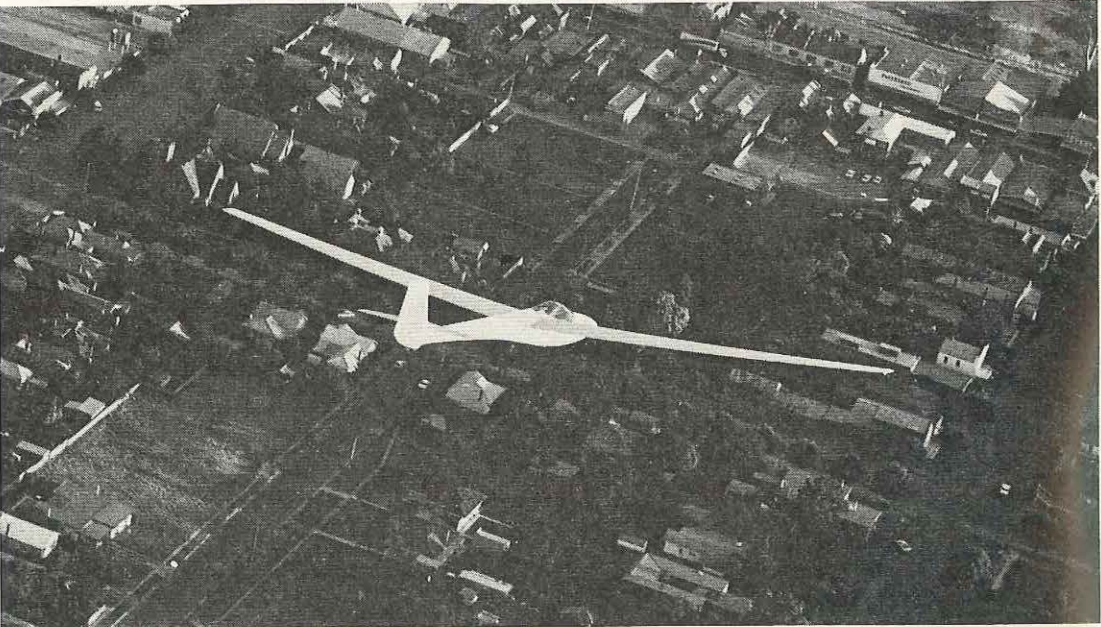


AVIATION SAFETY DIGEST

Number 77 January 1972

DEPARTMENT OF CIVIL AVIATION AUSTRALIA



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Wings over Benalla. Late afternoon activities caught by the Aviation Safety Digest camera at the Gliding Club of Victoria's well known base 120 miles north-east of Melbourne.

Front Cover: The rays of the setting sun reflect from the under-surfaces of a Chipmunk tug seen from a Kookaburra two-seater trainer in the low-tow position.

Rear Cover: A Libelle high performance sailplane releases from a Pawnee tug at 1500 feet.

Above: The descending Libelle re-enters the circuit area over the town preparatory to its last landing for the day.
—D.C.A. Photographs by T. Martin

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DOWNED IN THE DESERT

During a flight from Birdsville Queensland, to Alice Springs Northern Territory, acrid fumes and dense smoke filled the cabin of a Cherokee Six. With all six occupants becoming increasingly affected, the pilot was forced to attempt a landing on a small clay pan. The aircraft was damaged but no one was injured and the pilot succeeded in extinguishing a fire in the forward luggage compartment. After a number of difficulties in locating the position of the aircraft, the occupants were rescued by helicopter.

The pilot and his five passengers were all from Newcastle, N.S.W. and had hired the aircraft for a holiday flight to Ayers Rock and return. Although the flight was a private one, the pilot had previous experience as an airline pilot and still held a senior commercial pilot licence. As well as being equipped with appropriate HF and VHF communications equipment, the aircraft was fitted with ADF and VOR navigation aids and carried a VHF survival beacon.

The party departed West Maitland Aerodrome two days before the accident and flew to Bourke where they remained overnight. The following day they continued to Birdsville where they again remained overnight. The flights on both these days were uneventful and went according to plan.

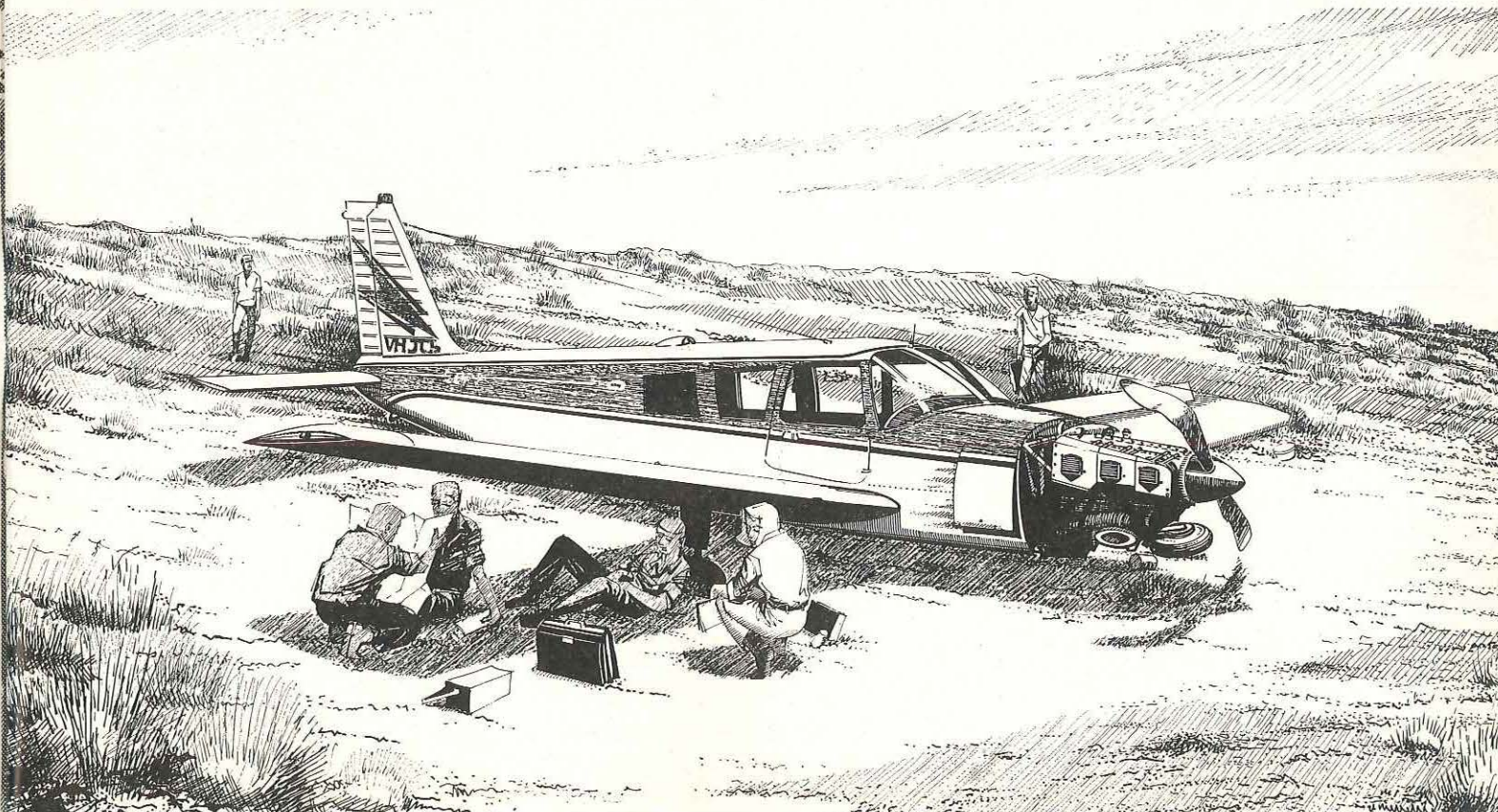
At Birdsville on the morning of the accident, radio propagation conditions were poor on HF, and the pilot was unable to contact Leigh Creek or Alice Springs to obtain an area forecast. As the weather was fine however, the pilot prepared a flight plan and, assuming that the wind would be light and variable, he calculated the time interval to Alice Springs as 162 minutes and nominated a cruising altitude of 6,500 feet. The aircraft's endurance was 350 minutes. Details of the flight plan, together with a SARTIME of 1030 hours local time to Alice Springs, were passed to Adelaide Flight Service via an airline aircraft which the pilot managed to contact while still on the ground at Birdsville.

The party then loaded their luggage into the aircraft and the last item to be placed in the forward locker was a loosely rolled, but untied plastic foam mattress, which when the locker door was closed, fitted snugly around the luggage and prevented it from moving.

After taking-off from Birdsville, the pilot found that he was now able to contact Alice Springs Flight Service Unit, and he passed his departure time of 0710 hours. He then obtained the area forecast from Alice Springs, which indicated fine weather over the route and a wind velocity of 220 degrees at 20 knots in the lower levels. The pilot amended his flight plan accordingly.

Some thirty minutes after departing Birdsville, an acrid smell became evident in the cabin of the aircraft. Because of its nature, the pilot diagnosed it as a boiling battery and decided that he would close down all electrically operated equipment to overcome the problem. As by this time the aircraft was well on its way to Alice Springs where there were facilities for effecting repairs, and the weather was fine, with no difficulty likely to be encountered in maintaining VFR flight, the pilot considered that it would be better to continue to Alice Springs rather than turn back to Birdsville. After notifying Alice Springs of the situation and his intentions, and arranging to transmit "operations normal" calls at specified times, the pilot turned off the master switch.

With the electrical system turned off, the odour appeared to dissipate some-



what and at 0800 hours the pilot turned on the master switch again and reported to Alice Springs. Alice Springs asked the pilot to confirm that no other problem existed and it was arranged that the aircraft would call again at 0830 hours. This the pilot did and after reporting "operations normal" once more informed Alice Springs that he would report again in another hour, when he would request a clearance to enter the Alice Springs control zone. The pilot had noticed that when he turned on the master switch to transmit his calls, the odour would become obvious again but would then disappear after he switched off the electrical system. He therefore assumed his diagnosis of the boiling battery had been correct.

Some twenty minutes later however, the pilot was startled to see dense, dark brown smoke seeping into the cabin from somewhere beneath the instrument panel on the starboard side. The smoke had

an acrid odour akin to an electrical fire or boiling batteries. The pilot was unable to understand what was causing the smoke for by this time, the master switch had been turned off for nearly half an hour, and altogether had been off for a total period of nearly an hour and a half.

The pilot quickly reviewed all that had happened to the aircraft that day; his initial pre-flight inspection, the packing of the luggage, the contents of the luggage locker, whether there was in fact a fire, where it could be located, and what could possibly have caused it. The pilot finally concluded from the colour of the smoke and other factors that there could not be a fire, but that acid from the aircraft battery had escaped in some way, and was acting on the luggage, causing the smoke and fumes. By this time the smoke and fumes had filled the cabin and were becoming so pungently overpowering that several of the passengers were having great difficulty in breathing and were feeling ill. The pilot opened all the air vents, including the clear vision window, but it was obvious to him that the flight could not continue. Despite the fact that he had the clear vision window open beside him, he too was having difficulty breathing. The situation was rapidly becoming worse, with the smoke and fumes intensifying, so the pilot again turned on the aircraft's electrical system and advised Alice Springs that he would have to make an emergency landing.

By this time the aircraft was almost over the centre of the Simpson Desert and the pilot altered heading some 20 degrees to port to try and intercept the course of the Hale River. A few minutes later a small clay pan came

into view directly ahead and the pilot decided it would have to suffice for the landing. After briefing the passengers, he informed Alice Springs of his intentions and made a low orbit of the clay pan while he planned his approach. As it was obvious to the pilot that the aircraft would over-run the boundaries of the clay pan which was only about 250 feet long, he made a powered approach at minimum control speed and turned off the switches just before touch down. After the aircraft was on the ground, the pilot held the nose up as long as possible to lighten the deceleration forces and prevent the aircraft going over on its back at high speed. The nose wheel came down after the aircraft had left the boundaries of the clay pan and after striking a mound of sand, was torn off. Shortly afterwards the port landing leg also struck a mound and was wrenched off. As the aircraft slid to port, the forward luggage locker door flew open, discharging burning pieces of the plastic foam mattress which set fire to the surrounding spinifex grass.

Immediately the aircraft came to rest, the pilot ordered the passengers to disembark quickly. The passengers stamped out the grass fire, while the pilot ran to the forward luggage locker, inside which he could see a fire burning. Seizing a water container from inside the locker, he used its contents to extinguish the fire.

Some time later, when the pilot considered that there was no further risk of the aircraft catching fire, he decided to attempt to call Alice Springs and report that they were all safe and uninjured. Before doing so however, he examined all the fuses to see if any had blown and removed those not required

for the operation of the radio. After successfully making contact with Alice Springs and reporting the aircraft's estimated position, the pilot activated the VHF survival beacon and set it up on top of a nearby sand dune.

Meanwhile in Alice Springs, the Distress Phase had been declared as soon as the pilot advised that he was going to make an emergency landing and arrangements were made to commence an air search as soon as possible. The survival beacon signal was first heard by a Qantas HS-125 operating 73 miles north-west of Oodnadatta at 1154 hours, and a De Havilland Heron employed in the search, first picked up the signal at 1320 hours. The Heron continued to fly search patterns based on the signal indications, but search meter readings did not seem to show any logical pattern.

At 1518 hours, another search aircraft, a Twin Bonanza, located the crashed aircraft visually at approximately 25° 15' South, 136° 10' East but its exact position was difficult to determine because of the featureless nature of the desert sand hills. Because of fuel shortage, the Twin Bonanza was forced to return to Alice Springs before other search aircraft reached the site but at 1703 hours a Cessna 206 flown by a very experienced bush pilot re-located the crashed aircraft and its occupants and dropped storepedoes containing water, food and blankets.

Darkness was then approaching, so the 206 returned to the aerodrome at Andado Station, about 50 miles from the accident site, and plans were made to implement rescue operations from this base the following day. Because the nature of the terrain ruled out the possibility of rescuing the party by land

vehicle, a Bell 47 helicopter which was based in the Alice Springs area, was requisitioned to up-lift the six survivors and to convey a two-man accident investigation team to and from the site. As the helicopter could carry only two passengers at a time, four round trips would be necessary but it was considered that the entire operation of rescue and on-site investigation, could be completed in the one day.

When this plan was attempted the following day however, great difficulty was found in locating the downed aircraft on each of the helicopter's trips and only four of the six occupants could be rescued before the end of the day. Happily, weather conditions remained fine and warm and four more storepedoes were dropped to the two remaining survivors at the crash site so that they had adequate supplies of food, water and clothing. On the third day of the rescue operation, the same difficulties were again experienced in locating the site, but eventually the two remaining survivors were up-lifted and the investigation team completed their work and were evacuated.

* * *
The site of the forced landing proved to be 30 miles to port of the direct Birdsville—Alice Springs track and about 35 miles south-west of the dead-reckoning position based on information transmitted by the pilot just before he landed. The error, though substantial, is hardly surprising when the difficulties experienced by the pilot are considered, together with the almost featureless nature of the desert area. It is probable that the pilot would have tended to turn the aircraft to port during the time he was gulping fresh air from the clear

vision window on the port side of the aircraft. Also, when the pilot saw that a forced landing was inevitable, he turned some 15 to 20 degrees to port towards the course of the Hale River.

The small clay pan which the pilot had selected for the forced landing was the most suitable area available in the vicinity. Although the aircraft touched down further along the clay pan than desirable, this is understandable in the circumstances. Even if the aircraft had touched down on the edge of the clay pan, it is unlikely that it could have been stopped before overrunning the available length into the surrounding soft sand.

