

DEPARTMENT OF CIVIL AVIATION AUSTRALIA

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COVER: (Back and front) The recently completed runway extension at Sydney Airport now open for traffic. The threshold at the north-western end has been temporarily displaced to allow the older section of the runway to be re-surfaced.

—S. J. CHERZ PHOTO.



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Musketeer destroyed on take-off



While attempting to take-off from a claypan on a station property in north-western Queensland, a Beech Musketeer failed to become airborne. After using all the available run the aircraft struck a tree, and still under power, crashed into a dry creek. The aircraft was destroyed by fire and all four occupants were killed.

The aircraft belonged to the owner of another station property in the district, who, with three members of his family, had flown over to the station at which the accident occurred, to buy a horse. The pilot had telephoned the property earlier in the morning to arrange the visit and had been given particulars of the layout of the station buildings to enable him to identify the property from the air. As there was no constructed airstrip on the property, the pilot was also given the position of a claypan on which other light aircraft had landed previously.

While waiting for the aircraft to arrive the

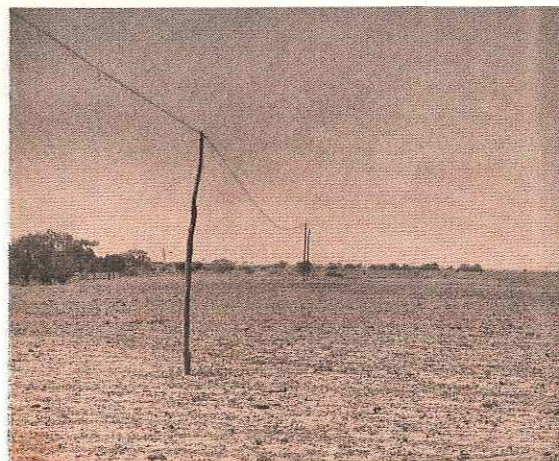
owner of the property on which the claypan was situated ran his car over the claypan to indicate the usable area. In due course, the aircraft arrived over the property, circled once or twice at between 500 and 1000 feet and made a normal landing into the north-east. The wind at the time was from the north-east, gusting to about 10 knots, and, after touching down close to the south-western boundary and using firm braking, the pilot had no difficulty in bringing the aircraft to a halt after a landing roll of about 500 feet.

After the party had concluded their business the owner of the property drove them back to

their aircraft. On the way he detoured to point out a low telephone line which crossed the proposed take-off path on the north-eastern side of the claypan, then drove to the opposite extremity of the landing area to indicate its south-western boundary to the pilot, where the take-off run could be commenced.

The four members of the party then boarded the aircraft and the pilot started the engine. After letting it warm for a short time, the pilot released the brakes and turned the aircraft and taxied towards the south-western extremity of the claypan. The aircraft did not stop again nor was the engine run up, and on reaching the boundary of the landing area the aircraft turned sharply around under considerable power to make a rolling start to the take-off run. The aircraft seemed to accelerate normally at first, but then did not appear to be gaining any more speed. At this stage the onlookers also noticed that the flaps were fully extended.

After running for some 550 feet, the aircraft assumed a tail-down attitude, apparently as an attempt was made to pull the aircraft off the ground. Almost immediately the nosewheel was lowered to the ground again. This movement was repeated several times as the take-off run continued, and on the fourth attempt the aircraft became airborne briefly but sank on to the ground again. The porpoising movement continued until after the aircraft had passed beyond the north-eastern edge of the claypan and reached a road which crossed the area 100 feet further on. It then became airborne again for some 80 feet. At this stage the aircraft was approaching the low telephone line, 150 feet beyond the road, which the property owner had pointed out to the pilot. The aircraft touched down again on all three wheels, ran beneath the telephone line, then became airborne once more. The starboard wing



was then seen to lift as though the pilot was attempting to turn to avoid the low trees growing in the dry creek bed which now lay ahead in the aircraft's path. As the aircraft banked it again sank to the ground, making contact with the port landing wheel and wingtip before settling back on to the undercarriage again. Still under full power, the aircraft then struck one of the trees with its port wing. The wing was torn off and the aircraft crashed with great force into the opposite bank of the creek. The engine was torn out and an intense fire broke out immediately, which consumed the wreckage, except for the tail section and the outer portion of the starboard wing.

* * *

Examination of the wreckage produced no evidence that the aircraft performance was other than normal up to the moment of impact. A propeller slash on the tree struck by the aircraft indicated that the engine had been under full power at the time and a subsequent stripping of the engine did not disclose any defects. The wreckage examination also confirmed that the flaps were fully extended at the time of the accident.

Inspection of the claypan from which the take-off was being attempted showed that its surface was a dry crust which crumbled under the load of a tyre, allowing the wheel to sink to some extent into the soft earth. The retarding effect on the soft surface would have been approximately the same as that of long grass.

When measured, the length of claypan available for the take-off was found to be 1,174 feet. The low telephone line nine feet above the ground, which the property owner had pointed out to the pilot, was found to be just far enough beyond the north-eastern edge of the claypan not to affect the available operational length of the claypan itself.

The owner of the property and other persons on the property who witnessed the accident said that although a wind from the north-east was gusting at up to ten knots or more when the aircraft landed, by the time the aircraft was ready to depart again the wind had dropped and it was almost calm. The temperature at the time was about +30 degrees centigrade. The witnesses' assessment of the weather conditions was later supported by meteorological observations obtained from weather reporting stations in the area. According to the Take-Off Performance Chart included in the Flight Manual for the air-

The telephone line 250 feet beyond the edge of the clay pan, under which the aircraft passed.



The burnt-out wreckage just beyond the line of trees in the creek bed. Note the ground mark made by the aircraft immediately before impact.

craft, in such conditions of Density Altitude and at the weight to which the aircraft was loaded at the time, the distance required for a take-off to a height of 50 feet would have been 2,100 feet. However, because Performance Charts are prepared from data obtained on flight tests made from a short, dry grass surface, additional allowance would have to be made for the soft surface of the claypan, so that the actual take-off distance required would have been greater than 2,100 feet.

The Take-Off Performance Chart for the Beech Musketeer also stipulates that 15 degrees of flap should be used for take-off. In view of evidence that the pilot had selected full flap (i.e., 30 degrees in this type of aircraft) either before or during the take-off run, consideration was given to the effect this would have had on the actual performance of the aircraft during the take-off.

To determine what difference the use of 15 degrees and 30 degrees of flap would make to the distance required for take-off, a series of flight tests were carried out in another Musketeer aircraft. It was found that although the use of 30 degrees of flap shortened the actual ground run a little, this was more than offset by the poorer climb performance to 50 feet. Because the difference in overall performance between the two configurations were not as great as might have been expected however, it was apparent that the pilot's technique in using full flap for the take-off was not the most significant factor in the accident. From the evidence provided by the aircraft's wheel tracks across the claypan, as well as the statements made by eye-witnesses, it was evident that the technique employed by the pilot in his attempts to lift the aircraft into the air before sufficient airspeed had been gained would

have considerably reduced the chances of becoming airborne in the distance available.

The marks left by the nosewheel indicate that the pilot made six attempts to become airborne within the confines of the claypan, apparently in the belief that the aircraft was about to fly. It seems doubtful that the pilot had in mind any particular speed at which he would rotate the aircraft for take-off and was using a "trial and error" method at some speed approaching that at which he had been able to lift the aircraft off on previous occasions. There was some evidence provided by persons who had flown with the pilot that he was in the habit of using a similar technique even when taking off from airports where the runway length was more than adequate. In the case of this take-off, as the aircraft's Flight Manual shows, the length of run available was totally inadequate.

There was no evidence that the pilot had consulted his Flight Manual before attempting the take-off, and it may be significant that when he landed earlier in the day there was a stronger wind blowing which could have rendered the short distance of run available less obvious to him. When the pilot was driven over the claypan before taking off, one member of his party was heard to remark that the strip was "no shorter than the one at home." However, it is apparent that the pilot made no attempt to measure the length of the strip, even with the car's speedometer, before committing himself to the take-off.

* * *

Considering the fact that the pilot had made so many unsuccessful attempts to become airborne before reaching the edge of the claypan, it is necessary to consider why he did not then abandon the take-off. There was no reason why this action would not have been successful from the edge of the claypan, or perhaps even from the point at which the aircraft crossed the road. At a later stage still, the take-off could probably have been abandoned by ground looping the aircraft, though this would have involved damaging the aircraft to some extent. Certainly it is difficult to judge distance over a claypan that is surrounded by comparatively flat terrain, and the edges of this claypan were indistinct, but, even so, the pilot could no longer have been in any doubt of the aircraft's position once it reached the road 100 feet beyond the edge of the claypan.