The on-site investigation of the accident was concentrated on establishing the cause of the fumes, smoke and fire. The only section of the aircraft which exhibited evidence of burning was the forward luggage locker, the interior of which had been severely damaged by fire.

On the exterior of the aircraft on the starboard side, evidence of smoke and brown staining streamed rearwards from the nose locker door as far as the cabin door. An unpleasant pungent smell pervaded the interior of the locker and was obviously related to the burnt remains of the plastic foam mattress still in the locker.

The luggage locker lamp, which is normally attached to the locker roof lining immediately inside the door, was found hanging by its wiring with the integral switch still in the "on" position. The lamp assembly had clearly fallen from its mounting when the lining was burnt away. The insulation on the wires leading to the lamp had been burnt away within the locker itself but was un-



damaged elsewhere. The fuse for this circuit was blown but there was no evidence of any electrical malfunction which could have caused the fire, and the aircraft's battery was found to be in excellent condition.

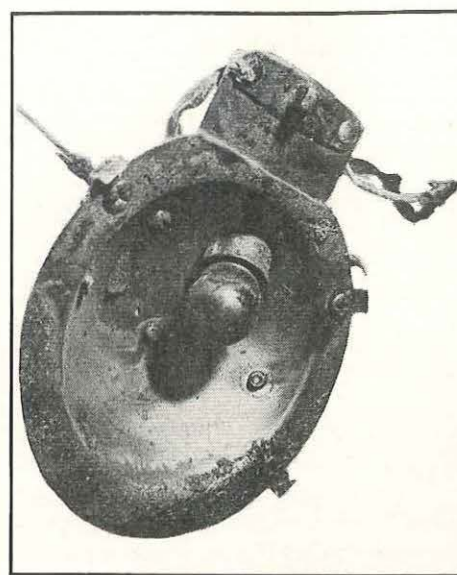
The lamp assembly itself in the locker was badly charred and its unprotected bulb was covered with burnt remnants of plastic foam. Normally in this type of aircraft, the bulb in the luggage locker is protected by a translucent plastic lens, but there was no evidence that a lens had been attached to the lamp assembly at the time of the fire. Thus any soft material packed tightly into the upper section of the locker, could come directly into contact with the bulb itself.

A series of tests carried out later at Parafield Airport, using an identical lamp assembly connected to a 12 volt battery, and foam material similar to the mattress carried in the aircraft, showed that, with the plastic lens in place and the light turned on, the foam material showed no tendency to overheat when in contact with the lamp. When placed in direct contact with the naked bulb however, the foam began to exude an intensely pungent odour after about four minutes. It gave off wisps of smoke after eight minutes and dense smoke and fumes after 23 minutes. Even after the switch had been turned off, the foam continued to emit dense fumes for up to 20 minutes. The application of any draught increased the intensity of the fumes.

The acidity of the fumes was enough to cause serious discomfort in the room where the test was being conducted, and there was no doubt that the odour was the same as that found in the cabin and luggage locker of the aircraft at the site of the accident. The odour was not unlike that of the fumes given off by a boiling battery.

The luggage locker lamp in the Cherokee Six is controlled by a switch on the fitting itself, but it has nothing to indicate which positions are "off" and "on". The lamp and switch cannot be seen from outside the aircraft, even with the locker door fully open. The fuse for the circuit cannot be reached from the pilot's seat, unless the wire is pulled from behind the instrument panel.

From the time the aircraft first departed on the holiday flight, all loading and unloading had been carried out in daylight and there had been no reason for the pilot to switch on the light in the locker. Furthermore, it is very likely that the luggage would have been loaded soon after the party had arrived



at the aerodrome on each occasion, and before the pilot had turned on the aircraft's master switch. Similarly, the contents of the locker would most likely have been unloaded after the pilot had shut down the aircraft each time. Thus, the lamp would not have been illuminated at any time during the trip when the locker door was open. The pilot could not recall noticing the lamp at any time and did not know if it had been fitted with a lens when he first accepted the aircraft. There was nothing to indicate that the lens had been knocked off during loading or unloading operations en route. In the circumstances, it would be unreasonable to expect the pilot to have noticed that the switch was on before leaving Birdsville, and it seems quite probable that it was on when the pilot took delivery of the aircraft for the trip, and even for some time before.

It seems clear from the investigation that some time after take-off from Birdsville, the rolled-up foam mattress, tending to unravel itself, came into contact with the illuminated bulb in the luggage locker. This heated the foam excessively, causing it to emit the increasingly obnoxious fumes and smoke which were carried back into the cabin. As shown in the tests, the nature of the foam was such that once it began to smoulder, it would continue to do so even when the source of heat was turned off. This characteristic was probably accentuated by the inevitable slipstream draughts that would have existed around the inside of the closed locker door.

Each time the pilot turned on the master switch to transmit his "operations normal" calls, the situation in the nose locker would have worsened, but it is

probable that the foam did not actually ignite until it was exposed to the air when the locker door flew open during the forced landing. Although the locker was lined with flame-resistant upholstery which sealed it off to a reasonable extent from the cabin interior, the dividing bulkhead could in no way be considered smoke-proof, and it is probable that most of the smoke and fumes permeated through this bulkhead. The aircraft's firewall is of course, located further forward between the luggage locker and engine.

As already pointed out, the pilot in this case can in no way be criticised for the circumstances in which the in-flight fire developed. Indeed, it could even be said that he was very unlucky for he had taken all reasonable precautions during the planning stage to ensure the safety and success of the flight.

But if any aspect of his airmanship is open to question, it is his decision to continue with a three hour flight, over some of the most forbidding terrain in Australia in a single engined aircraft that had developed a malfunction of unknown extent.

Certainly there were no repair facilities at Birdsville, but as it turned out, had the aircraft returned and landed at Birdsville, there can be little doubt that the source of the smoke and fumes would have been discovered before any real damage was done.

In view of the circumstances of this in-flight fire, the dangers posed by unprotected lamp bulbs in aircraft cargo compartments has been the subject of an article in the Department's Airworthiness Advisory Circular. Operators have been reminded of the importance of

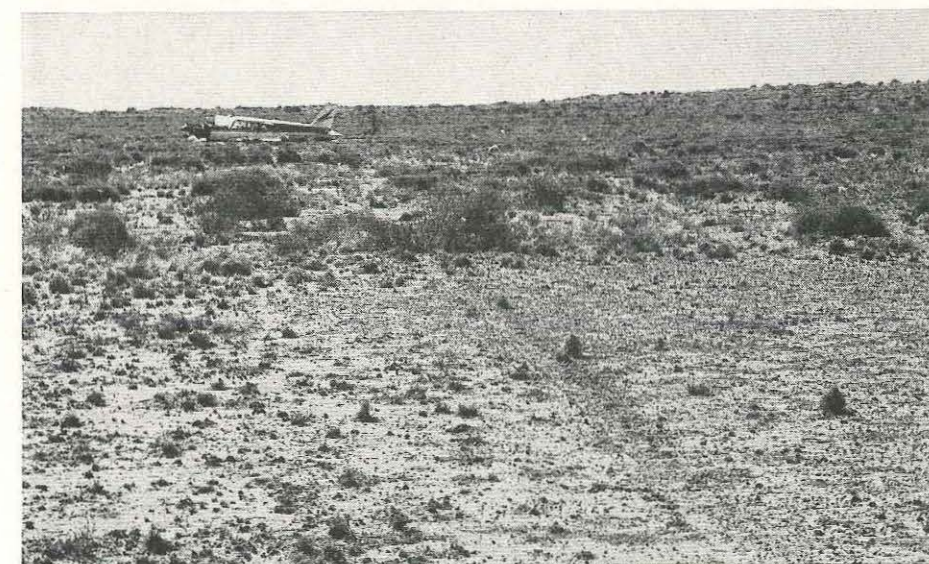
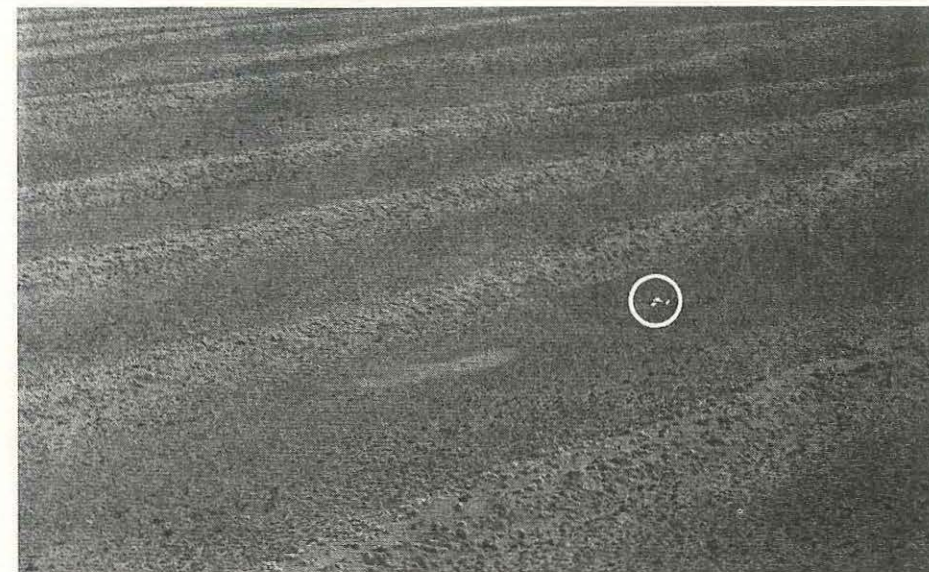
Opposite page left: Burnt-out interior of forward luggage compartment with lamp hanging by damaged wiring.

Right: Close up of lamp with fragments of burnt plastic foam still adhering to bulb.

This page top: The downed Cherokee as sighted by the search aircraft. The clay pan on which the initial touch-down was made can be seen to the left of the aircraft's position. Note the parallel sand ridges typical of the area.

Centre: Wheel marks left by the aircraft on the surface of the clay pan. The rougher ground beyond is clearly evident.

Bottom: The damaged aircraft as it came to rest. The engine cowlings were removed after the accident.



continuing checks of aircraft compartments to ensure that the requirements of Airworthiness Directive DCA General 33A, are being maintained, so as to avoid the possibility of a further and perhaps fatal accident.

The difficulties experienced by the search aircraft in homing on the VHF survival beacon in this case, have also been the subject of additional Departmental work. This search and rescue operation provided the first known instance in which any real difficulty has been experienced in tracking down the precise position of a beacon transmitting on the ground.

Despite the fact that the beacon's signal was heard some distance away by a high flying aircraft, it is evident that its full transmitting capability was not achieved, probably because it was placed on a sand dune. The sandy terrain appears to have insufficient "conductivity" to provide a satisfactory "ground mat" for the beacon's antenna. Subsequent tests have shown that the performance of a beacon in such cases can be vastly improved by using a sheet of metal foil, or a metallic "space blanket" type ground sheet, as a ground mat. Even wrapping the beacon's plastic case in foil can effect a considerable improvement in transmitting performance. More is now known too, of the limitations of airborne search receiving equipment, and of the familiarity with search procedures to be expected of pilots generally.

The tests are continuing, together with a further evaluation of search methods and homing equipment, and the results of this research will be circulated to operators when the programme has been completed and the results are known.

OUTBACK SURVIVAL

NOW that our Australian continent is once again in the fiery grip of mid-summer heat, and numbers of light aeroplanes and helicopters are operating over the "outback" areas of Australia in extremely high temperatures, it is timely to again consider the question of personal survival in the event of being forced down in this hostile environment.

The fact that this can still happen, despite the most careful flight preparation and planning, is exemplified by the accident reviewed in this issue. Fortunately, though the site of this forced landing was almost in the centre of the forbidding Simpson Desert, the accident occurred before the onslaught of summer and the occupants were spared the ordeal, and indeed the danger, of waiting for rescue in temperatures well over the century.

The art of survival is as old as mankind himself. From the dawn of his history, man has had to learn to cope with the extremes of nature in order to survive. That he has been able to do so successfully in a great diversity of climatic and topographical conditions is probably as much a tribute to primitive man's instinct for survival as it is to his ability to think and plan. But as communal life has become more ordered and dependent upon the diversity of specialised human skills which all go to make up what we call a civilisation, so the skills originally sharpened by instinct have been blunted or lost altogether.

The fact that so many ordinary people have lost their lives in the outback in recent years, in circumstances which could so easily have been avoided, is clear evidence of modern man's inability to recognise nature's danger signals and his ignorance of the need to prepare for likely emergencies. For, like its opposite extreme in nature the sea, the Australian outback is a deceptively unforgiving adversary, quick to take advantage of any ignorance, stupidity or lack of preparation.

The rapidity with which the combination of very high surface temperatures and lack of drinking water and personal protection can debilitate the human body has been demonstrated over and over again by the tragedies that have occurred in remote areas when motorists and others have become stranded far from help or water supplies. It is important to realise too, that in terms of flying distances in the inland, one does not have to travel far to get into difficulties. Only two summers ago, a glider pilot, making a local soaring flight from an airstrip only a few miles from Alice Springs, became lost and made an out-landing on a road. It was nearly three days before he was found, despite an intensive air search based on Alice Springs, using 15 aircraft. The pilot had no water or survival equipment of any kind and when rescued he was dangerously dehydrated and suffering acute distress from the effects of thirst. There

is little doubt that if this pilot had not been found on the morning of his third day of intense heat without water, death would have overtaken him within a few hours. Some readers may recall that this pilot's experience was the subject of a documentary film entitled—"He who Dares—Doing A Perish" and was screened on ABC television some months ago.

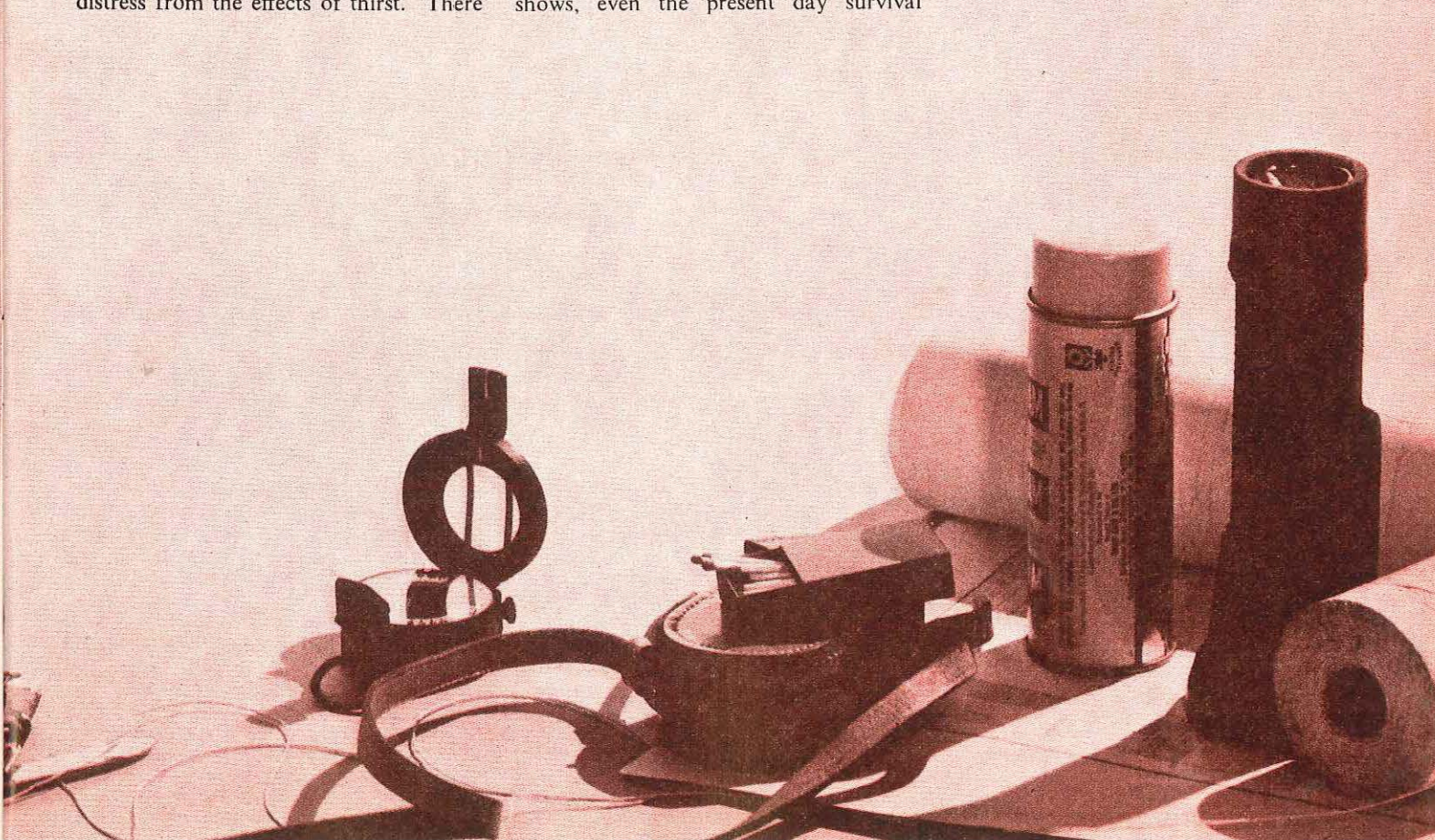
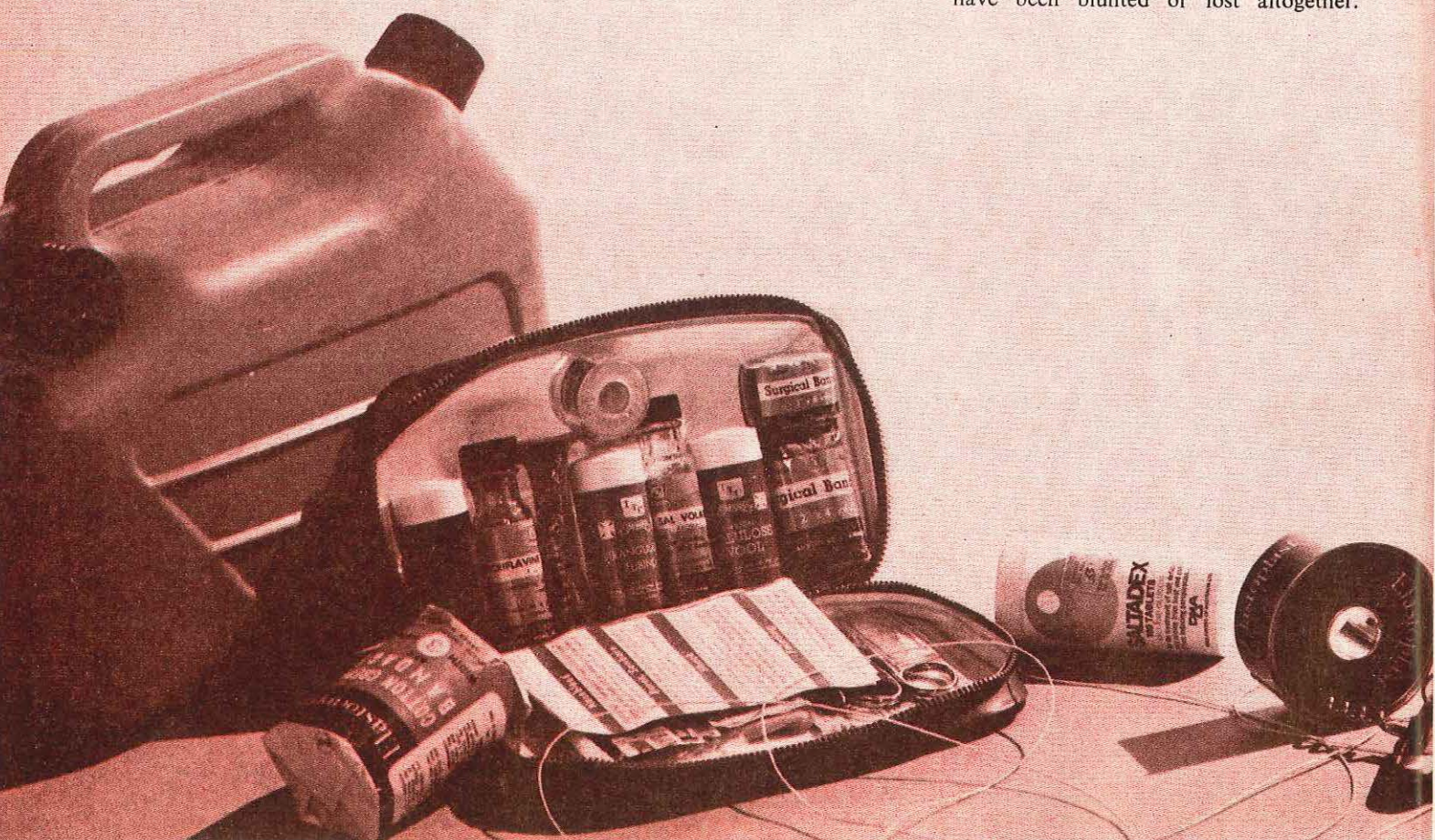
The advent of the VHF survival beacon in Australian aviation has undoubtedly lessened the chances of the occupants of an aircraft sharing the fate of the unfortunate Jim Knight who in 1961, while flying his Wackett trainer from Ceduna to Cook in South Australia, strayed off track and became lost in desert country north of the trans-Australia railway. No trace of his aircraft was found for three years, and even then only by chance, 200 miles from its destination and 42 degrees off track. The circumstances of this tragedy were described in Digest No. 44 and the article itself, "Journey into Nowhere" was reprinted in Australian Flying in its March 1971 issue. Survival beacons had not of course been developed at that time, but there seems little doubt that if Knight had been equipped with one of the types of beacon now available, the Wackett could have been located in time to save the pilot's life.

But as the much more recent desert landing case reported in this issue shows, even the present day survival

beacon cannot always ensure that help is only a few hours away. In such cases, especially in difficult terrain like the Simpson Desert, rescue can take longer than one might expect. It is thus extremely foolish to "trade" on the advantages of today's technology, and assume that one is never likely to be very far from help for very long. Unfortunately, there are some pilots who do not seem to appreciate this fact and whose attitude to operations in remote areas is far from professional.

As general aviation activity has grown in the more remote areas of Australia and New Guinea, particularly helicopter operations associated with aerial surveying, oil exploration and mineral prospecting, this attitude of unpreparedness has become increasingly evident. The following instances illustrate the scant regard some pilots seem to have for their own well being:

- A pilot who flies almost naked during summer operations in Central and North Western Australia "in order to keep as cool as possible"
- A pilot who regularly operates in shorts, sleeveless shirt and bare feet, over the remote and inhospitable swamps of south-western Papua.





• A pilot who made a NOSAR, NO DETAILS flight from Port Hedland to Darwin in an aircraft with an unserviceable HF radio and suspect VHF equipment, carrying only about three pints of water.

A person who is a pilot, especially one in the professional category, should have a better than average share of the physical and mental characteristics which can keep a human being going in the face of adversity. Had he the tendency to give in when the unforeseen occurred, it would have been tactfully suggested to him early in his flying career that he take up some less demanding way of earning a living. As well, in common with all normal human beings, he no doubt has a healthy desire to remain alive as long as possible. But in order that these attributes may be exploited to the full, some basic rules on survival equipment and preparation need to be followed. The "pink pages" at the front and back of the Visual Flight Guide set out some extremely valuable information on planning for safety and survival, and all general aviation pilots would do well to make themselves thoroughly conversant with the contents of these pages. The further advice that follows is offered only to emphasise and amplify some of these pointers to survival.

Water

Water is the first requirement, the absolute necessity for survival. The human body can go for surprisingly long periods of time without food; in fact as we all know well, some people would be much better off if they went without food occasionally! But without water for a day or so, or even for a matter of hours in hot and dry conditions, the human mechanism is in serious trouble. For this reason, whether or not natural water sources are available in the area, the well prepared pilot always carries water — even if he's flying over a rain forest jungle! Remember, a broken leg or similar injury can completely negate the value of a natural water source, no matter how close it may be to the crashed aircraft. It is not generally appreciated, that in hot and dry conditions the minimum amount of water that is necessary to sustain human beings is a gallon per man per day!

Food

As already mentioned, food is not of primary importance unless heavy work requiring much physical effort is to be undertaken. Easily carried emergency rations consisting of high calorie foods such as chocolates, raisins or even lump

sugar will usually suffice to sustain the body satisfactorily for a few days providing plenty of water is available.

Clothing

There are two factors to be considered in the choice of clothing. In the first place it should provide some measure of protection in the event of an accident, i.e. it should be flame and flash proof, and cover as much of the body as possible. Such a suggestion will no doubt, provoke knowing comments from some "professionals" who fly in northern Australia and New Guinea. It is sufficient to say however that, if some of the victims of the fatal and near fatal burning accidents that have occurred to light aircraft and helicopters in recent years had accepted the inconvenience of such clothing, the deaths and permanent disfigurements caused by extensive third and fourth degree burns might have been avoided.

Secondly, the clothing chosen should be suitable for what is likely to occur after an accident, and should provide adequate protection against the extremes of temperature likely to be encountered. Footwear is also extremely important — thongs may be ideal for padding out to a bush shower at camp but they have very definite disadvantages for walking over hot gibber country. (Assuming of course that any decision to leave the aircraft will be responsibly made after considering all factors).^{*} Generally speaking, the clothing worn should be strong enough to withstand the rough treatment one would expect in a SAR situation — their secondary use may well involve doing duty as bandages, shelters, blankets, etc.

Medical

Some type of basic medical kit should be carried in the aircraft for emergencies. This kit need not be elaborate, holding little more than a bandage or two (including some form of shell dressing pad), some antiseptic and burn ointments, and perhaps a length of cord suitable for use as a tourniquet. Naturally the larger the aircraft the more elaborate the kit may be, as weight becomes less critical.

While on this subject, it is important to remember that a basic knowledge of first aid can mean, literally, the difference between life and death to an injured crew member or passenger. Anyone who has sat by helplessly on the sidelines of a serious motor accident, and has been unable to provide effective assistance

^{*} Particular attention should be given to the advice in the VFG on staying with your aircraft while awaiting rescue.

because of ignorance of the fundamentals of first aid, will endorse the view that a short basic first aid course can be a most worthwhile undertaking.

Equipment

For practical reasons survival equipment has to be kept to a minimum in normal circumstances. The "nice to have" as opposed to the "must have" are almost unlimited, but where weight and cost are significant considerations, an effective survival kit can be designed for a small space and at a minimum of expense. Suggested items, in the "must have" category depending on the area of operation, are:

- (a) Water—emergency rations
- (b) Signalling mirror
- (c) Matches or lighter
- (d) All-purpose knife

- (e) Insect repellent, sunburn cream
- (f) Cordage
- (g) Basic pocket compass.
- "Nice to have" could include:
- (a) Flash light and/or signal flares
- (b) Water purification tablets
- (c) Ground sheet (preferably the "space blanket" type)
- (d) Additional water
- (e) Plastic sheeting, tubing, and containers (for solar water still).

It goes without saying of course, that a VHF survival beacon is a most desirable piece of survival equipment, whether or not it is a mandatory requirement for the type of operation. Several different makes of beacons are now available at comparatively low cost and are simply good insurance for any light aircraft flight in a remote area. Carrying a VHF survival beacon could in fact, mean, as we have already seen, the difference

between an unpleasant experience and a disaster.

Nearly always when a pilot and his passengers have emerged unscathed from a forced landing in a remote area, they have done so because the pilot-in-command had a good sound reason for every action he took, every decision he made. The mature, professional-type pilot has a healthy respect for all aspects of aircraft operation — including the difficulties he will inevitably face after any type of mishap or accident.

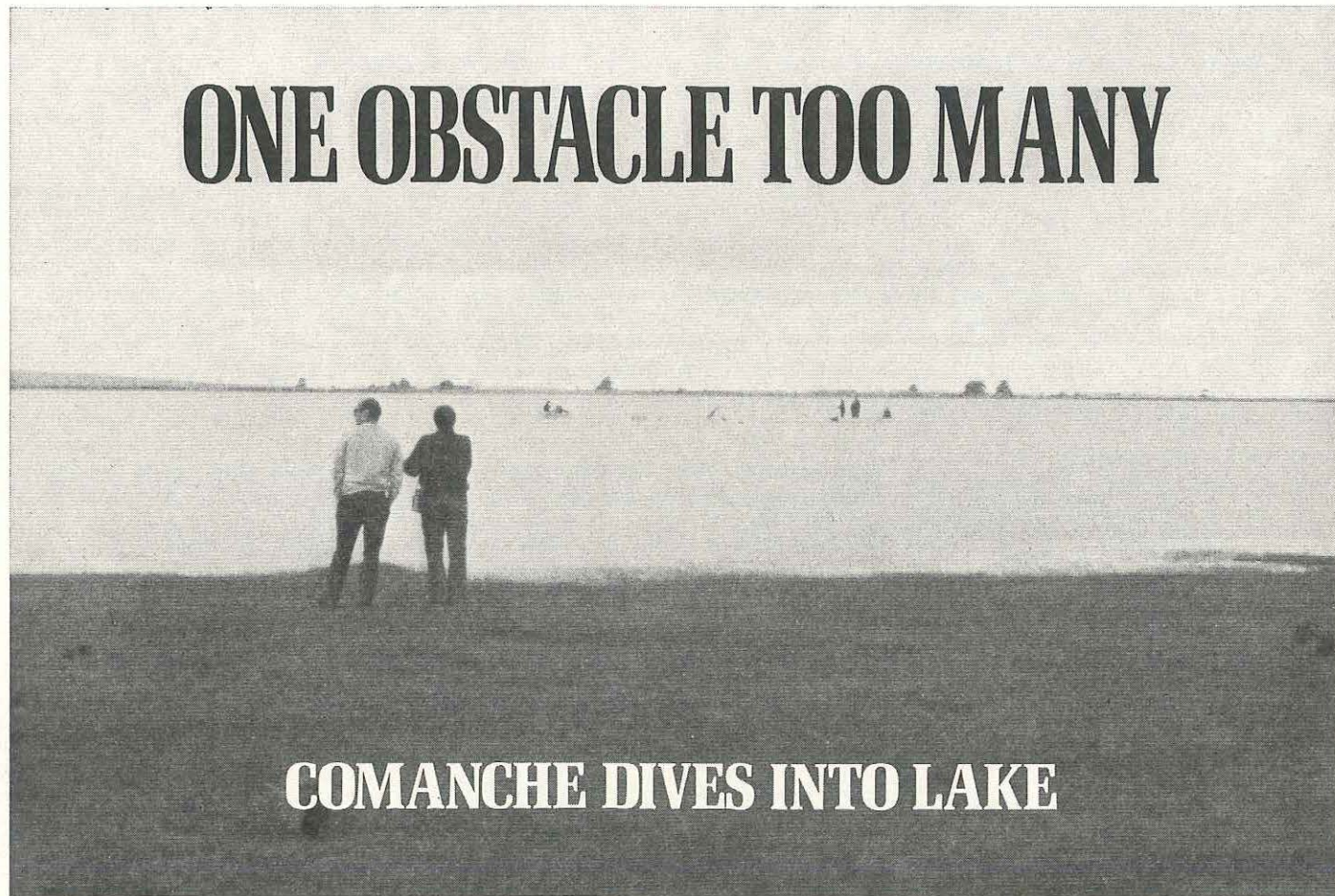
The problem of survival after a forced landing in the outback is probably more serious than most crises he is likely to be called upon to deal with, but the pilot who has equipped himself, mentally as well as materially, should be able to handle it so that, as the Visual Flight Guide puts it, "It Need Not be a Tragedy!"