It is tragically evident that the pilot had given little or no thought to the planning of the take-off. Hence, in the heat of the moment, he was unable to assess the point at which the

operation was becoming dangerous and should be abandoned. With an obviously short strip and a soft surface, it would have been prudent to have at least selected a point at which the take-off would be abandoned, if the aircraft was not already airborne.

Cause

The cause of the accident was that the pilot attempted to take-off on a strip which was of insufficient length under the existing conditions.

Comment

The situation that faced this pilot, though apparently he did not recognise it, is one with which nearly all light aircraft pilots who operate "in the bush" are confronted sooner or later. There is a tendency, which shows itself time and again, for people who do not fly themselves, but who have some association with bush flying operations, to sadly under-estimate the requirements of a "safe" landing area. In many cases the word of such people, albeit in good faith, leads pilots into trouble. The Digest has previously stressed the dangers of accepting a layman's word for it that a strip is "suitable," and cautioned pilots to take special care when obliged to operate into a non-licensed aerodrome of which they have no reliable knowledge.

This accident stresses these dangers all too well. The judgment of distance over extensive areas of comparatively flat ground is notoriously difficult, even for an experienced pilot, and when there is the slightest doubt about it, the available length should be measured. It is also vitally important to consult the Flight Manual to ensure that the ambient conditions and the length of run available are compatible with the loading of the aircraft. Pilots should also ensure that their knowledge of short field take-off techniques leaves nothing to be desired and that they have not formed undesirable habits since their training days.

This latter situation is a very real possibility with owner-private pilots who, once they complete their flying training, sometimes operate for years on end without ever undergoing any form of check. Pilots who believe they may be in this category would be acting in their own interests to fly occasionally with an experienced flying instructor so that any bad habits they may have unconsciously formed can be recognised and eradicated. Pilots who submit themselves to checks of this sort are in no sense admitting any lack of ability. Rather, they are conforming with the practice of the best commercial operators, all of whom have their own training and checking organisations.

CRUNCH!



AT Bankstown Airport a pilot boarded a Cessna 172 parked amongst a row of aircraft to taxi it to a refuelling bowser. The row of aircraft were facing a slight downward slope, and about 45 feet in front of them there was another parallel row of parked aircraft.

After starting the engine and taxiing forward, the pilot had difficulty in turning the aircraft and it continued towards the row of parked aircraft ahead. The pilot closed the throttle and tried to stop the aircraft on the brakes, but this was also unsuccessful, and it continued to roll downhill towards the next row of aircraft.

In desperation, seeing that his aircraft was going to collide with two aircraft ahead, the pilot applied full right rudder and cut the ignition switches. The aircraft brushed a parked Cessna 206, knocking off some paint, but not damaging it, then collided heavily with a Cessna 182. As

shown in the photographs, both the 182 and the 172 were damaged substantially.

The pilot said afterwards that the brakes had seemed ineffective. He had not been able to test them before beginning to taxi, as there was insufficient room.

The aircraft's brakes were subsequently tested, but could not be faulted, and the collision was attributed to the pilot's lack of care in manoeuvring his aircraft. The fact that the pilot, who was of small stature, had not adjusted the control seat when he entered the aircraft might have contributed to the incident. The seat was well back on its rails, and it is probable that from this position the pilot was unable to apply adequate braking.

The moral of this story? Whatever you do with aeroplanes, do it thoroughly. Trying to do things by halves, or in a hurry, so often proves expensive!



Makeshift strip grossly inadequate— Cessna written off

AT Derby, Western Australia, a Cessna 205 was chartered by a group of three prospectors to fly to the site of a mineral find on an abandoned mission station 120 miles north-east of Derby. The prospectors were most anxious to reach the site with the minimum of delay, and impressed on the charter operators that it was imperative that they should land at the mission station as soon as possible.

Although there was an old airstrip at the mission station, it was no longer serviceable, and a preliminary inspection of it from the air showed that it was overgrown with small trees. It was therefore decided that two of the party would fly into the site by helicopter and clear a landing area suitable for the aircraft to fly in with the third member of their party and their equipment. The prospectors estimated that they would be able to clear the strip in a day, and therefore arranged

for the aircraft to make the flight two days later.

On the day arranged, the pilot and his passenger set out from Derby in the Cessna 205 but, on reaching the abandoned mission station the pilot saw that the area the men had prepared was very inadequate and declined to land. While in the area the aircraft dropped some supplies to the men on the ground and the pilot wrote a note to them explaining that the strip they had cleared was too short. In addition, it would be necessary to cut down some trees on the approach to the strip. The pilot explained that he would need at least a thousand feet of cleared strip, and suggested another area a mile to the east. The aircraft then returned to Derby.

Late that night in Derby the prospector waiting to fly into the site again called to see the pilot with the news that a rival party of prospectors, who

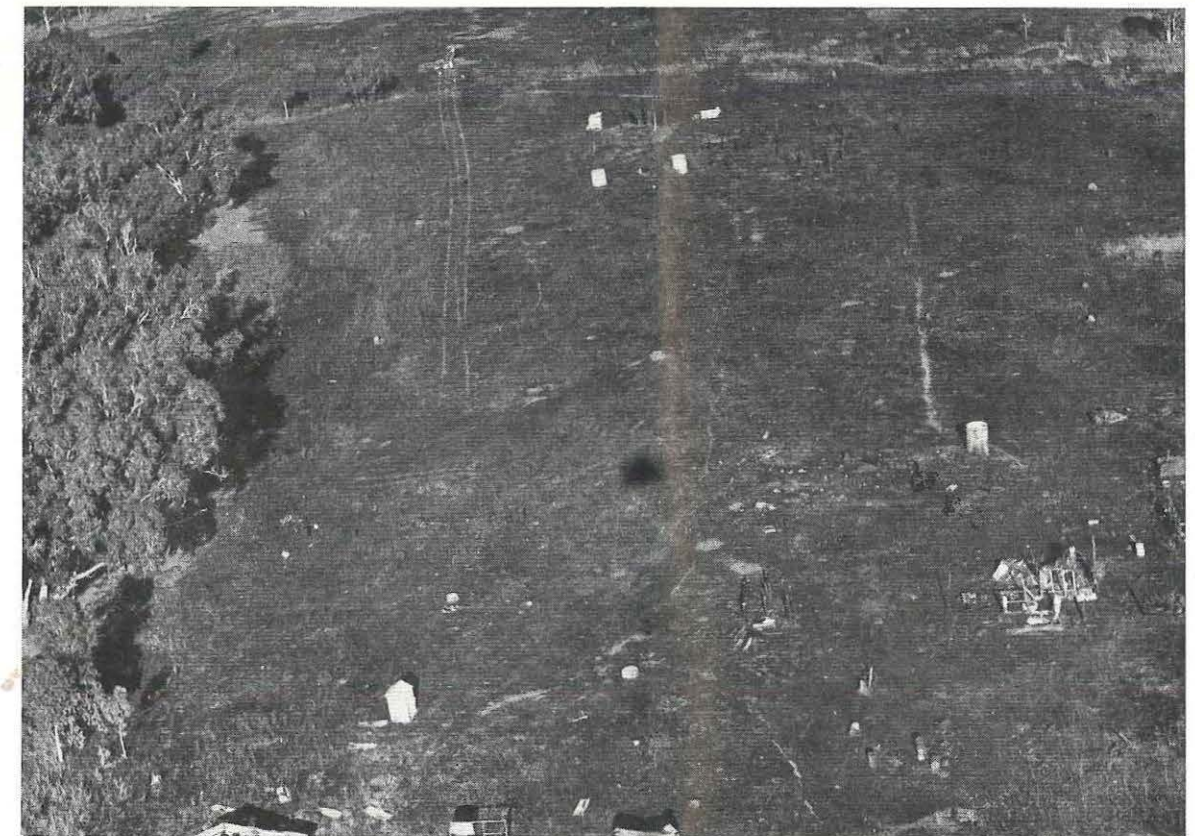
were interested in the same area, had arrived in Derby. The prospector told the pilot that he was extremely concerned and that it was now most urgent for him to reach the mission station. After discussing the situation, the pilot suggested that they depart Derby at 0715 hours in the morning and fly to the site to see what progress the other two men had made with the strip. They would also drop them a note to let them know that the rival party had arrived in Derby.