DON'T GO BARKING UP THE WRONG TREE —



Proper precautions during hand-starting are cheap insurance!

ONE OBSTACLE TOO MANY



COMANCHE DIVES INTO LAKE

AT Moorabbin Airport, Victoria, a private pilot had hired a Piper Comanche to fly himself and four passengers to Warrnambool and Shepparton to conduct some business before returning to Moorabbin. The pilot had a total of 225 hours experience and about 25 hours on Comanche aircraft.

Before departing on the morning of the accident, the pilot obtained the area weather forecast which indicated there would be six-eighths of strato-cumulus cloud with a base of 2,500 feet, and a general visibility of 15 miles. Scattered drizzle was expected until 0900 hours with visibility reducing to two miles in the showers. The terminal forecast for Warrnambool was for five-eighths of strato-cumulus cloud at 3,000 feet and a visibility of 15 miles.

After the pilot had submitted a flight plan to Warrnambool via Sorrento and Colac, the aircraft departed Moorabbin at 0700 hours. At 0718 the aircraft called Melbourne Flight Service and reported that it was at Sorrento at 1,500 feet and estimating Colac at 0736. At 0738 hours however, two minutes after this previous ETA, the aircraft

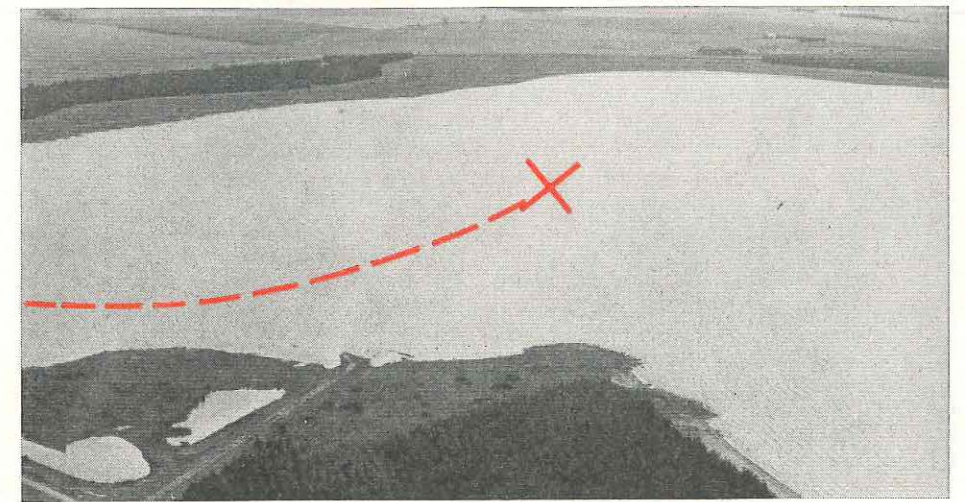
called Melbourne again without indicating its position and requested the present weather conditions at Warrnambool. On being asked for its estimate for Warrnambool the aircraft answered "17". Melbourne informed the aircraft that there were no reports from the Warrnambool area at the moment, but that a Fokker Friendship was on the ground there and due to depart shortly, when it should be able to pass a weather report. Eight minutes later, at 0756 hours, the Friendship called on departing from Warrnambool and Melbourne requested the present weather in the Warrnambool area. The Fokker advised that the wind was 310 degrees at 10 knots and that there was four-eighths of strato-cumulus cloud at 4,000 feet. After acknowledging the report, Melbourne asked the Comanche if it had copied the Warrnambool weather report. There was no reply and nothing more was heard from the aircraft.

Shortly after 0900 hours that morning the schoolmaster at Wurdiboluc, five miles south of Winchelsea, answered a knock on his door. He opened the door to find a man standing in wet

clothes and obviously in a state of shock. The man said he had been a passenger in a light aircraft that had crashed into the nearby lake. Three other survivors were still clinging to the wreckage of the aircraft awaiting rescue, and another passenger was missing. The school master immediately telephoned a neighbouring farmer who had a boat, as well as the Police Station at Winchelsea, and rescue operations were put in hand. The rescue party found the other three survivors nearly half a mile from the shore of the lake, standing on the partly submerged starboard wing of the aircraft, which had sunk in about 10 feet of water. After being brought ashore they were taken to Geelong Hospital for treatment. The body of the missing passenger was recovered from the lake several hours later.

As the aircraft was almost completely submerged, no examination of the wreckage was possible until salvage operations had been completed. Apart from impact damage and further damage which was unavoidably sustained during the salvage process, this examination found no

View looking south-west over Lake Wurdiboluc showing approximate final flight path and point of impact with water.



evidence of any defect or malfunction in the aircraft and it should have been capable of normal operation before it plunged into the lake. The wreckage examination indicated that the aircraft had first struck the water with the port wing, which had broken off about six feet from the tip. The aircraft had then cartwheeled into the water, striking the surface on the lower port side of the nose, with the propeller under power. The nose section, as far back as the instrument panel, had separated from the rest of the fuselage, which had quickly filled with water and settled to the bed of the lake.

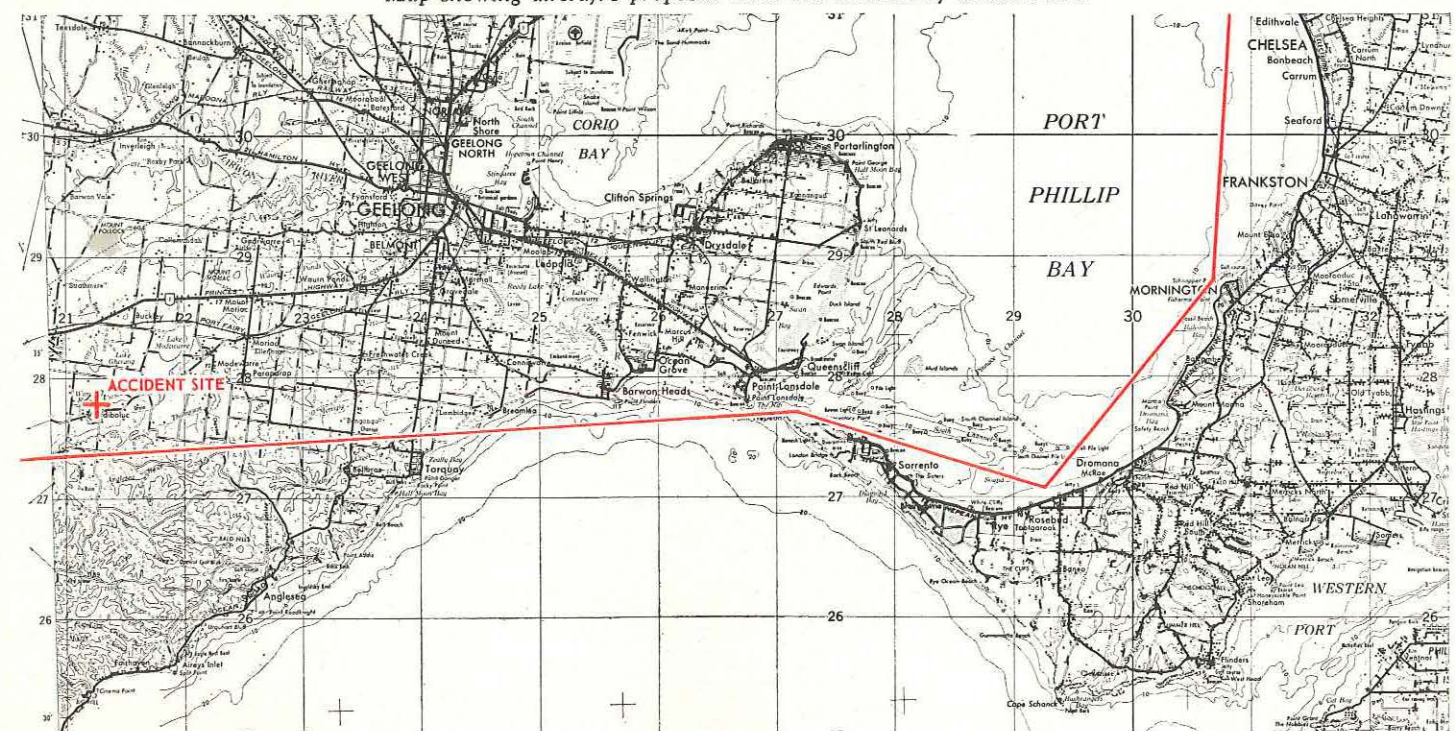
It was learned from the pilot and the other survivors, all of whom had their seat belts fastened at the time of the accident that, as they scrambled from the sinking wreckage immediately after

the impact, they realised that one of the passengers was missing. This passenger had not had his seat belt fastened when the aircraft struck the water. The pilot said that he had dived down into the cabin again to look for this passenger but was unable to find him. After the aircraft had sunk, the survivors were able to keep their heads above the water by standing on the starboard wing. They were several hundred yards from shore and when their cries for help produced no response, it was decided that one of the passengers would attempt to swim ashore to raise the alarm. This he did, but hampered by a back injury and his sodden clothing, it took him almost an hour to do so. It was almost another hour before the rescue party were able to reach the survivors.

Describing the events leading to the

accident, the pilot said that after reporting the aircraft's position at Sorrento, he maintained 1,500 feet until about 10 miles past Torquay, when the weather ahead began to deteriorate. As the cloud base lowered the pilot descended until the aircraft was flying about 200 feet above ground level. By this time it was drizzling and the pilot had to divert several times to avoid even lower cloud. Eventually, the pilot found himself in a position where the cloud base and visibility were such that he was unable to go on or back. It was at this stage that he had called Melbourne to ask what the weather was like at Warrnambool. When Melbourne did not have the information readily available, he began to look around for somewhere to land and had to fly "really low" to remain in visual contact with the ground.

Map showing aircraft's proposed track and location of accident site.



He was flying along the edge of the lake when he sighted tall pine trees looming up ahead through the mist. He banked the aircraft to the left to avoid the trees and this took the aircraft out over the water. The port wing tip struck the surface while the aircraft was still turning. Asked if he had considered turning back earlier the pilot said that when he first saw the mist and cloud he thought it was "only local" and that he could "get around it".

The area forecast which the pilot had obtained before departing, indicated that conditions were generally favourable for the flight. Although scattered drizzle was expected until 0900 hours, the terminal forecast for Warrnambool was for only five-eighths of cloud at 3,000 feet, with a visibility of 15 miles. It thus seems possible that the hope of getting through to this better weather had encouraged the pilot to continue into the deteriorating local conditions to the point where he found himself trapped.

The site of the accident was 22 miles

east of Colac, for which the pilot had previously passed an estimate of 0736 hours, but it was two minutes after this time when he called Melbourne asking about the weather at Warrnambool. This suggests that the pilot had already flown around for several minutes before he called Melbourne. The terrain in the area of the accident is flat and if the pilot was unable to retreat with safety from the point at which he was forced to turn back, the cloud must have been low indeed, and the visibility very poor. There are numerous fields in the area surrounding the reservoir which would have been ideal for a precautionary landing, but to make such a landing in deteriorating weather, particularly in poor visibility, a decision would obviously have to be made before the aircraft was forced too low and the pilot still had room to manoeuvre safely.

The aircraft was seen by several witnesses in the area between 0730 and 0750 hours. The different witnesses all made reference to the fact that visibility

was poor at the time in rain and mist, and that the aircraft was circling at low level. One witness said that the aircraft was not much higher than pine trees in the vicinity and that when it was about 200 yards away, his view of it was hampered by the poor visibility. An analysis of all the witness evidence indicates that the aircraft would have crashed at about 0748 hours.

It is apparent that when the pilot sighted the tall pine trees ahead of the aircraft and banked to the left to avoid them, he did not have to turn suddenly or steeply. At this stage, the trees were still some distance away. However, with the aircraft already at a very low level below the overlying cloud and without a clearly defined horizon, the pilot would have found it almost impossible to fly the aircraft accurately above the water, once it left the shore line and turned out over the lake.

Some readers will recall that the difficulty of assessing height above water was the subject of a Digest article several

months ago* and in the circumstances in which this turn was made, the pilot would have had virtually no external cues from which he could determine the aircraft's height above the surface. Neither would he have had any visual indication, if the aircraft was "slipping in" during the turn.

Although the aircraft's impact with the water can be directly attributed to the fact that the pilot was flying the aircraft at an unsafe height, its real cause lies much further back in the chain of events that led step by step to the accident. The five people on board the aircraft were making a business trip to Warrnambool and were scheduled to proceed

* See "Deadly Deception", Aviation Safety Digest No. 74, June, 1970.

to Shepparton afterwards for further business. For this reason the pilot was no doubt reluctant to make a precautionary landing which would have resulted in a considerable delay. His request for information on the Warrnambool weather suggests that he intended to try and get through if the report was favourable. The pilot evidently believed the bad weather only local in extent and seems to have been determined to continue the flight if this was at all possible. He could probably have made a successful precautionary landing earlier but in his determination to await a report on the weather at Warrnambool before making a decision, he delayed too long and became trapped by the local deteriorating conditions.

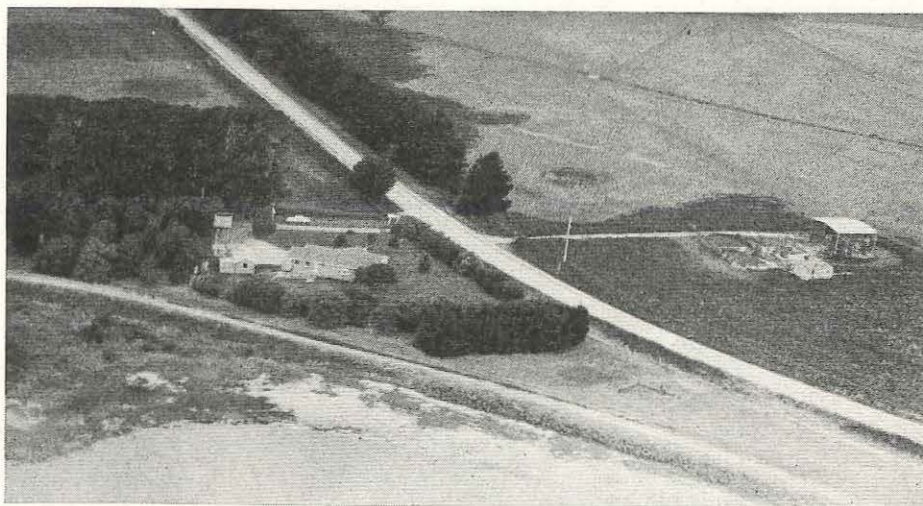
As in a number of other cases within

the last 12 months, the pilot's basic error was that he "pressed on" too far. Having continued as far as he did into the adverse weather conditions, an accident of some sort, either a collision with terrain or a loss of control after being deprived of visual reference, was almost inevitable. The lesson of this latest "Below VMC" accident is that, no matter what form the limitations of Visual Meteorological Conditions take, they must in no circumstances be exceeded.