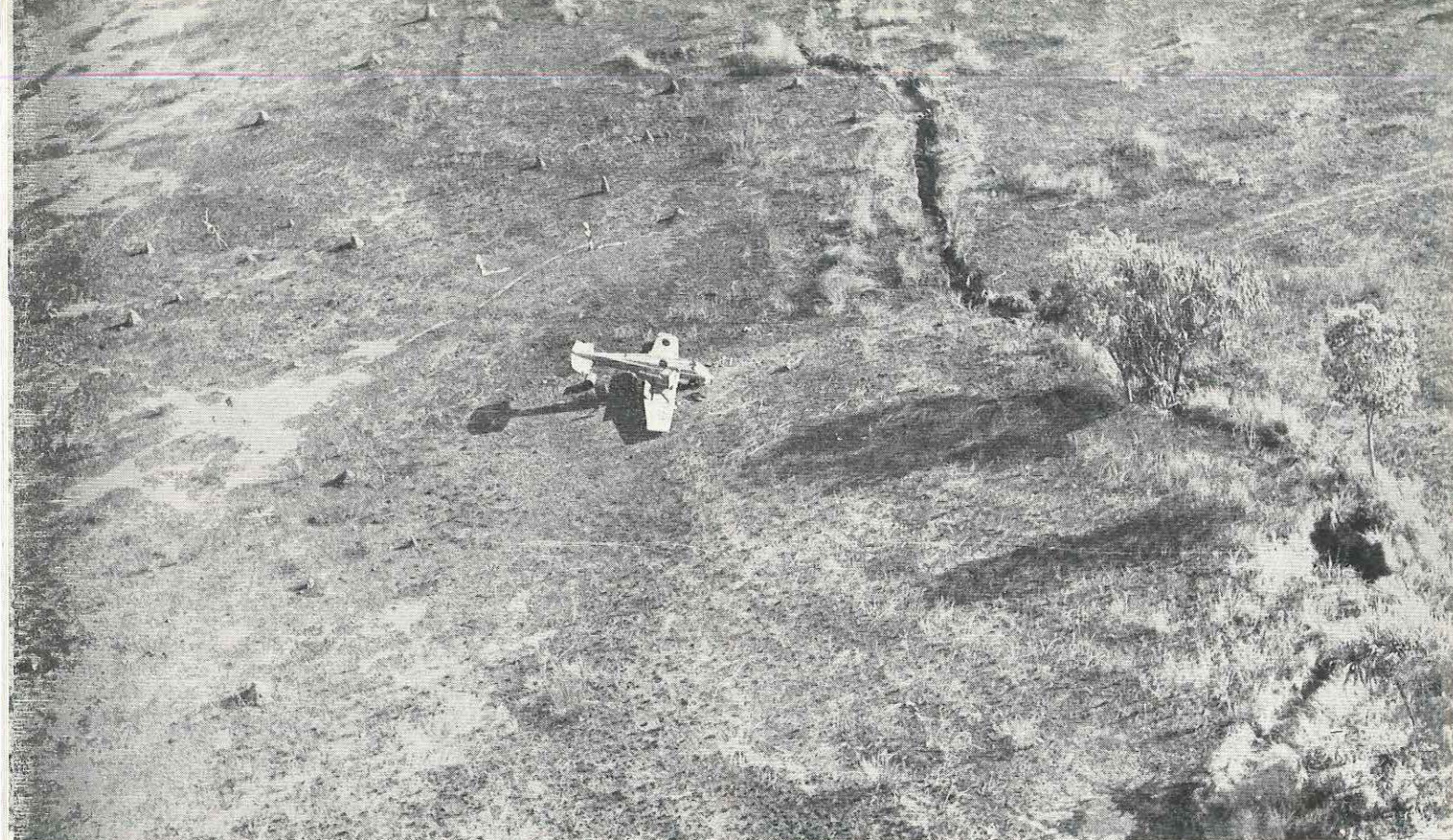
The aircraft, with the pilot and the prospector on board, departed from Derby in the morning as arranged and arrived over the site shortly after 0830 hours local time. The strip they had seen the previous day was unchanged, but the pilot then saw that the men had prepared a new strip by burning off an open area close to the old mission buildings. The pilot inspected this strip several times from low level, noting that because of a hill at its south-western end it was a "one-way" strip. He estimated its length as about a thousand feet. The pilot saw that, as well as burning off the area, the men had placed 44-gallon

drums to mark the threshold and both sides of the proposed landing strip. After completing his examination, the pilot concluded that the strip was suitable for the aircraft and commenced an approach. Because of some old buildings on the approach end of the indicated area the pilot was obliged to make a fairly steep final approach at 65 knots, using power and full flap. After clearing the obstructions the pilot reduced the airspeed to 45 knots, touched down about 100 feet in from the threshold and applied the brakes.

After the aircraft was on the ground, the pilot noticed that there was a slight downhill slope to the strip, and found that, because of the loose surface, the aircraft did not appear to be decelerating as quickly as he expected. After running about two-thirds of the way down the cleared area, by which time he had managed to slow the aircraft to about 20 knots, the pilot suddenly saw that there was an erosion gully across the strip immediately ahead. The pilot pulled hard back on the control column in the hope of riding over it, but the nose leg dropped into the gully and the

Below: Aerial view of the area on which the landing attempt was made. The aircraft's tracks can be seen across the fire-blackened surface.





The easily-recognisable erosion gully seen from the air.

aircraft impacted heavily against its opposite side and somersaulted on to its back. Neither occupant was injured, but the aircraft was badly damaged.

After the pilot had ensured that there was no danger from fire, the prospectors at the site helped him to raise the tail of the aircraft off the ground to clear the H/F aerial, and later in the day the pilot was able to contact Derby on the aircraft radio and report the circumstances of the accident. A little over an hour later a helicopter arrived to render assistance and the pilot was flown out. The passenger in the aircraft decided he would remain at the site with his companions.

Inspection of the strip on which the pilot had attempted to land showed that it was grossly inadequate for the operation. Apart from the fact that the strip was unsuitable for normal category operations because of the hill at its south-western end, the effective operational length was very much less than that required. From the threshold marked by the drums to the erosion gully in which the aircraft crashed was only 600 feet. Obstructions on the approach end of the strip reduced the effective operational length even

further to only 550 feet. From the aircraft's Flight Manual it was determined that, with the load the aircraft was carrying in the prevailing conditions, an effective operational length of 1550 feet would have been required for the landing. Although the damage to the aircraft was repairable from a technical point of view, the area where the accident occurred was so inaccessible and remote that salvage of the aircraft was considered uneconomical.

* * *

It is difficult to understand how the pilot failed to notice the erosion gully across the proposed landing path before he committed himself to landing on this grossly inadequate area. The pilot said afterwards that he did not see it because the whole area had been burnt black and the edges of the gully were hidden by tufts of grass. It is quite evident, however, that the pilot's inspection of the area from the air must have been very cursory, for, as the photographs on these pages show, the gully itself was clearly visible from overhead and from almost any angle

the growth on either side of the gully should have indicated that there was a watercourse of some sort there.

Even if the erosion gully had not been there, and the length available for the landing had been more realistic, the area chosen for the landing would still have fallen far short of the required standards of an authorised landing area. Apart from the hill at the south-western end of the proposed landing area, which precluded any possibility of going around, there were trees and old water tanks close to either side of the landing path. As well as this, the landing strip itself was dotted with debris such as planks of wood, strips of wire netting and growth, and there was every possibility of damaging the aircraft while running through these obstructions.

It is probable that the circumstances in which this operation was conducted had affected the pilot's judgment to some extent. The fact that rival prospecting parties were anxious to be first to the site of a new mineral find had given the

operation an air of urgency, and it is very evident that the pilot was under considerable pressure from the charterers of the aircraft to make a landing at the site as soon as possible. It was no doubt this pressure which persuaded him to take a chance with the landing.