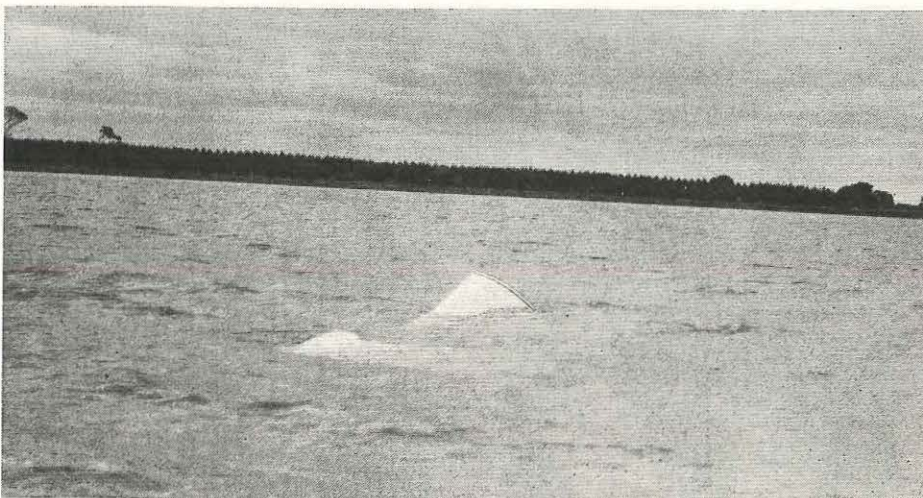
Cause

The cause of the accident was that the pilot proceeded into weather conditions in which visual flight with adequate terrain clearance could not be maintained.

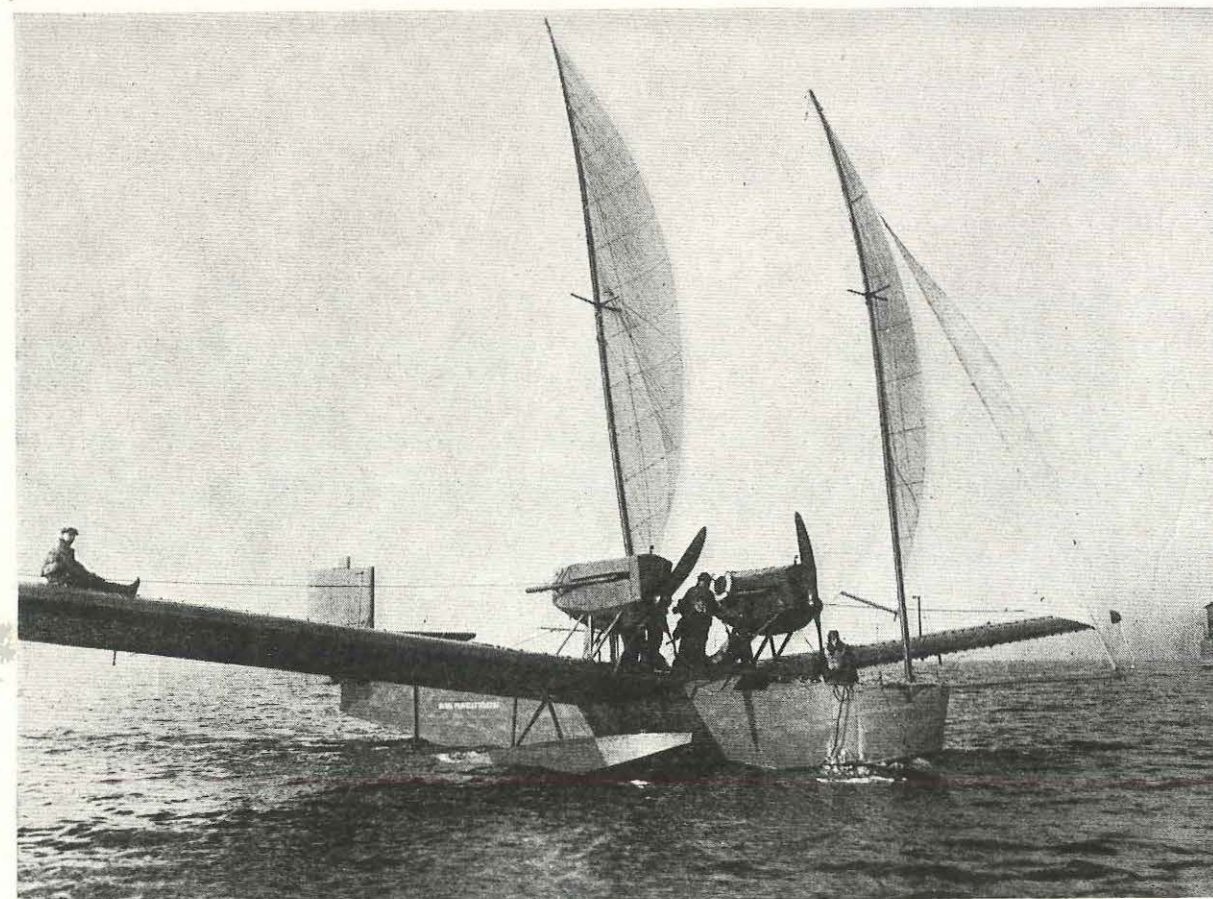
View looking in the direction in which the aircraft was flying shortly before the accident. The tall trees which the aircraft turned to avoid can be seen on the left.



The only portions of the aircraft which remained visible above the surface of the lake after the accident were the starboard wing and cabin roof. The survivors clung to the wreckage while awaiting rescue.



AIR SAFETY ADVICE-ILLUSTRATED



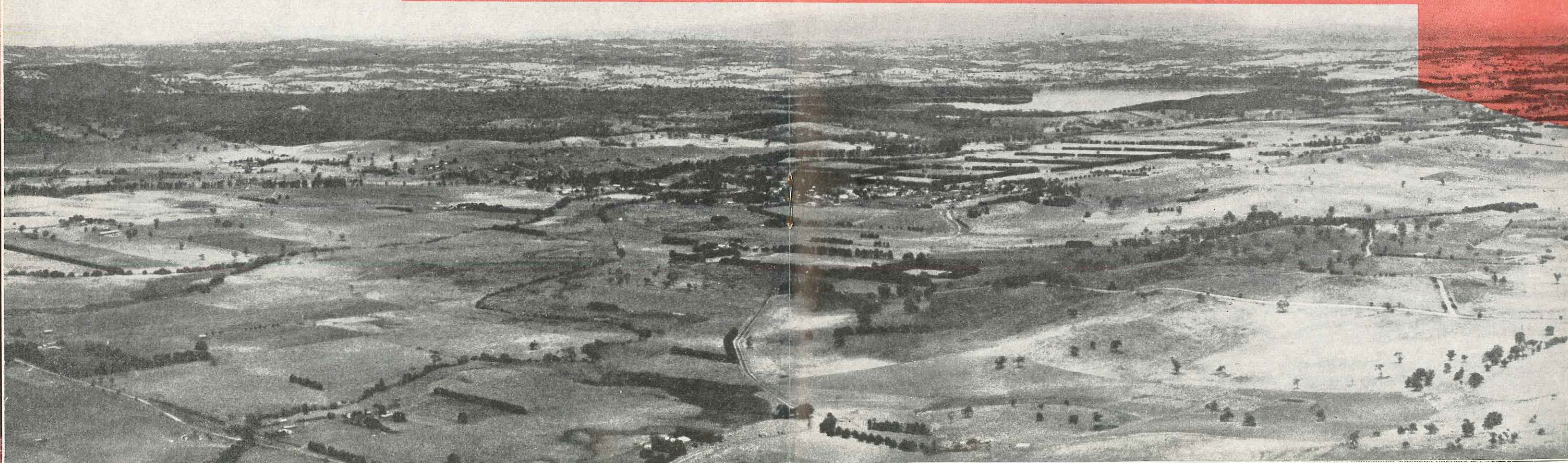
"Caution—wake turbulence!"

—Rohrbach R.O. II flying boat sailing under jury rig in 1925.

If all controlled airspace . . .

. . . could be tinted pink, unauthorised penetrations might cease to be a problem! But since tinting has to be confined to maps and charts, the only alternative is to make the most of them!

Flights near controlled airspace boundaries demand accurate navigation and a high level of vigilance - especially when visibility is reduced!



Welcome To Our New Readers

The publication of this issue of Aviation Safety Digest represents a further step forward in its task of serving the interests of flying safety. It is in fact the first issue to be available to readers other than those whose association with Australian aviation is professional or official. We are glad indeed that the means has at last been found to make the Digest available to our many pilot friends overseas and to all those enthusiastic "armchair pilots" at home who have shown such an abiding interest in air safety generally and in the utterances of the Digest in particular, but who, for simple budgetary reasons, we have been unable to assist in the past. In welcoming all our new readers, perhaps a brief word of explanation would not be out of place. Aviation Safety Digest does not purport to be just another "general interest" aviation magazine. Neither is it simply a means of making public the findings of accident and incident investigations conducted by the Department's Air Safety Investigation Branch. Rather, its whole purpose is air safety education — to inculcate a consciousness of safety in all who have anything to do with the operation of aircraft. The Digest attempts to achieve this purpose by using object lessons uncovered during accident and incident investigations, to point out and drive home its message. In general aviation, and particularly in private flying, by virtue of the very diversity of its operations, much necessarily depends on the pilot's initiative, prudence and self discipline for maintaining acceptable standards of safety and for making the right operational decisions. But passengers in light aircraft, whether or not they are knowledgeable in aviation matters, can also play a part in this process. In the confined, encapsulated world of a light aircraft in flight, there is inevitably a close relationship between pilot and passenger. As well, there is often that familiarity which comes from friendships previously established in a non-aviation setting, or perhaps the very personal relationship that can develop between employer and employee working together in isolation from other people or influences. Whatever the type of relationship responsible, there is no doubt that the general aviation pilot is frequently exposed to subtle psychological pressures, real or imagined, from the passengers he

carries. How he wonders, are they judging him? How in their eyes, is his flying measuring up to that of other pilots with whom they have flown? Do they really understand why he had to take this course of action and not that one, which might have seemed the quicker and more convenient? Do they really agree with his decision to stay overnight rather than trying to "make it" right on last light? Do they think he is "chicken" because he wouldn't agree to beating-up that friend's homestead? Do they really understand about the time he "wasted" telephoning for the area forecast and submitting a detailed flight plan instead of just "getting in and going" when they were ready? Will they understand if the weather forces him to turn back when only a few miles short of the destination? Or will they judge him by the standards of an RPT service and urge him to "press on" so that they can keep that appointment? In fairness to some passengers, it must be admitted that the opposite is occasionally true and that a less responsible pilot can place his aircraft in jeopardy without his passengers being fully aware of the dangers to which they are being exposed. In such a situation, subtle pressure from passengers to take the safer course of action, in preference to attempting to complete the flight as planned, can be a very definite restraining influence. Yes, passengers who travel in light aircraft as well as others on the periphery of general aviation, do have a part to play in air safety, even if they believe they know little of the subject. As pointed out in our last issue, the effectiveness of any air safety education programme is obviously in direct proportion to the number of people who participate in it — to the breadth of coverage it achieves. The more people there are that know something of the problems, the more they are likely to be acted upon. For this reason alone, we believe that nothing but good can accrue from extending the circulation of Aviation Safety Digest to people beyond the inner circle of the initiated. There is a great deal of public interest in aviation, and a wider knowledge of the standards to be expected in flying, particularly in the field of general aviation, can do nothing but contribute to maintaining these standards.

I believed I could climb above it

THE SINGULARITY of this latest addition to the 'Below VMC' accident list, lies in the fact that it didn't happen—at least not in the way we normally expect. The traditional type of ending was however, avoided only by what must have been the narrowest of margins and certainly not by any good management on the part of the pilot! Thus, as well as providing another most valuable object lesson on the dangers of unauthorised 'Below VMC' operations, the happy ending to this near-disaster exemplifies the value of requesting assistance when in difficulties, and gives some idea of the help that is readily

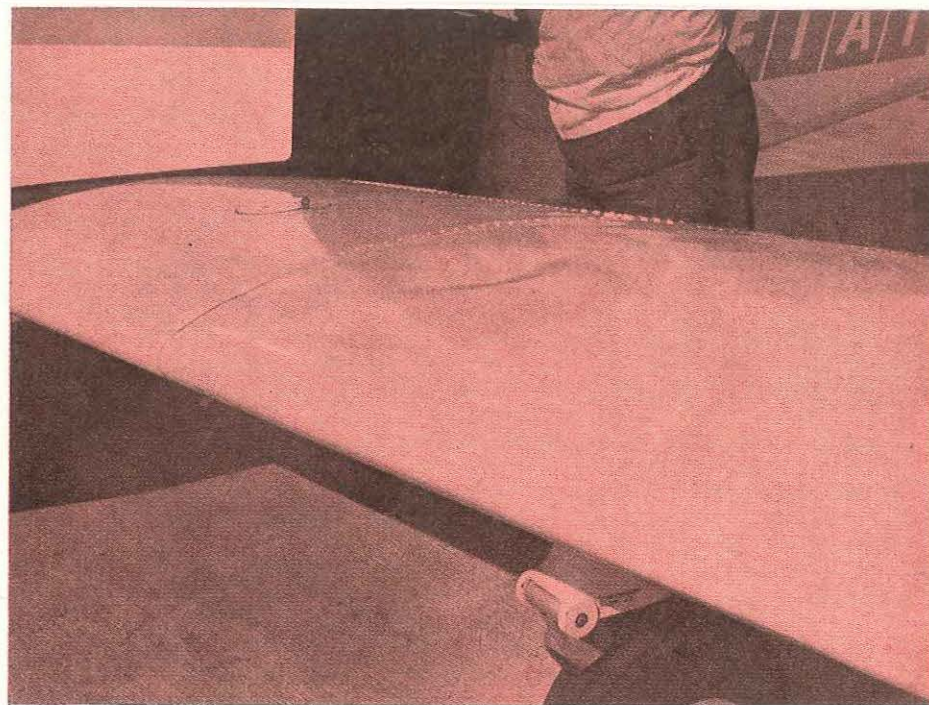
TIME		
1125	AIRCRAFT ATC	Melbourne, this is Mike Uniform Sierra on 118.9. This is Melbourne Departures. You're not yet identified. Report present altitude.
1126	AIRCRAFT ATC	Present altitude 3,000. Climb to 7,000 VFR. Area QNH 1005. Report at 7,000. Your route clearance is Kilmore, direct Mangalore.
1129	ATC AIRCRAFT	Confirm, you're just passing Kilmore now. Cannot see Kilmore. We're not in VFR conditions. I'm climbing to 4,000 now and going to 7,000.
	ATC	Confirm you're not in VFR conditions or you just don't have sight of the ground?
	AIRCRAFT ATC	I don't have sight of the ground. Roger, but confirm you can continue climb in VMC?
	AIRCRAFT	Well I'm going to keep going for a little longer to see how I go.
1133	ATC ATC AIRCRAFT ATC AIRCRAFT	Roger, advise if you can't maintain VMC. Present altitude? Just going through 6,000. Are you equipped with 130.4? Standby.
1135	ATC	Still this frequency?
1136	(Aircraft calls on 124.7) ATC	This is Melbourne Approach, maintain VFR and report if in VFR conditions. We are not in VFR conditions!
	AIRCRAFT ATC AIRCRAFT	Roger, report your altitude. Four and a half thousand.
1137	ATC AIRCRAFT	Roger, your flight conditions at this moment? Melbourne, this is Mike Uniform Sierra. We're having terrible difficulties at the moment. We're not in VFR conditions and we're about four and a half thousand. I'm trying hard to control the aircraft!
	ATC	Roger, report when you are clear of cloud. Are you able to maintain a level attitude?

'Below VMC' accidents were very much in the news last winter and were responsible for 14 fatalities in five separate disasters within a space of several weeks. A sixth accident in this category during this same period, but which 'broke all the rules' by the fact that the occupants survived, was reviewed in our July issue and took advantage of this almost unique opportunity to hear the pilot's story afterwards. Now, in this further account that follows, we have yet another chance to study some of the circumstances that can set the scene for catastrophes of this sort.

and freely offered to pilots who are known to be in trouble. At the time control was lost the light aircraft involved was in the vicinity of Kilmore, en route from Moorabbin to Canberra. Kilmore is situated in a gap in the Great Dividing Range, 35 miles north-east of the city of Melbourne. The story has been taken almost verbatim from the actual record of communications between the aircraft and Melbourne ATC, and the pilot's description of the flight which he gave after landing at Melbourne Airport. Only the aircraft's callsign has been changed—for obvious reasons!