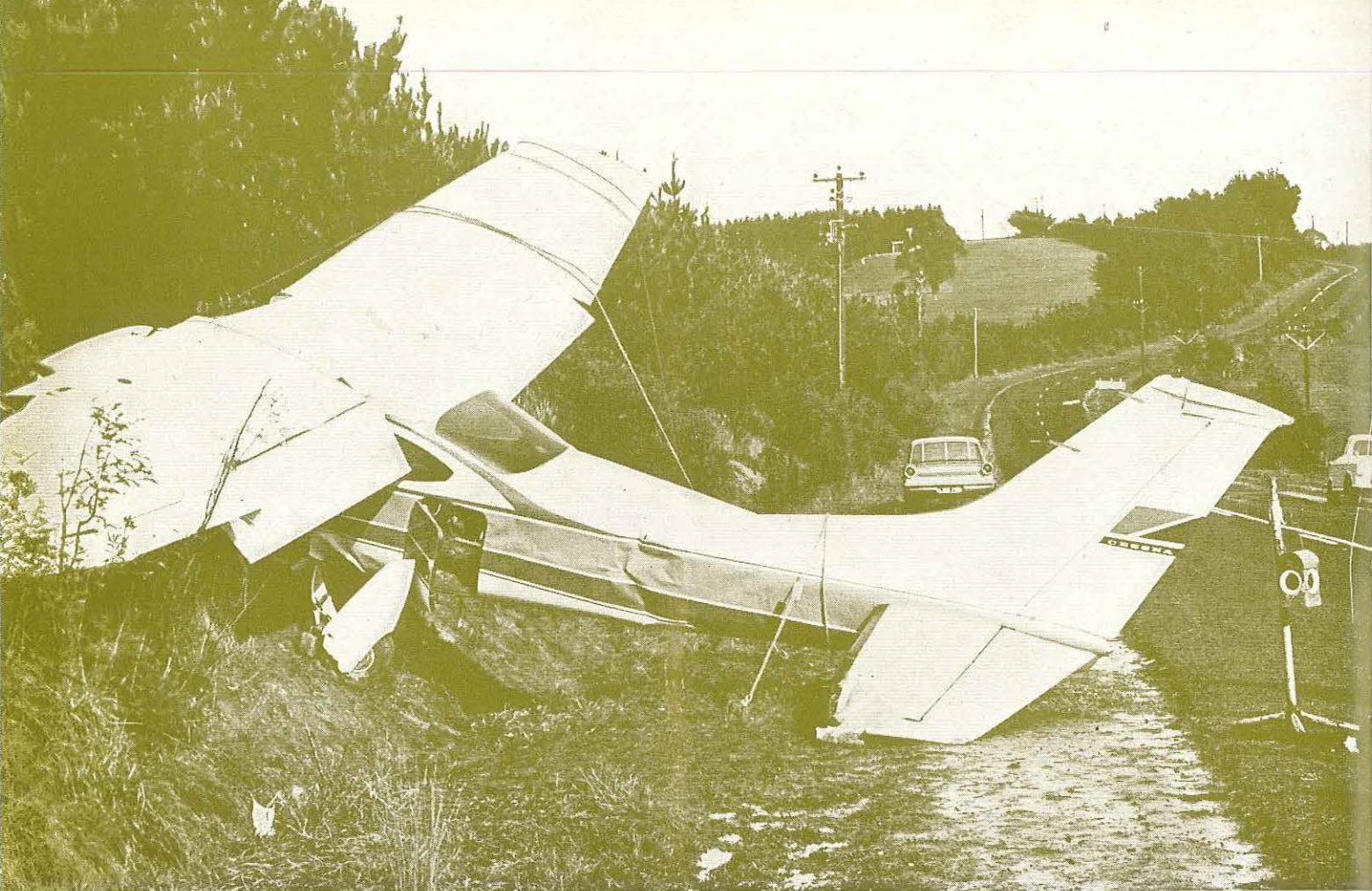
Such circumstances cannot, however, excuse the fact that the pilot allowed his judgment to be compromised. As a professional pilot, a professional standard of conduct was to be expected of him. In deliberately attempting a landing on a strip which he knew fell far short of the standard required of an authorised landing area the pilot failed in his duty as the holder of a Commercial Pilot Licence and, in so doing, jeopardised the safety of the passenger he was carrying and caused the loss of an aircraft.

Cause

The cause of the accident was that the pilot attempted to land the aircraft on an unsuitable area.

View of landing path from "threshold" marked by drums. Note the steep hill beyond the end of the "strip".





COSTLY LANDING - - - On Agricultural Strip

AT Parafield, South Australia, a private pilot planned a flight to Moorabbin, Victoria, with an enroute landing at Meningie, South Australia, to pick up two additional passengers. One passenger was accompanying the pilot from Parafield. One of the reasons for the trip was to transact some business with a farmer from Korumburra, Victoria, some 60 miles south-east of Melbourne, who had offered to meet the party at Moorabbin Airport and drive them to his property.

The aircraft departed Parafield at 0800 hours with a SARTIME of 1200 hours to Moorabbin Air Traffic Control. The two additional passengers were picked up after an uneventful flight to Meningie. Approaching Horsham, in the mid-west of Victoria, a little over an hour later,

the aircraft encountered lowering cloud and reduced visibility, and because of the higher terrain ahead and his uncertainty about the weather the pilot decided to land at Ararat and refuel.

The aircraft was refuelled to capacity, and while on the ground at Ararat the pilot telephoned Moorabbin for a weather forecast. The forecast he was given indicated strong westerly winds and showers in the Ballarat area. While speaking to Moorabbin the pilot took the opportunity to enquire about landing fields at or near Korumburra. He was informed that there was an agricultural strip at Korumburra and a privately owned airstrip nearby Leongatha, but that no information was available on these landing areas.

After completing his telephone call the pilot decided that as the weather on the direct route to Moorabbin was marginal for VFR flight, he would amend his flight plan to divert to the south and fly either to Leongatha or Korumburra via the heads of Port Phillip Bay. Soon after departing Ararat the pilot advised Melbourne of his change in flight plan and amended his SARTIME to 1400 hours.

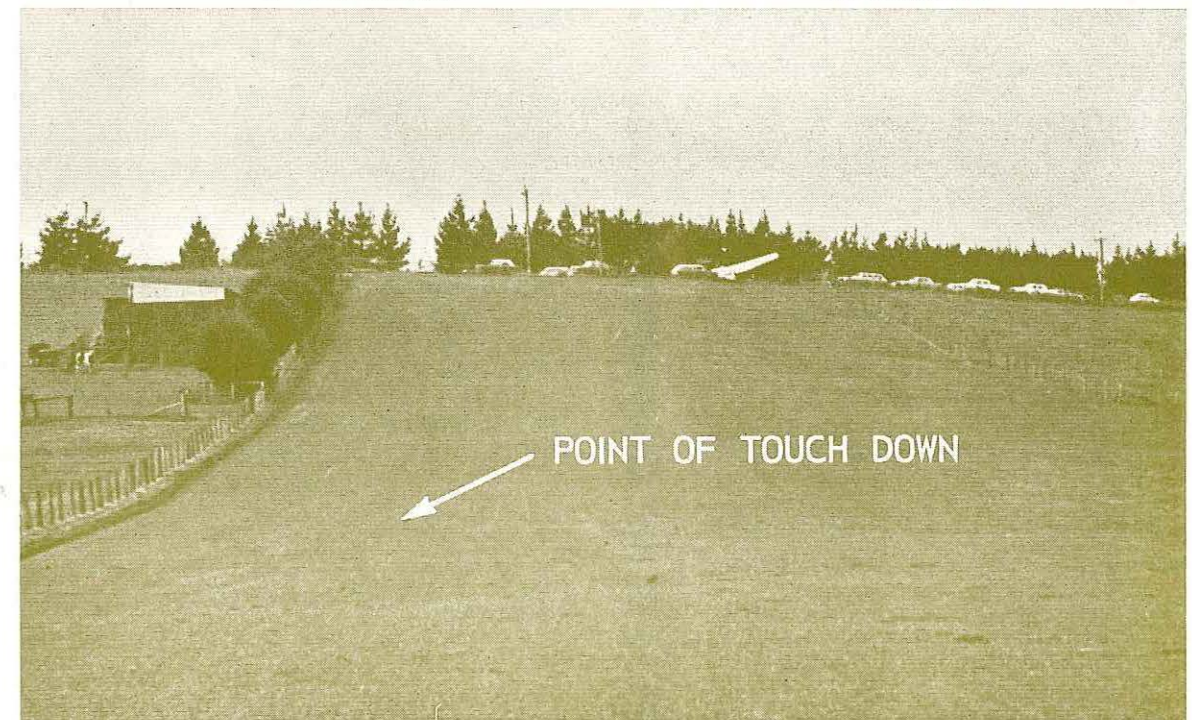
Arriving over Korumburra at about 1245 hours, the pilot located the agricultural airstrip and saw that the party they had come to see was waiting for them on the ground. The pilot overflew the airstrip at about 1,000 feet and assessed it as about 1,500 to 2,000 feet long with a continuous upslope from north to south. At the southern "uphill" end of the strip there were trees and a power line bordering a road, and the pilot saw that the strip was suitable only for landings into the south. The wind was from the north, almost aligned with the strip, but the pilot assessed it as being only about 10 knots. After descending and making a low run along the strip from north to south and examining the surface, the pilot decided that he could make a landing downwind, concluding that the upslope of the strip would help bring the aircraft to a stop. After climbing away from the low run, the pilot flew to the north of the strip

and began a long final approach. He used full flap but did not attempt to make a "short-field" type of approach.

The aircraft failed to settle on to the ground as the pilot expected and seemed to float for almost half the length of the strip before touching down lightly. The pilot considered whether he should go around, but, in view of the obstacles at the southern end of the strip, decided against it, still believing that the steepness of the slope and the apparently soft nature of the ground would enable him to bring the aircraft to a stop in the distance available. Instead, however, the aircraft did not appear to lose speed and, still rolling fast, careered up the slope and overshot the end of the strip, tore its way through the fence bordering the road and finally crashed head-on into an embankment on the opposite side of the road. The pilot and the front seat passenger were knocked unconscious by the impact and suffered severe injuries, and the two back seat passengers sustained minor injuries. All four occupants suffered skin burns as a result of being showered with aviation fuel from the ruptured wing tank fuel lines, which, fortunately, did not catch fire. The aircraft itself was damaged beyond economical repair.