TIME		
1138	ATC	Reply when ready. Are you able to maintain a level attitude?
1139	AIRCRAFT	Just managed to regain level attitude. I'm having a hell of a job. But I'm at 5,000 feet and I am in a level attitude at the moment and I'm following the ADF to Mangalore.
	ATC	Roger you're cleared at 5,000. Maintain a level attitude and report when you are visual, clear of cloud.
	(Aircraft acknowledges)	
1140	ATC	Reply when convenient with your fuel endurance.
	AIRCRAFT	We departed Moorabbin with 310 minutes endurance.
1142	ATC AIRCRAFT	Your flight conditions at the moment? I still cannot see the ground and I'm flying straight and level. I've got the ADF needle finding for Mangalore and I can see the sun above me but that's all.
	ATC	Roger. If you can climb safely, suggest you initiate a climb to get on top of cloud and this will also improve our radar response on your aircraft.
1143	AIRCRAFT	Am climbing now from 6,000 through to 7,000... my present heading is 360 with the ADF needle pointing on 0. It might help you to pinpoint my position.
	ATC	We have you identified at 10 miles SSE of Mangalore. Report your flight conditions now.
	AIRCRAFT	I'm climbing through seven and a half and I can't see the ground. I'm still not above cloud... do you suggest I continue climb from 7,000?
1147	ATC	We've been advised the cloud tops are at 10,000 feet so if you'd like to level out we'll initiate a turn right, on to a heading of 210. Make a very gradual turn and report when established on 210.
	(Aircraft acknowledges)	

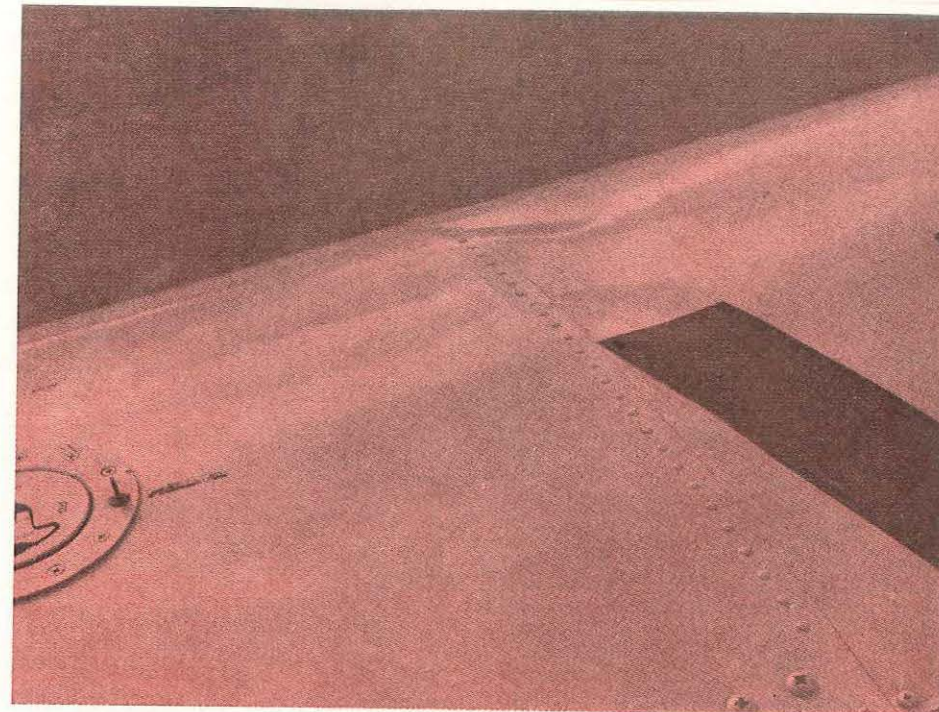
Severe buckling of the upper surface of the Musketeer's port wing just outboard of the fuel tank conveys some idea of the excessive in-flight loads to which the aircraft was subjected.



TIME
ATC Your position is 35 miles NNE of Melbourne. You can either maintain 7,000 or you can continue to climb to try to get on top of this cloud. Advise.
1149 AIRCRAFT I'm even on 7,000. My present heading is 175 and I'm endeavouring to steer to 210.
ATC I'll continue to plot you on radar. The main thing is to maintain a level attitude.
AIRCRAFT Am continuing to climb. Am now at 7,200. It's just starting to clear a little in front of us . . . we've broken through the cloud and we can see holes in it down below us!
1150 ATC Roger. Do you think you can maintain a clearance from cloud in your present position or will you be going back into cloud?
AIRCRAFT I'm going back into cloud. I can just see the ground. There's a little farmhouse below us.
ATC Suggest you continue to maintain a level attitude and if you're able, position yourself clear of all cloud.
AIRCRAFT Could you suggest at the moment a heading to try and keep on track?
1151 ATC Your heading is good to Essendon or Melbourne. If you like you could turn right on to a heading of 210.
AIRCRAFT Is the weather in Melbourne visual?
ATC Affirmative. There are reported gaps in the cloud between you and Melbourne.
AIRCRAFT I'd like to return back to Melbourne if you'd give me guidance.
ATC Roger, I'll continue to plot you on radar. You can expect guidance to Melbourne but the main thing is to maintain a level attitude at this time.
AIRCRAFT Am heading now 215.
1153 ATC Your heading is good for Melbourne.
1154 AIRCRAFT I have located Essendon NDB on 356 and am now following the needle.

TIME
ATC Roger. Maintain a level attitude.
1155 AIRCRAFT Melbourne, I've now broken through and can see blue sky in front and a break in different cloud formations.
ATC Roger. Advise when you are fully VFR on top of this cloud.
1156 AIRCRAFT Melbourne, this is Mike Uniform Sierra. Now that I'm out of the cloud, I've just noticed that the aeroplane has suffered structural damage on the wings due to the forces encountered whilst we were out of control.
ATC Roger. Maintain VFR on top and advise the extent of this structural damage and also your indicated airspeed.
AIRCRAFT I'm now in the open away from cloud and can see the ground clearly. The structural damage is that the wings have bent just outward of the tanks on both sides where the wing joins. It's approximately five feet from the wing roots on both sides.
ATC Could I have your indicated airspeed?
AIRCRAFT Indicated airspeed is 96 knots.
1157 ATC Roger. Are you able to descend from your present position to 4,000 feet maintaining VFR to enable us to get you visual contact with the ground?
AIRCRAFT It is possible. It's quite clear beneath me now. Descending from 7,000 through to 4,000.
ATC Report approaching 4,000.
(Aircraft acknowledges)
1159 ATC Could you advise if your wings are bent up or down?
AIRCRAFT Both wings are bent upwards.
At this stage, the flight was vectored west of Melbourne Airport while the air traffic controller working the aircraft telephoned Moorabbin Airport to confer with a highly experienced flying instructor who was thoroughly familiar with the aircraft type. They discussed the possible effect of the wing damage on the handling of the aircraft during the

Similar damage was sustained by the starboard wing as a result of the loss of control in cloud.



approach to land, particularly in relation to the strong cross-wind components which prevailed on both runways at Melbourne Airport. As it seemed desirable that, in its damaged condition, the aircraft should be landed into wind, the question of it returning to Moorabbin was considered.

Before any decision was made however, the pilot was requested to check the aircraft's handling characteristics at a safe height by slowing to about 10 knots above stalling speed. He was warned while doing so to leave the flaps up and to restrict angles of bank to no more than 20 degrees. A few minutes later the pilot reported that the aircraft's characteristics seemed normal but he had not wished to 'push' the tests too far as the wings had begun to 'flap a bit' as the aircraft approached the stall.

The pilot was then advised that his approach speed should be maintained at 80 knots, 10 knots above normal, to make allowance for this fact. It also was decided that it would be unwise to take the aircraft back over the suburban built-up areas to Moorabbin Airport in its damaged condition. Instead, a grassed area between the runways at Melbourne Airport, where the aircraft would be able to make a landing into wind if the pilot so desired, was prepared. Fire tenders were brought into position and after the aircraft had been vectored over the airport and detailed instructions had been passed to the pilot, he was told that the airspace was 'all his' and that he was cleared to land anytime he wished. The aircraft subsequently made a safe cross-wind landing on the runway.

Describing his experiences afterwards, the somewhat shaken private pilot said:

'We departed Moorabbin at 1051 and I tracked to Yan Yean via Nunawading at 2,000 feet without any problems although I was not familiar with the area. From Yan Yean we tracked to Kilmore and visibility to Kilmore was quite good. We could see the ground at Kilmore although there were patches of cloud in the area. I gave a position report at Kilmore at 1122 at 3,000 feet and I was going to commence my climb from there. From there on I did not keep a log but at about 1135 I was aware that it had become misty and I asked for a clearance to 7,000 feet because I could see the sun above us and believed that we could get above the cloud and into the sunlight.'

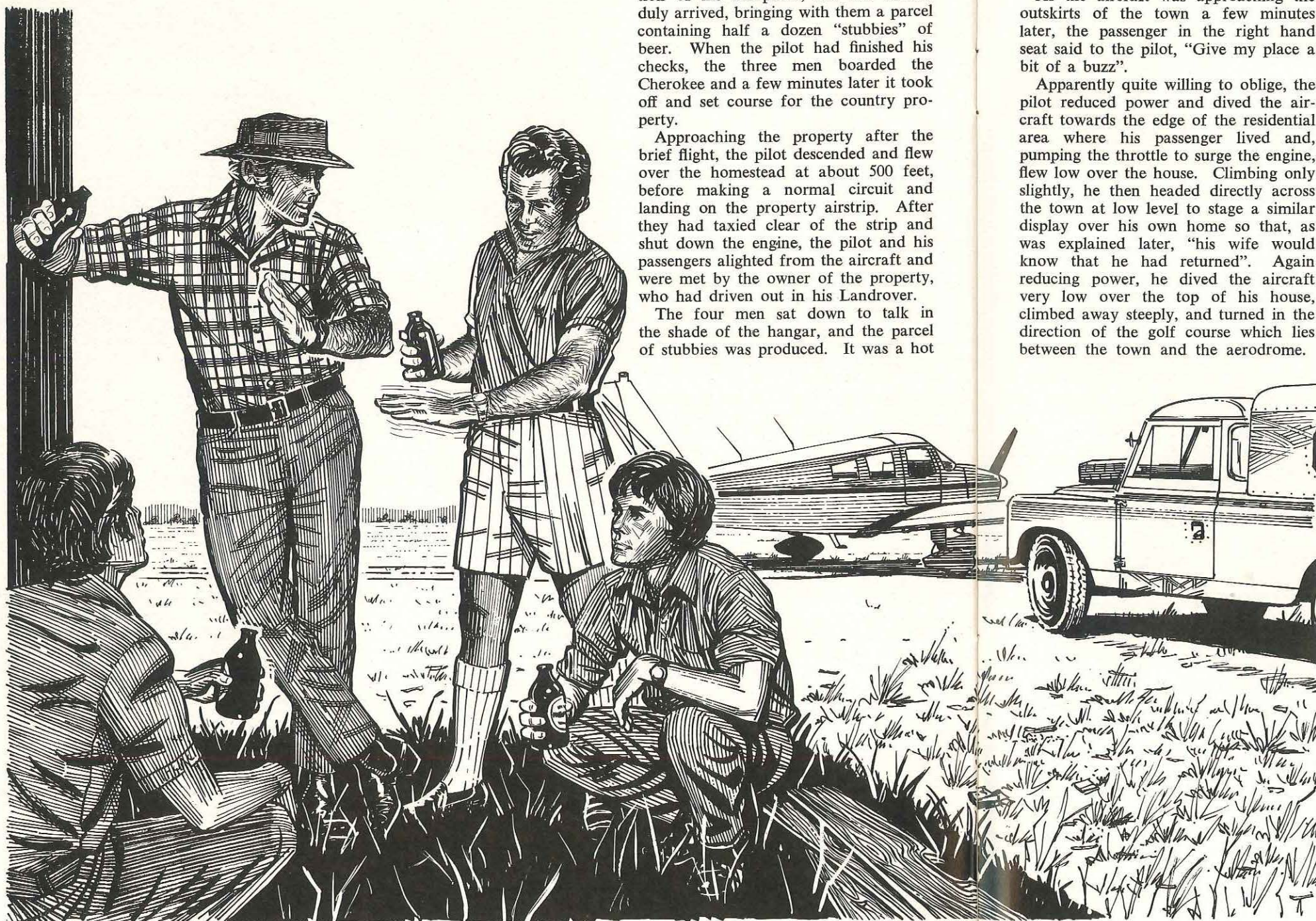
The clearance came back to climb to 7,000 feet and I immediately initiated the climb to seven thousand. It was during this climb that Melbourne asked if I had 130.4. Not having used this frequency before I was not sure that I had it or not. I tried to select this frequency and this is where the trouble started. I took my eyes from flying the aircraft and it was then that I lost my flying attitude. When I had finished fiddling with the radio selector I noticed that the flight attitude indicator had toppled. Then I tried to get back to the original frequency but I could not remember what it was. Eventually I managed to contact Essendon, who advised me the correct frequency. This is where I lost control of the aircraft completely and my wife had the presence of mind to select the Melbourne Approach frequency and I asked her to advise them that we were in difficulties.'

From then on we were going up and down, in a spiral dive and I think that the aircraft descended from 6,000 feet to about 2,000 feet because I saw the ground at one stage—very close. But I managed to get in to a climb and the altimeter indicated climbs and descents. The airspeed indicator was fluctuating from 0 to 140 and 160 knots. Eventually I got the aircraft approximately stabilised and managed to keep it on an even keel. From there on Melbourne asked me to let them know when I was straight and level which I did. They then advised that they had me on radar and vectored me to Tullamarine. When we broke clear of cloud, I could see that the wings had suffered structural damage and during the descent we picked up some rime ice. We were given different headings to fly and when we could see the ground we were asked to descend. We eventually landed at Tullamarine.'

The pilot, who needless to say, had no instrument flying experience, added that when he commenced his climb to 7,000 feet at Kilmore, he believed he could climb above the cloud ahead. The cloud increased as the aircraft climbed but the pilot thought this would be temporary only. He had considered turning back but, because he could still see the sunlight, he continued. Suddenly the cloud seemed to close in and he was in solid cloud.

The pilot concluded: *'I would like to mention that the radar controller was really tremendous in his handling of the situation. His calmness of voice with clear instructions was a tremendous help in my time of need.'*

Regardless of the Consequences



ON a Sunday afternoon at an inland town (which shall be nameless), the owner-pilot of the Cherokee so sadly depicted on opposite page, had decided to make a short flight to a country property some 20 odd miles away.

Earlier in the day, in fact just after lunch at a hotel in the town, the pilot had mentioned his intentions to two friends and they asked to accompany him. The pilot agreed and arranged a time. At the aerodrome later, while the pilot was making a pre-flight inspection of his aeroplane, the two friends duly arrived, bringing with them a parcel containing half a dozen "stubbies" of beer. When the pilot had finished his checks, the three men boarded the Cherokee and a few minutes later it took off and set course for the country property.

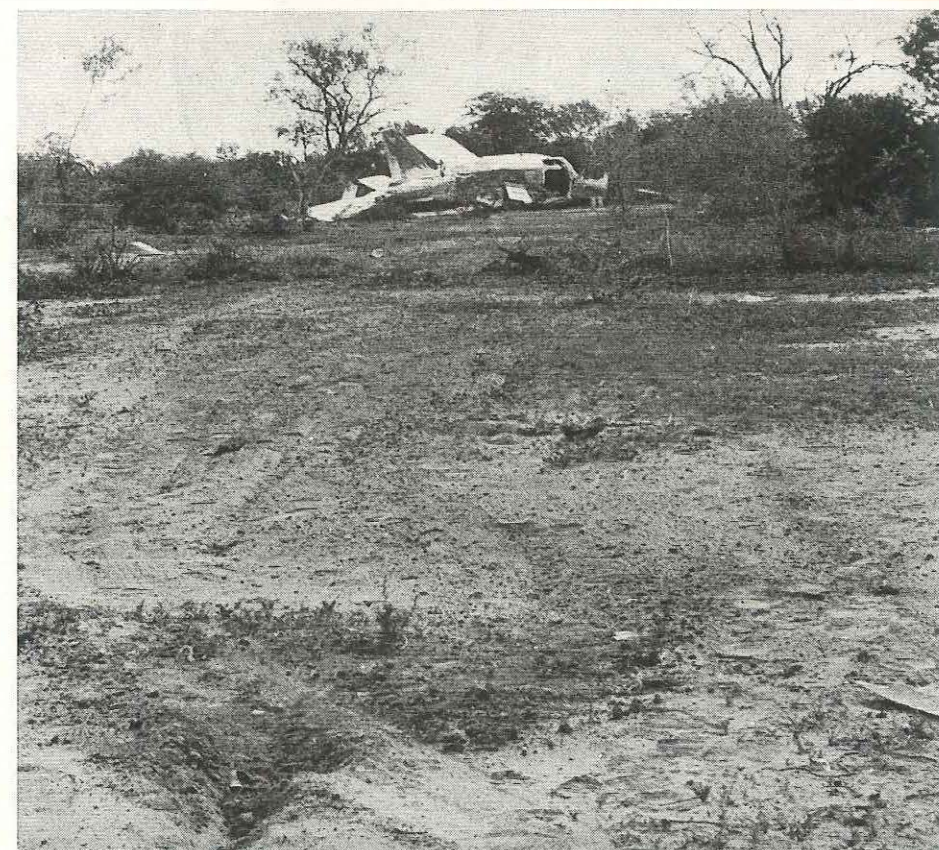
Approaching the property after the brief flight, the pilot descended and flew over the homestead at about 500 feet, before making a normal circuit and landing on the property airstrip. After they had taxied clear of the strip and shut down the engine, the pilot and his passengers alighted from the aircraft and were met by the owner of the property, who had driven out in his Landrover.

The four men sat down to talk in the shade of the hangar, and the parcel of stubbies was produced. It was a hot

afternoon and between them they consumed the six bottles, though the pilot himself drank rather less than half a bottle. About half an hour or so later, the pilot looked at his watch and said they must be going as he had to go out that night. The three men boarded the Cherokee again and as the property owner watched, the pilot started the engine and taxied the aircraft to the far end of the strip. It took off into wind and climbed away in the direction of the town.

As the aircraft was approaching the outskirts of the town a few minutes later, the passenger in the right hand seat said to the pilot, "Give my place a bit of a buzz".

Apparently quite willing to oblige, the pilot reduced power and dived the aircraft towards the edge of the residential area where his passenger lived and, pumping the throttle to surge the engine, flew low over the house. Climbing only slightly, he then headed directly across the town at low level to stage a similar display over his own home so that, as was explained later, "his wife would know that he had returned". Again reducing power, he dived the aircraft very low over the top of his house, climbed away steeply, and turned in the direction of the golf course which lies between the town and the aerodrome.



View of wreckage looking in direction of impact. The force with which the aircraft struck the ground can be gauged from the depth of the initial impact marks in the foreground.

At the golf course, a number of players and others sitting in the club house saw the aircraft approaching at low level from the direction of the town. Climbing slightly at first to clear some trees, it made a low pass close to the club house. After turning in a wide orbit, the aircraft headed back and made a second pass at the club house, crossing a practice fairway adjacent to the building at low level. It then turned away again and flew directly towards a group of players about a quarter of a mile from the building. Descending once more, the aircraft dived very low over the golfers and pulled up into a steep climb straight ahead. With its forward speed decaying rapidly, the aircraft held its steep nose up attitude until, at a height of about 200 feet, the port wing dropped suddenly and the aircraft fell away to the left, diving steeply towards the ground. As it disappeared from view behind the trees, there was a dull thump and a few seconds later a huge cloud of dust arose above the trees.

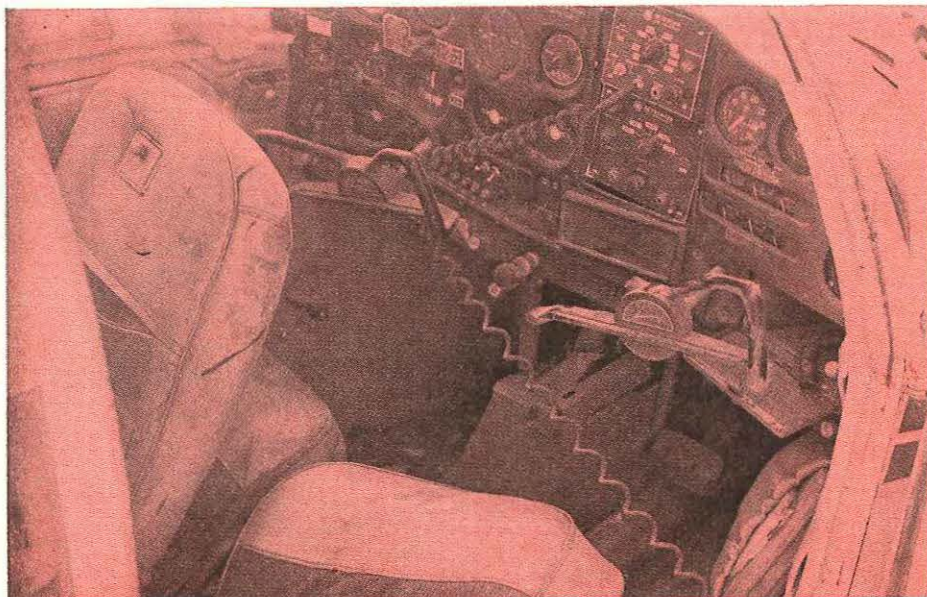
Jumping into their cars or any other available vehicle, a number of golfers and others on the course hurriedly set off in the direction of the accident. As

they reached the scene, they found the aircraft almost destroyed by impact forces, and one of its occupants seriously injured. Incredibly, despite the obvious severity of the crash, the pilot and the other passenger had sustained only minor injuries.

The site of the crash was in flat, lightly timbered country and only a few yards beyond the golf course boundary fence. Examination of the wreckage and the marks which it had gouged in the soft, dusty ground, showed that the main impact had been taken on the nose and starboard undercarriage. This had been severe enough to dislodge the starboard wing, and the wreckage had slid sideways for another 170 feet before coming to rest.

A detailed examination of the aircraft revealed no evidence of any malfunction which could have contributed to the accident. From the damage to the propeller blades, it was clear that the engine was operating at high power at the moment of impact.

The pilot held a private licence endorsed for PA-28 aircraft and had accumulated a total of 375 flying hours,



The interior of the aircraft after the accident. Considering the extent of the damage, it is surprising that the consequences were not more severe.

all of which had been gained in this type. He had logged approximately 90 of these hours in the 90 days preceding the accident.

Although there was some evidence that the passenger occupying the right hand front seat might have been affected by alcohol at the time of the accident, it was not possible to determine whether the pilot was in a similar condition. It was apparent that, of the six "stubbies" that the men had shared at the property airstrip, the pilot himself consumed only half a bottle. However, there was some evidence that the pilot, while in the hotel earlier in the day, had what he chose to describe as a "normal Sunday pre-lunch drink" of about six glasses of beer. Thus, while the small quantity consumed by the pilot at the property might not have been significant in itself, it cannot be known to what extent the earlier drinking might have affected his judgement.

When interviewed later, both the pilot and the front seat passenger claimed they could remember nothing of the final stages of the flight. Both had suffered head injuries from striking the instrument panel. These were more extensive in the case of the passenger, for although he had fastened his seat belt before departing from the property airstrip, he had undone it after take-off and still had it unfastened when the accident occurred.

From the eye witness reports of people who had watched the aircraft from the golf course, it was possible to reconstruct the final flight path with a fair degree of accuracy. It was apparent that the manoeuvre performed by the

aircraft just before impact was similar to a stall turn. There was also some evidence to suggest that the pilot could have been attempting just such a manoeuvre when the accident occurred. In fact, on at least one occasion shortly before the accident, the pilot had discussed the technique for performing a stall turn with another private pilot who was endorsed on Chipmunk aircraft.

But whether the pilot was attempting a stall turn, or simply lost control when the aircraft stalled at the top of the steep climb, there can be no doubt that the height at which he was flying gave him no chance of recovering before the aircraft struck the ground. In fact, from the time the aircraft approached the town on its return trip from the property, the flight can only be regarded as a gross display of irresponsibility, with no regard for airmanship, regulations, or the safety of other persons.

Some idea of the height at which the aircraft was flown over the town can be gained from a comment which the pilot passed later to the effect that he "would not have been at all surprised if someone had told him he had touched down in his own back yard"! A flight conducted in this manner could hardly be expected to end much differently than it did. Indeed, the only surprising aspect of the accident is that its consequences were not far more severe.

Cause

The cause of the accident was that the pilot operated the aircraft at an unsafe height. _____


Appreciation from a Private Pilot

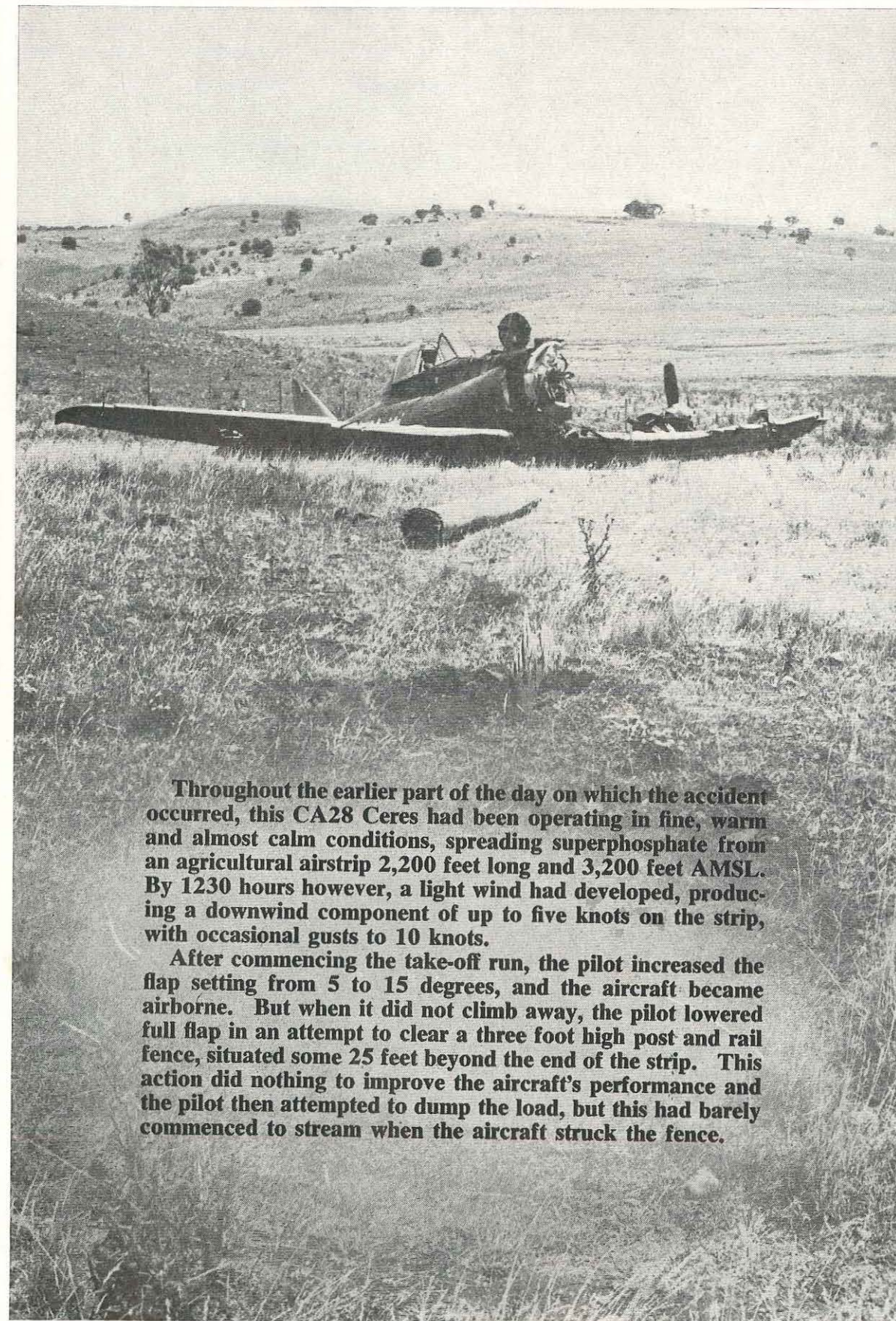
The Department's airways operations system is at times the butt of criticism from a misguided few in the industry who seem to regard it as something of a "big brother" conspiracy, rather than an organisation that exists for the express purpose of providing an umbrella of safety for all who fly. For this reason, it is very pleasant when a bouquet comes unsolicited from the ranks of the general aviation industry. This appreciative note has been written by a Tasmanian private pilot:

"Recently I flew a light aircraft from Hobart to Darwin and back, going via the Centre and returning via the East Coast and I feel that some mention should be made of the air traffic controllers and flight service officers with whom I had dealings during the flight.

Having logged only 250 flying hours in the nine years that I have held a licence, I was somewhat dubious of making such a trip over so much unfamiliar country, and the thought of landing at some of the major airports worried me, to say the least. No doubt pilots who are used to heavy traffic and the procedures at major airports take these sort of things for granted, but I can assure you that there is a vast difference between the Apple Isle and places like Sydney!

But, after a great deal of planning we at last set out and, without naming all the cities and towns we visited, I can only say that the assistance and guidance I was given throughout the whole trip made the difference between three weeks holiday and three weeks mental strain! A few of the instances of which I speak are: Assistance with flight planning; telephone clearance into a major airport after a radio failure; clearances through controlled airspace and restricted areas; all possible assistance when I informed A.T.C. that I was unfamiliar with the area; and the use of a rotating beacon to assist me in locating an airport in heavy rain.

Looking back over the whole flight, I feel that without all the assistance I received, my holiday would not have been nearly as pleasant and relaxing as it was. As far as I am concerned the 'men in the tower' are a great lot and they do a wonderful job!" ————— 



Arriving over a station property airstrip in fine weather, the pilot of this lightly laden Comanche flew a normal left hand circuit and approached to land into a very light northerly breeze. The pilot's planning of the circuit resulted in a somewhat flatter than usual final approach path, with some power applied. The pilot knew there was a fence short of the strip threshold, but believed the aircraft would clear it without difficulty.

As the aircraft passed over the fence with the pilot looking well down the strip, the starboard wheel struck a tubular steel fence panel, forcing it rearwards. As the aircraft touched down 500 feet further on, it slewed to the right, ran off the strip and came to rest entangled in the eastern boundary fence.



Although the pilot of this Cessna 182 had been advised, as he was approaching Essendon, that the surface wind was 25 knots and gusting to 40 knots, he decided to continue for a landing. He expected to have some difficulty in taxi-ing without wing tip assistance, but thought the normal cross-wind taxi-ing technique would handle the situation.