Left: The aircraft as it came to rest against the road embankment, badly damaged.

Below: Photograph looking up the strip in the direction of landing. The road and accident site can be seen in the background.



It was evident immediately the investigation of the accident began that the pilot's assessment of the wind strength was greatly in error and that this was a major factor in the accident. The pilot stated that he assessed the wind from the smoke of a nearby factory chimney and believed it to be about 10 knots. It was clear from the other evidence, however, including that of a private pilot who owns a property near the agricultural airstrip, that the actual wind strength was of the order of 30 knots. Inspection of the agricultural strip itself showed that it fell far short of the minimum strip requirements for normal category operations. Even for agricultural flying, because of the obstructions of the southern end, it was suitable only for "one-way" operations from the north. From fence to fence the overall length of the strip was only 1,550 feet, whereas the Flight Manual for the Cessna 182 shows that, even in nil wind conditions, a landing distance of 1,780 feet is required. The pilot had greatly over-estimated the gradient of the strip, and the effect this would have in assisting him to bring the aircraft to a stop and, with the 30-knot tail wind, there was absolutely no chance of completing a successful landing on the strip. Measurements showed that the aircraft, travelling at high speed because of the tail wind component, did not touch down initially until 900 feet beyond the threshold of the strip, leaving only 600 feet for the landing roll.

The pilot, who held a private licence and had accumulated 140 hours' aeronautical experience, said later that he had not used a "short-field" type of approach because, with the full load he had on board the aircraft and the nature of the surrounding terrain, he had not wished to approach at reduced speed. When he last looked at the airspeed indicator as the aircraft was crossing the fence it was registering 70 knots. The pilot said that he had not considered going elsewhere to land after reaching Korumburra. Once he had seen the strip from the air he believed it was suitable for a landing in the existing conditions. He believed the accident had occurred because he had not placed the aircraft firmly and positively on the ground soon enough during the landing.

It was difficult to understand how a pilot could so under-estimate the strength of the wind that was blowing at the time of the accident. The private pilot witness already mentioned, who lived nearby, said, when describing the wind, that it was "blowing a gale." Though he did not see the aircraft actually land, he saw it flying overhead and circling beforehand. He noticed that it was drifting considerably while flying cross-wind and that its ground speed appeared to be very fast on the down-wind leg of the circuit.

Apparently the significance of these effects was lost on the pilot of the aircraft.

The farmer, who was waiting at the airstrip to meet the occupants of the aircraft, said that early on the morning of the accident one of the passengers in the aircraft, who had been picked up at Meningie, had telephoned his house to say that they were leaving for Korumburra and would arrive late in the morning. The farmer himself was not at home at the time and his wife had taken the message. It was because of this message that he had waited at the airstrip from about 1100 hours until the aircraft arrived at about 1245 hours. The farmer added that if he had spoken to the passenger himself, he would have told him that it was windy and advised him to land elsewhere.

Although the pilot said that he made the decision to fly directly to Korumburra instead of Moorabbin after he had landed at Ararat, it is apparent that at least one of the passengers wanted to fly to Korumburra before he boarded the aircraft at Meningie. If this were so, the pilot's judgment in assessing the suitability of the strip and the wind may have been coloured by his desire to keep faith with his passenger's arrangements.

Cause

The cause of the accident was that the pilot attempted to land on an area which, under the existing conditions, was not suitable for the purpose.

Comment

Just how close the accident came to being a disaster like that of the Musketeer reported on page 1 will never be known, but the fact that the contents of one of the fuel tanks was spilt into the cabin and over all the occupants indicates that the margin was exceedingly slim.

The accident is another example of how necessary it is to ensure that an area selected for landing meets at least the standards set out in Aeronautical Information Publications (AGA-4-2) and in the Visual Flight Guide, and that its length is sufficient for the prevailing conditions, as specified in the Flight Manual for the aeroplane type. The accident also emphasises the difficulty, especially for inexperienced pilots, of assessing the true strength of the wind on the ground when there is no reliable wind indicator available and difficulty of assessing the effect of slope on a strip. Overall, in common with other accidents reported in this issue of the Digest, it stresses once again the very great care that is needed for the safe conduct of operations on landing areas when they are not well known to the pilot.

Undercarriage trouble – with a difference

PREPARING to land at Broken Hill, N.S.W., at the conclusion of a cross country flight, the pilot of a Beech Bonanza found that the undercarriage circuit breaker "popped" each time he attempted to lower the undercarriage.

The pilot of another Bonanza which was flying in company with the first aircraft then passed advice by radio on lowering the undercarriage manually and, after a number of radio exchanges between the two aircraft, the pilot of the first Bonanza reported to Broken Hill that the undercarriage was now down and locked with the green "down" indication light showing. The aircraft then landed normally while the Airport Fire Service stood by.

Further investigation established that the trouble had developed because the emergency hand crank had somehow been moved into the cranking position in flight. When the undercarriage was selected down electrically, causing the hand crank to turn, it fouled a piece of luggage stored behind the pilot's seat. This had overloaded the undercarriage electrical circuit, causing the circuit breaker to "pop." When the hand crank was replaced in its stowed position, it was found that

the undercarriage system functioned normally, and further inspection by a Licensed Aircraft Maintenance Engineer confirmed that no damage had been caused to the system.

This same type of emergency hand crank is fitted to Beech 33, 95 and 95-55 aircraft, as well as the Beech 35, and, in its position to the rear of between the front seats, is readily accessible from the rear seats. If not stowed correctly with the protective cover fastened, it could be unintentionally obstructed by the feet of passengers sitting in the rear seats, or could possibly be interfered with by young children being carried in the rear seats of the aircraft.

As well as the risk of obstructing the operation of the undercarriage, there is danger of injury from the fast-turning handle when the undercarriage motor is energised.

This incident, like the accidents reported in the January Digest this year, stresses the importance of ensuring that there is NO way in which passengers or cargo can obstruct the operation of an aircraft—and, incidentally, that an occasional "brush-up" on emergency procedures would not be out of place for some pilots!

Have you the gentle touch?

After climbing to about 50 feet after taking-off from an airstrip at Portarlington, Victoria, the engine of a Cherokee 235 failed without warning. The pilot continued straight ahead and carried out a successful forced landing in an open area adjoining the strip site. The aircraft was undamaged and the pilot and his three passengers were uninjured.

Investigation showed that although the pilot had positioned the fuel tank selector to the port main tank before beginning the take-off, the selector had become unserviceable and the fuel was actually turned off. The pin locating the selector lever to the selector spindle had dropped out, and, as well, one of the selector "stop" pins was missing from the fuel cock.

If the pilot can be criticised at all in this incident,

it could be for not sensing that the "feel" of the fuel selector was not normal, and being alerted to the fact that something was wrong. The different "feel" of this selector should have been detectable on two accounts; firstly, because the selector lever was moving freely on the selector spindle and would therefore have little resistance to movement, and, secondly, because of the absence of a positive stop.

Pilots generally, especially those in the professional category, take pride in their ability to handle their aircraft smoothly and to trim it accurately. It is equally important for them to develop a "feel" for the smooth, positive operation of other controls. This "gentle touch" can often lead to the identification and correction of developing abnormalities before any damage is done.

No—we're not repeating ourselves —Accidents are!

The small photographs in the top left hand corner of the page, showing a Baron which came to grief on a soft strip in the Northern Territory, appeared in the Digest nearly 12 months ago. (See "Taxiing is so Easy", Aviation Safety Digest No. 53, November, 1967). Their similarity to those depicting the accident described in this article convey better than any words the constancy of the hazards that confront modern aircraft operating on only partly prepared surfaces.

AT Port Hedland, Western Australia, a Cessna 401 had been chartered to fly a party of businessmen to a mining site some 70 miles distant. The pilot was not familiar with the landing area at the mining site but knew its length to be adequate for his aircraft as it was used frequently by Beech Queenair aircraft which are of a similar order of all-up-weight to the Cessna 400 series.

Arriving in the circuit area at his destination, the pilot flew over the strip which runs east-west and saw that the western area was unserviceable and marked with a cross. The wind was light and the pilot decided to land into the west towards the unserviceable area. The aircraft touched down normally, and at the end of the landing run the pilot turned the aircraft towards the left-hand side of the strip to make a 180 degree turn and taxi back to the parking bay where a party was waiting to meet the visitors. Just as the pilot applied right rudder to commence the 180 degree turn, the port main wheel began to bog in the soft surface, and a moment later the nosewheel sank also. Although the speed of the aircraft at this time was only five to ten knots, the nose leg collapsed and the aircraft dropped on to its nose. The propellers, which were idling, each dug into the surface of the strip and were damaged.

The surface of this strip consists of coarse red sand, with little gravel or clay content. The strip had been re-graded about two months before the accident and its surface generally was firm and met the requirements of an authorised landing area. At the western end, 300 feet had been marked as unserviceable because recent rain had made a

small washaway in the strip. Another light twin-engined aircraft had landed on the strip the previous day, and its tracks showed that it had passed only ten feet to the right of where the Cessna became bogged. The wheels of this aircraft had made an impression only about half an inch deep in the surface of the strip, and there had obviously been no difficulty in manoeuvring.

Examination of the area at the side of the strip where the accident actually occurred showed that

the surface had not compacted after the grading, though it looked satisfactory. Where the nose-wheel had sunk in, the sand was slightly moist and offered little resistance to a narrow, high-pressure tyre. When the nosewheel sank into the surface, the sand build-up in front of the wheel, and the inertia of the moving aircraft exerted sufficient pressure through the nose leg to fracture one of the drag braces, allowing the nose leg to collapse backwards beneath the fuselage.

Cause

The cause of the accident was that the pilot attempted to manoeuvre the aircraft on an area of ground which, although within the apparent confines of a prepared landing area, was not suitable for the purpose.

Comment

As already indicated this accident is yet another example of the potential hazards that exist when operating modern, nose-wheel type light aircraft from any but adequately prepared aerodrome surfaces. The subject was discussed fully in the article "Taxiing Is So Easy" referred to above. This earlier article was directed mainly at operators and pilots of single-engined and smaller types of light twins, but, as this latest accident shows, out-back airstrip surfaces are no respecters of aircraft size.

Control lost during Instrument Flight

Anti-histamines a factor?

(Based on accident report issued by Board of Trade, United Kingdom).

Three minutes after taking off on a private flight from Sleaf Aerodrome to Hawarden, Wales, United Kingdom, a Bellanca aircraft was seen to emerge from the base of low cloud and crash at high speed into a grass covered hill. The aircraft disintegrated on impact and the three occupants were killed.

Two pilots were on board the aircraft. The pilot who occupied the right hand seat held a private pilot licence and had logged 168 hours, all on light aircraft, including 39 hours in Bellanca aircraft. The pilot was associated with the company that owned the aircraft and had arranged for the flight to take place. The pilot who occupied the left hand seat was a flying instructor officer on leave from a nearby R.A.F. station and had logged nearly 2,000 hours, including over 300 hours instrument flying. He also held a civil private pilot's licence.

Before the aircraft departed, one of the pilots had obtained a weather forecast by telephone and had arranged with Hawarden Air Traffic Control that the aircraft would call when airborne from Sleaf and that the approach radar would be used for the landing at Hawarden. The flight from Sleaf to Hawarden was expected to take approximately 15 minutes.

The aircraft departed from Sleaf at approximately 1555 hours. According to eye-witnesses the departure was perfectly normal, the aircraft taking off from runway 01 and climbing straight ahead. At 1556 hours the aircraft called Hawarden Approach and reported airborne from Sleaf flying at 2,000 feet in instrument meteorological conditions, and requested homing to overhead. No ETA was given. Hawarden Approach acknowledged the call and, shortly before 1557 hours, cleared the aircraft to Hawarden NDB at 2,500 feet. The aircraft did not acknowledge this clearance and subsequently failed to reply to further calls made to the aircraft throughout the next 15 minutes. It was then learned that the aircraft had crashed near the village of Welshampton.

The weather at the scene of the accident was overcast, with low cloud 200-300 feet above the ground. There was a slight mist, with a visibility of less than one mile and little or no wind. Witnesses near the scene of the accident reported that they thought the aircraft was in cloud when they first heard it, with the engine running normally. The engine then spluttered and stopped

and the aircraft was seen descending below the low cloud. One witness said that the power came on when the aircraft was very close to the ground. The aircraft then banked and turned left around a field and was momentarily lost from view. When the aircraft reappeared it was in the nose-down attitude in which it struck the ground.

Notwithstanding the witness evidence that the engine had spluttered shortly before the crash, examination of the wreckage revealed no evidence of any pre-crash malfunction of the aircraft, its engine or equipment, and it is possible that the change in engine note was the result of the pilot throttling back. The aircraft was fitted with VHF communications radio and ADF and VOR receivers. The VHF and VOR equipment were switched on and tuned to the frequencies of Hawarden Approach and Daventry VOR respectively. Examination of the VOR receiver showed that it was set to a bearing approximating that of the crash site from Daventry VOR. The ADF receiver was not in use at the time of the accident.

It was learned that the R.A.F. pilot, who was occupying the left hand control seat of the aircraft, had reported to his station medical officer earlier on the day of the accident, suffering from a cold and sore throat. He was prescribed "Triominic" three times daily. "Triominic" is a powerful anti-histamine drug often used as a "cold cure" (and it is available in Australia). It is the practice in the R.A.F. not to permit a pilot to fly for 48 hours after taking anti-histamines because of the possible side effects of this type of drug, which include drowsiness. However, as the pilot was on leave from his unit, the question of his flying was not discussed with the medical officer. The post-mortem examination produced evidence consistent with the history of a cold and the anti-histamine drug was detected on analysis. A box of "Triominic" was found in the clothing of the pilot.

From the medical evidence it was clear that at the time of the accident the pilot in the left hand seat was suffering from a moderately severe cold.

The evidence also indicated he had taken one or more "Triominic" tablets some time before the flight and that these tablets were still exerting their effects at the time of his death in the late afternoon. While it could be argued that, because anti-histamines had been prescribed for this pilot previously, he would have known their effect and taken precautions, the side effects of these tablets may vary in severity in the same person on different occasions. Also, though they may pass unnoticed during ordinary ground activities, they could be important when flying an aircraft.

It is well known that, even with experienced pilots flying a properly instrumented aircraft, the possibility of disorientation exists if the pilot is suffering from a head cold which can disturb the balance and orienting functions of the middle ear, or if he is tired or for any other reason not alert and unable to concentrate. In this case, the pilot was very experienced in instrument flying, but had a moderately severe cold and had taken

medication which, though it would have relieved the congestion in his head and made him feel better, could have made him drowsy. Had he, in fact, become disorientated, he could have lost control of the aircraft or, alternatively, failed to realise that his co-pilot had lost control. If this was the case, the situation could have become irretrievable on breaking out of cloud because of the proximity of the ground. Disorientation therefore provides a possible explanation for the accident, but there is insufficient evidence to come to any firm conclusion. The circumstances of this accident do, however, serve to focus attention on medical fitness in relation to flying and the possibility that some forms of medication may seriously affect a pilot's performance.

Cause

The aircraft descended and struck the ground at high speed for reasons which have not been determined.

A built-in snare

At the conclusion of a charter flight to a station property in New South Wales the pilot of a Cessna 172 commenced an approach to land, employing a short-field technique, and touched down right on the threshold of the property strip.

Just as the wheels made contact with the surface of the strip the pilot was aghast to see that the aircraft was passing beneath a single wire power line that was stretched across the approach end of the strip. The power line was not marked in any way, and had the pilot not been employing a short-field type of approach it is very likely that the aircraft would have collided with the wire.