After a successful landing into wind, the pilot turned the aircraft to the left on to a taxiway. But when he attempted to turn into wind again on to the next taxiway to the right, a strong gust lifted the starboard wing tip, and the aircraft pitched nose down and to the left until it was resting on its port wing tip. The pilot stopped the engine and climbed out intending to hold down the tail, but before he could do so the aircraft was blown over on its back.



Following an uneventful charter flight from Talasea, New Britain, to Bali airstrip, Unea Island, New Guinea, the pilot of a Cessna 310J experienced braking difficulties during the landing run because of the long wet grass, then found that he was unable to taxi off the strip until a build up of grass and mud was removed from in front of the mainwheels. These difficulties were overcome, but during the four and a half hours that the aircraft remained on the ground at Bali, continuous rain fell. This worsened the condition of the already soft strip, and three large pools of water formed on the northernmost 550 feet of its 2,600 feet length.

Before taking-off from Bali, the pilot taxied the aircraft, with one passenger on board, for the full length of the strip from south to north. He then loaded the other three passengers and taxied the length of the strip to a position on the over-run, 150 feet beyond the southern threshold. The take-off was then commenced into the north and, after a ground roll of some 2,200 feet, the pilot rotated the aircraft sharply. It became airborne close to the first pool of water and some 550 feet from the northern threshold, but almost immediately the right wing dropped. The pilot regained level flight but, probably because he did not believe the aircraft could achieve a safe flight path over a range of hills to the north of the strip, he abandoned the take-off soon afterwards.

After striking the ground 20 feet beyond the threshold, the aircraft skidded, then cartwheeled 300 feet before coming to rest inverted in a deep gully. One passenger suffered fatal injuries and the aircraft was destroyed.



Returning to Shepparton aerodrome at the conclusion of a brief local flight, the relatively inexperienced pilot-in-command of this Musketeer found that the 10 knot crosswind he had experienced on take-off had increased to 15-20 knots, and a good deal of drift was obvious on final approach.

The aircraft touched down starboard wheel first, still drifting to the right, and shortly afterwards began to weathercock into wind. Unable to control the swing, the pilot applied power to go around, but the aircraft ran off the runway and flight strip, heading towards a hangar 300 feet from the edge of the strip. It could not become airborne in the distance available and struck a steel joist at the corner of the building. The pilot sustained serious injuries and the aircraft was damaged beyond economical repair.



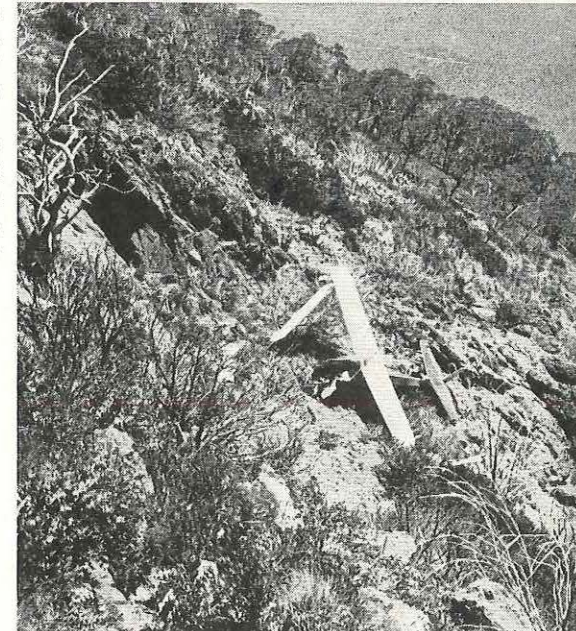
Although he was unable to contact the property owner at his destination for a strip report before departing, the pilot of this Cessna 182 knew that no rain had fallen in the area during the past two weeks and began the flight believing he would be able to assess the condition of the strip from the air before landing. The pilot's aerial inspection after arriving over the strip revealed nothing unusual, but the strip, which was sited within a large paddock, was only sparingly marked with white painted motor tyres.

Patches of long grass obscured the pilot's view of the markers after touchdown and, in the belief that he was keeping the aircraft aligned with the marked strip, the pilot veered the aircraft slightly to the left of the landing direction. Towards the end of the landing run and when almost 70 feet to the left of the centre of the strip, the undercarriage sank into an isolated patch of soft, moist, black soil and the port wing and propeller struck the ground.



After rigging an improvised launching catapult which relied on the elasticity of a bungee assembly of motor tubes, and the acceleration of a four-wheel drive vehicle, an attempt was made to launch an ES57 'Kingfisher' glider from a level clearing on the crest of the steep-sided Big Talbingo Mountain, N.S.W.

The launching device had not been tested, nor had the operating technique been practised, and the glider was catapulted over the edge of the cliff at a speed insufficient to sustain flight. The left wing dropped, and the glider entered an incipient spin, spiralling to the left, until it struck the rocky cliff face below. The pilot was seriously injured and the glider severely damaged.



After landing at the "one-way" mission airstrip at Mai, New Guinea for the purpose of familiarising another pilot with the aerodrome, the pilot of this Cessna 172 did not take into consideration the poor surface condition of the 1,350 foot long strip, nor did he consult the performance charts before attempting to take-off in downwind conditions of five knots, gusting to 15 knots.

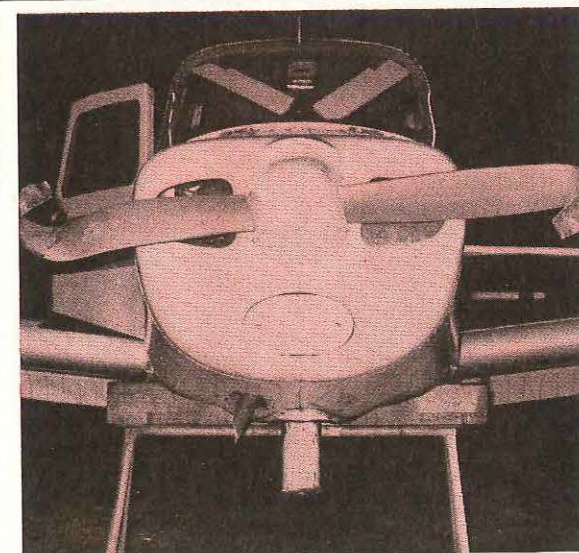
Acceleration was initially slow because of grass cuttings on a recently mown section of the strip but was then normal until the aircraft encountered a wet patch some 400 feet further on. But even when the aircraft encountered further soft patches, which slowed its acceleration again, the pilot persisted with the take-off. The aircraft had still not left the ground when, still under full power, it over-ran the strip into long kunai grass. The pilot-in-command closed the throttle, the observer pilot turned off the fuel, and the aircraft swung violently to the left and stopped, substantially damaged.



Shortly after setting out from Port Moresby on a private search for a missing yacht, the pilot of this Cessna 150 was advised by radio that the vessel had been located, but he decided to remain aloft and do some private flying in the Port Moresby harbour area. After flying at various heights below 500 feet for about fifty minutes, he applied power to climb and return to the airport. Instead of responding to the throttle the engine lost power at a height and position from which a suitable landing area could not be reached, and the pilot was forced to ditch the aircraft in the harbour.



During a period of solo training at Jandakot, Western Australia, the pilot of this Beechcraft Musketeer commenced an approach for a touch-and-go, short-field type landing. As he began to round out however, the main wheels struck the ground heavily and the aircraft pitched forward on to the nosewheel with sufficient force to fracture the nosewheel fork attachment leg lugs. Following the loss of the nose fork and wheel, the propeller contacted the ground and the aircraft slid for 200 feet before coming to rest on the mainwheels and nose leg housing.



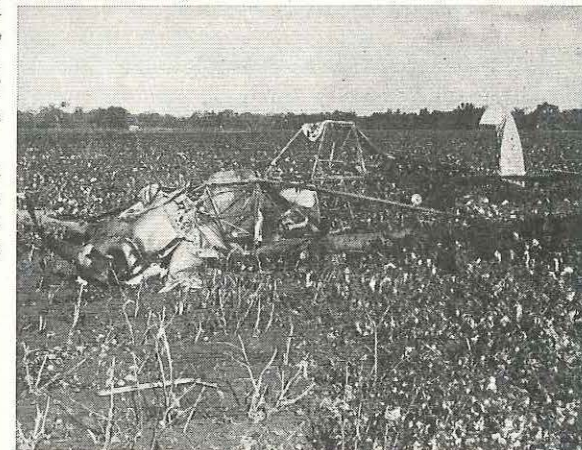
Unaware that a clevis pin had become dislodged from the starboard main undercarriage torque tube assembly, the pilot of this Beechcraft 'Queenair' lowered the undercarriage for a landing at Rottnest Island, W.A. but was unable to get the starboard main landing gear to lock down.

The aircraft returned to Perth, where an air-to-air inspection showed that although the starboard undercarriage leg was almost fully extended, it was remaining stationary during the pilot's attempts to cycle the undercarriage. The aircraft was landed at Perth, but the starboard undercarriage collapsed at the end of the landing run.



Night spraying of a cotton crop near Wee Waa, N.S.W., had proceeded without incident until the pilot of this Piper Pawnee commenced a steep climbing turn to the right to proceed to the next area, a mile and a half away. As the aircraft rolled out of the turn, he felt a momentary restriction of the aileron controls and switched on the cockpit lighting for a few seconds to search for loose objects.

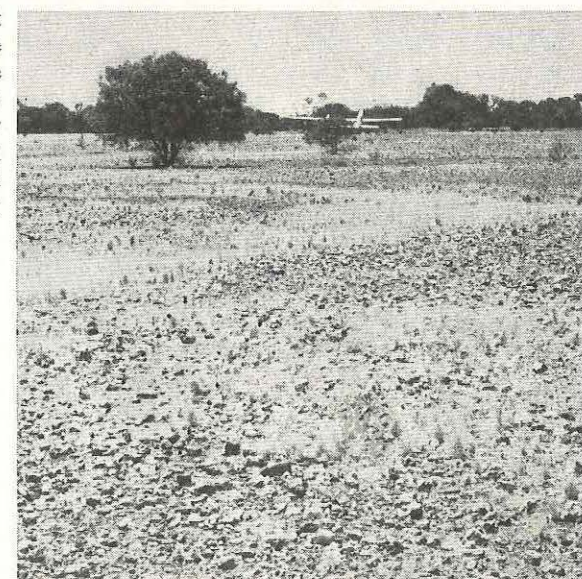
Satisfied that all was clear, the pilot switched the lights off again, but at that moment the aircraft struck the ground in a steep nose down attitude while banked slightly to port. The undercarriage collapsed and fire broke out immediately. The pilot, who was otherwise uninjured, suffered serious burns while escaping from the aircraft.



Although an inspection had showed that this Cessna 337 had sustained no damage as a result of a heavy landing at Karimui, P.N.G., the pilot abandoned the subsequent take-off because of a 'hammering' noise coming from the nose undercarriage area, which he believed to be abnormal. The pilot applied the brakes, but the aircraft did not stop within the confines of the strip, and after passing through the threshold markers on to an unserviceable area, the nosewheel dug into the soft surface and the aircraft overturned.



Three hours after departing Meekatharra for a charter flight to Mount Newman, W.A., the pilot of this Cessna 172H saw that he would be unable to reach his destination because of an intervening duststorm. Unaware that two suitable airstrips lay close to his return track, he attempted to return to Meekatharra. When only five miles north of Meekatharra, after being airborne for almost six hours, the engine failed from fuel exhaustion and the pilot was committed to a forced landing on stony, scrub-covered ground. The aircraft was substantially damaged but none of the four occupants was injured.



An early morning inspection from the air of the unfenced and partially completed landing area on the pilot's own property near Proserpine, Queensland, gave no indication of any obstructions or wandering stock, but showed the pilot that there was no wind.

The subsequent landing was quite normal until the Tri-pacer's wheels were firmly on the ground, when a kangaroo bounded across the landing path from the adjacent scrub. It was struck by the nosewheel, which was damaged and slowly collapsed rearward. The aircraft fell on to its nose, skidded for 148 feet, and overturned.



**PLEASE DO NOT
SPEAK TO THE
DRIVER WHILST
THE BUS IS IN
MOTION**



A short charter flight over familiar terrain seemed an easy enough assignment. But a simple combination of everyday circumstances almost set the stage for a disaster!

I had been rostered to make a charter flight with three passengers from an aerodrome in north-western Australia to an iron-ore mining site. On arrival, I was to wait until my passengers had completed their business and then return them to our base aerodrome—a simple enough assignment, but as later events were to prove, even a slight relaxation of airmanship, in some combinations of circumstances, can have unfortunate results. The flight was planned to depart at 1400 hours local time, in a Beech Baron and the distance to be flown was just over 50 miles due east.

The outward leg proved uneventful and quite easy on the eyes, as the sun had passed its zenith and was almost directly behind us. The passenger beside me had logged a modest number of flying hours as a private pilot, and he displayed a zealous interest in the progress of the flight. He questioned and discussed the various problems we encountered and was most interested in the technique used in flying this particular aircraft. As a result, my attention was somewhat diverted from the task of navigating and flying the aeroplane, but no other traffic was operating in the vicinity, and after an uneventful trip we duly arrived at the mining site. A wait of some two hours ensued.

Towards 1630 hours local time, we all boarded the aircraft once more for the return flight. By this time the sun had sunk much lower into the west, so that

on our return track, we would be flying directly into it. This is a common enough situation, familiar to all outback pilots, and should have presented no great problem, particularly as the Baron is IFR equipped. Soon after departure my "co-pilot", who was once again beside me, began to ask further questions and I knew I would have to keep my wits about me. Throughout the whole flight I was "earbashed" by this passenger, and, not wishing to be discourteous, I simply nodded in agreement to his statements, trying hard not to allow my mind to wander. Towards the end of the flight we commenced our descent and I made a visual approach to join the circuit on a left downwind leg for a landing into the south-west for runway 14. But at a critical moment my attention had been diverted sufficiently to miss a call which should have alerted me that a large aircraft was about to depart from the same runway. Normally, when approaching an aerodrome, I maintain a careful lookout and listening watch. But, being familiar with the area, I was more relaxed than I should have been and this, combined with the fact that my attention was diverted, and the glare of the sun which was severely restricting forward vision, set the stage for a potential accident.

We were now approaching the position from which a gentle right turn would bring us onto the downwind leg of the circuit. At that instant I saw the

large aircraft almost directly ahead at the same altitude as ourselves, climbing out after take-off on a reciprocal heading and converging on us from slightly to our left. Instinctively I threw the Baron into a steep turn to the right and rolled out on the downwind leg. After requesting the passenger beside me to remain quiet until we were on the ground, I made a determined effort to devote my whole attention to the operation of the aircraft. An uneventful approach and landing followed, and while taxi-ing in we both agreed that each of us had learned something that day!

This brief experience has a lesson for pilot and passenger alike. For the pilot, airmanship is something that must be constantly practised, and this implies keeping oneself "on top of the situation", at all times, whether the problem be navigation, action in the event of engine failure, or the distracting influence of a talkative passenger. The passenger on his part, must always keep in mind that the pilot sitting next to him, or in front of him, has a job to do and should not be regarded as a discussion partner, simply because of his close proximity or the interesting things he appears to be doing.

The bus driver has a sign next to him which reads "Do not speak to the driver whilst the bus is in motion". Perhaps a similar directive should be appended to the pilot's seat. After all its occupant "drives" a somewhat more complex "bus" — particularly when that "bus" happens to be a multi-engined aircraft operating in busy airspace! —

SAFETY FIRST!

Are your refuelling precautions as complete as this?
The little extra time it takes to do it properly is cheap insurance!

The results of mixing water and Avgas need no emphasis. But did you also know that static fires during refuelling have destroyed a number of aircraft? * ANO20.9 is there for your protection — don't disregard it!



*SEE AVIATION SAFETY DIGESTS 45, 55 and 63