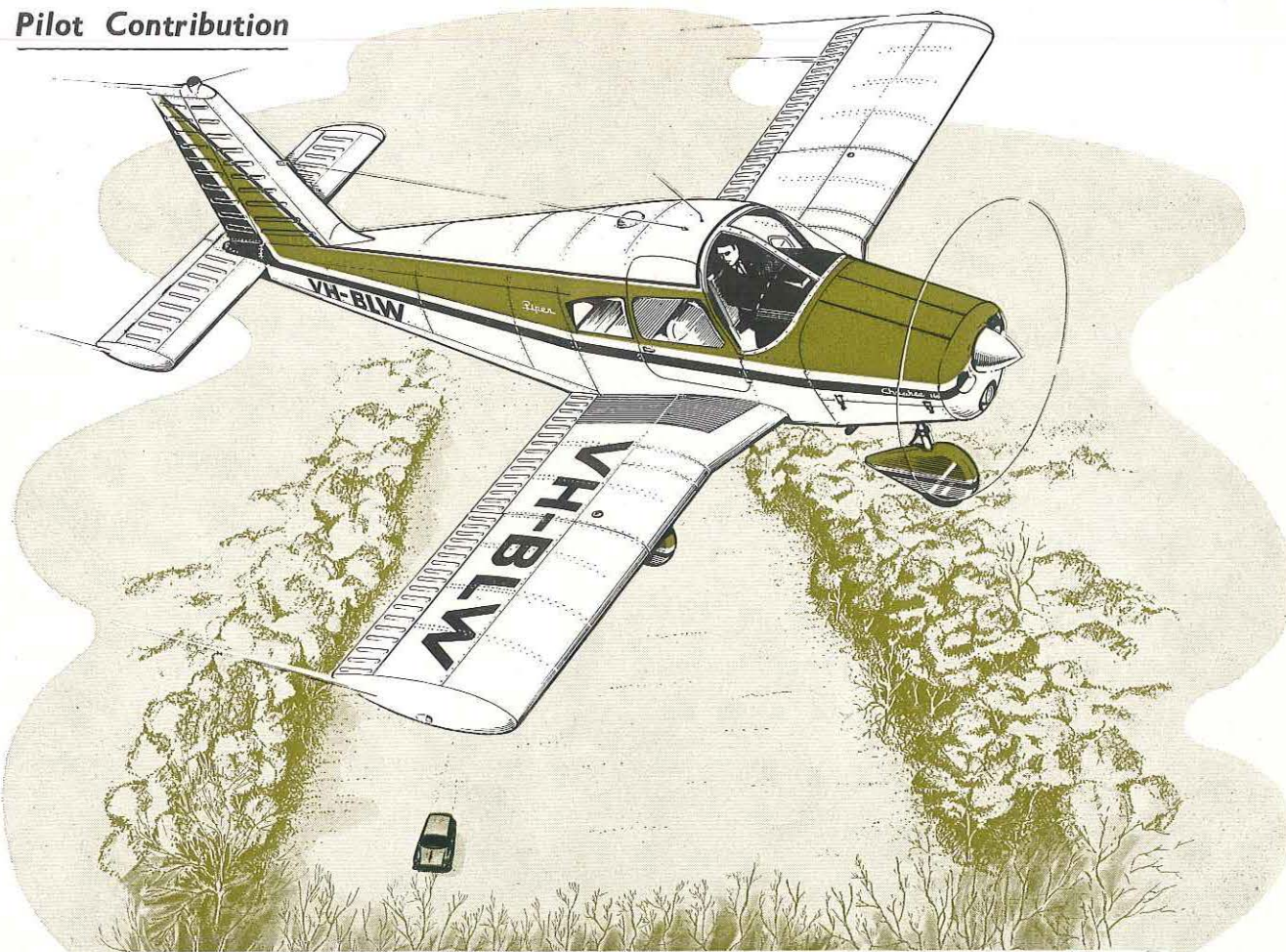
The pilot said afterwards that the passenger he was carrying had worked on the property for two years and had assured him that the strip was satisfactory for use. He had, however, forgotten to warn the pilot of the presence of the power line, which had been installed (with apparently little imagination) by an electricity supply authority after the airstrip was built.

In forwarding a report of the incident, the pilot was justifiably indignant that such a hazard should be allowed to exist in close proximity to an airstrip. What he apparently did not appreciate, however, is that pilots themselves are entirely responsible for establishing the suitability of proposed landing areas for their aircraft.

Where the proposed landing area is a government or licensed aerodrome, its physical dimensions and characteristics are published in Aeronautical Information Publications and the Visual Flight Guide. As well as this, Notams on the condition of the aerodrome are issued whenever it does not conform to the published data, and the aerodrome itself is appropriately marked.

The situation is entirely different when the proposed landing area is not a government or licensed aerodrome. In this situation, the pilot must establish the physical dimensions and characteristics of the landing area for himself and must obtain the owner's approval for the landing. The pilot must then ensure that the proposed landing area conforms to the standards for authorised landing areas set out in the A.I.P. and the V.F.G., and that the surface is sufficiently smooth and firm for the aircraft type involved.

All this information should, of course, be obtained before the flight begins, but, in addition, when a pilot is not familiar with a particular area he would be well advised to thoroughly inspect the area from the air before attempting a landing. As this incident demonstrates, it is obviously unwise for a pilot to accept a passenger's or other layman's word that a particular strip is suitable for the aircraft.



Beware the Private Strip — at High Altitude!

Originally published in the A.O.P.A. Monthly Magazine earlier this year, this pilot contribution article is reproduced by courtesy of the Aircraft Owner's and Pilot's Association of Australia. Although it has no doubt been seen by many Digest readers already, we believe it is well worth a second reading and merits the widest possible circulation. The theme of this pilot's "incident report" is exactly the message this issue of the Digest is attempting to convey. Coming from one who was almost another victim of a sub-standard landing area, it dramatically brings out the dilemma that faces a pilot who has been persuaded, against his better judgment, to use an area that is allegedly "good enough".

HAVE you ever considered the possibility of you, as a pilot, finishing up at the end of a paddock in a ball of orange fire and black smoke? Well, I have, and it is not a pleasant thought. Yet this could easily have happened to me not so long ago.

My aeronautical experience at that time was some 200 hours and I felt quite confident of my flying ability and did not think that I would do anything which could be classed as dangerous in cross-country flying. But I did.

The occasion presented itself in the form of an invitation to visit country friends at a northern N.S.W. town, and I and my friends, a fellow pilot and his wife and baby, were happy to accept.

The property owner suggested we land at a strip close to the homestead, which he said was frequently used by crop dusters, and was some 40 nautical miles from a major country airport.

Before departure I obtained the following information on the strip from my friends. The lati-

tude and longitude. The elevation, 3,500 feet. (This figure did not make as sufficient impact on my grey matter as it should have.) Length—not sure said the owner, but long enough to take a DC3. The owner was not a pilot. Surface well covered with grass. This grass turned out to be clover from four to six inches high.

Our aircraft was a Cherokee 160 of old vintage and not noted for its "steam," though it performed up to standard. As we had rented it, the day before departure I phoned to be sure all things necessary, including flight manual and performance charts, were aboard. But I did not check that the latter were aboard, and they were not.

We departed early on a Saturday morning of a long weekend and enjoyed a pleasant and uneventful flight to the major airport, where we phoned our friends to tell them to look out for us. At the appointed time we arrived in the area and, after twenty minutes fruitless search for the strip and our friends, returned to the major airport, from which we were collected by car in due course. "Why didn't you land, you flew right over us?" they said. As the terrain is moderately hilly in the area, most of our attention was directed to keeping clear. Our friends then admitted that it would be almost impossible to see the "strip" from the air, the strip being a long paddock which had not been used for ag. work for many months. However, we repaired to the "strip" and drove the car over it at 60 m.p.h. and measured its length on the speedometer as half a mile. Its width was approximately 50 yards, with trees each side. It sloped gently uphill, and at this end were dead trees, some 30 feet high.

All, except me, were convinced that all would be well to bring in the 160. I was also aware that our friends did not look forward to the long drive back to town, and this influenced me to bring the plane in.

The solo flight from the airport was delightful in the early morning, and I arrived over the strip, where my co-pilot was waiting in the car, now easily identifiable. As I circled, the car drove down the strip, which direction coincided with the wind direction at the major airport 40 miles distant. Unknown to me, they drove downwind! (five knots).

On my first approach I was amazed at the ground speed. The approach speed of 70 knots I.A.S. trues out at 75 knots with altitude 3,500 feet and an O.A.T. of 15 deg. C. Add the positive wind component and we have a ground speed of 80 knots to eat up the strip quickly. As I went round at 50 feet I was surprised at the relative lack of power available at full throttle at that altitude. Next time I landed, and, to my horror,

immediately started to skid on the clover, thinking at one stage that I would finish up in the trees. However, the Cherokee pulled up with moderate braking with about a quarter of the strip left. But I was very shaken, and from that moment had serious doubts that we could fly out.

For two nights I hardly slept, worrying if I should swallow my pride, have the wings removed, and the aircraft trucked out. When I mentioned this possibility to the "experts" I was greeted with cries of "No worry, we'll do it easily."

On the Sunday I decided to carry out fast taxiing tests with three male adults aboard including myself. In two runs, one each way, 55 knots was all we could do before we had to brake to avoid the fence, and lift off speed is 60 knots. "No trouble," said the experts, "she'll get off easily."

We eventually decided to leave the wife and baby at the property, empty as much fuel as possible and generally lighten the aircraft as far as possible. Our departure was arranged at first light on the Monday—we had to be at work Tuesday. Monday morning we awakened to a fog-bound strip, which suddenly cleared at 10 a.m., with a ground temperature of approximately 15 deg. C.

We warmed up and taxied to the far end of the strip, held her on the brakes, full throttle, and away we went. Three-quarters of the way down the strip, with only 55 knots indicated, and flight was rapidly becoming essential. I pulled on the wheel, she staggered in the air, sagged back, decided to fly, and in a gradual climbing turn, with the stall warning flashing, cleared the trees by about 30 feet—too close for comfort! Never was I so glad to be flying. The trip home was uneventful and pleasant.

Here are some lessons learned:—

- Never land at a private strip unless you have satisfied yourself by personal inspection that it fulfils requirements.
- Be sure the performance charts are aboard and that, having consulted them, it is clear that you can get in and out.
- Never accept the advice of laymen associated with flying, or pilots not endorsed on the aircraft type.
- Long, wet clover is a vastly different surface from short, dry grass.

There are many pilots with Private Pilot Licences far more experienced than I who could add more lessons for the benefit of all. But the one I learned most is the importance of density altitude!

Perils of 'Landing Anywhere'

ELSEWHERE in this issue of the Digest are the accounts of four accidents, one fatal, the others of varying degrees of severity, which occurred because the landing areas the pilots concerned chose to use were inadequate or unsuitable for the aircraft type or the prevailing conditions. These accidents would be more than sufficient to cause the Department deep concern if they were isolated events. But when, as it happens, they are but four examples of a trend that has developed over the past two years, the seriousness of this problem can hardly be over-stated. The problem is not just associated with the actual physical size of the selected landing area—other characteristics such as surface condition, surface obstructions and the pilot's planning of the operation have also played their part. Neither is the problem peculiar to any particular region or class of operation. Charter, agricultural and private aircraft have all been involved from time to time, and it is quite clear that there is a general lack of appreciation of the additional vigilance necessary for aircraft to be operated with safety when away from government or licensed aerodromes.

The problem appears to be very largely one of complacency on the part of pilots, who seem to think that it is merely a matter of "picking a paddock" and all will be well. It is possible that this attitude has grown up as a by-product of the very ease with which modern, tricycle under-carriage aircraft can be handled, particularly on the ground. This characteristic has perhaps encouraged pilots to take liberties with these aircraft which would have been unthinkable with the older, difficult-to-taxi types of tail wheel or tail skid aeroplanes. Then, too, the ever-increasing use of

light aeroplanes as an everyday means of personal transport, particularly in country areas, appears to have engendered a much more casual attitude to flight preparation in all its aspects. In the minds of some pilots, a flight in their light aeroplane seems to be equated with a trip in a motor car, for which it is often a more desirable alternative. Unfortunately, in many cases, little more thought and preparation is being given to such a flight than would be afforded its motor trip counterpart. Obviously, if aircraft are operated on this basis, it will only be a matter of time before a day of reckoning comes.

It must not be forgotten that light aeroplanes today, despite their many refinements and the ease with which they can be flown capably by pilots with comparatively little experience, are still aeroplanes. They are not aerial motor cars, however much some manufacturers try to persuade people to the contrary, and their operation is still subject to the same pitfalls that have plagued heavier-than-air aviation from its earliest days. Like the aeroplanes of years gone by, they must be treated with respect, if safety is not to be compromised. In fact, the safety of their operation is in direct proportion to the adequacy of the pilot's flight preparation and sense of airmanship. This, of course, is assuming that the aircraft themselves are airworthy, but today, only very rarely is it the aeroplane that lets the pilot down!

These further examples of accidents that have resulted from using unsuitable fields will give some idea of the extent and diversity of the overall problem, and of the change in pilot attitude that is needed if the number of these accidents is to be reduced:



At the conclusion of a cross-country flight from South Australia the pilot of the Cherokee 180 shown in the picture made a landing on the racecourse of a town in western Victoria, where he had been told "there was plenty of room for the Cherokee 180." The landing was uneventful and the pilot disembarked two passengers and took off again. After flying to another nearby town and picking up a third passenger the pilot returned to the racecourse and prepared to land again. During the aircraft's absence, however, a light shower of rain had fallen which had made the grass surface greasy. The pilot made a

normal approach to land and after touching down applied the brakes. On the wet grass this had little effect and the pilot was unable to prevent the aircraft running into a wooden fence at the up-wind end of the landing area.

Reference to the landing performance chart in the aircraft's Flight Manual showed that a distance of 1,900 feet was required for a landing on short, dry grass. Although the actual length of the area from fence to fence measured 2,100 feet, a power line 50 feet high on the approach path reduced the effective operational length to 1,250 feet.

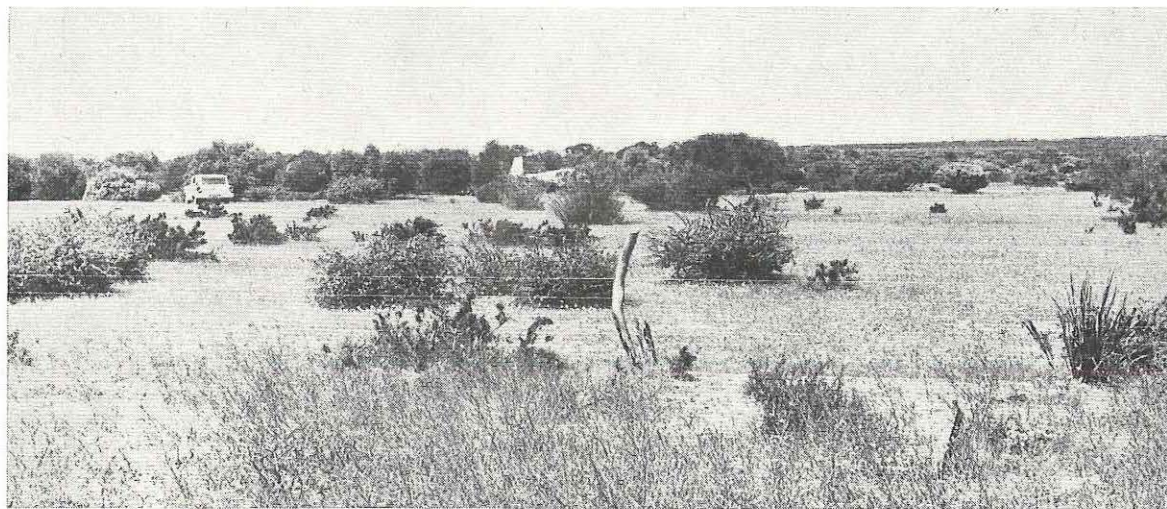
PERILS OF "LANDING ANYWHERE"

(Continued)



The pilot of this Mooney M20 attempted to take off fully loaded from a paddock in which the effective operational length of the run he had chosen was 1,800 feet. After using the length of the paddock without becoming airborne, the pilot attempted to lift the aircraft over the fence at the up-wind end of the paddock. The aircraft struck the fence with the undercarriage, the port wing dropped, then the starboard wing struck a bush and the aircraft slewed

to a stop badly damaged. The occupants escaped without injury. The pilot had not consulted the take-off performance chart in the aircraft's Flight Manual, which would have shown him that in the prevailing conditions an effective operational length of 2,200 feet on short, dry grass was required. In any case, because the paddock was covered in long weeds, it is very doubtful whether the area would have met the requirements of an authorised landing area.



In Western Australia the pilot of a Cessna 172 had flown from Jandakot Airport to visit some country friends and had landed his aircraft in a suitable paddock on their property. When he was ready to depart again the next day the wind was blowing from a different direction and it was necessary for him to select another take-off path. Just as the pilot was ready to leave, a neighbouring farmer asked the pilot if he would take his children for a short local flight. The pilot agreed, and after calculating the all-up weight of the aircraft, estimated that he would require at least 2,000 feet of take-off run. However, as the property owner had driven his vehicle over the paddock in the proposed direction of take-off and determined that half a mile of run was available, the pilot was satisfied that the length was adequate. After the passengers were on board the aircraft the pilot started the engine and taxied down-wind preparatory to beginning the take-off run. Because there was an undulation in the paddock he lost sight of the up-wind fence of the paddock, and

he continued taxiing down-wind only until he believed he had sufficient room for the take-off run. He then turned the aircraft around and, after completing his checks, began the take-off.

The aircraft accelerated normally, but when it reached the top of the rise the pilot saw the boundary fence not far in front of the aircraft and realised that the distance he had allowed was not enough. The airspeed at this time was a little above 50 knots. However, the pilot believed he could clear the boundary fence. The aircraft became airborne, but then sank back on to the ground again and struck the fence. The nose leg collapsed and the aircraft skidded to a halt badly damaged. One of the child passengers suffered minor injuries.

Measurements made later showed that from the point at which the pilot had begun the take-off run, the effective operational length was only 1,450 feet, whereas if he had utilised the full length of the paddock the distance available would have been in excess of 2,500 feet.



PERILS OF "LANDING ANYWHERE"

(Continued)

In western New South Wales, the owner-pilot of a Cessna 172 was returning to his property from a nearby town and landed at a neighbouring property to deliver some parcels. The landing was completed normally, but after the aircraft was on the ground the pilot saw that the surface of the strip had been softened considerably by rain which had fallen during the preceding week. After off-loading the parcels the pilot prepared again to take off and taxied on to the strip. Here he stopped the engine and climbed out to examine the wheel marks made by the aircraft during the landing. The pilot saw that the edges of the strip were very soft, so, to ensure that he would use only the firmer centre section, he had his aircraft pushed backwards along the strip so he could begin the take-off without first having to make

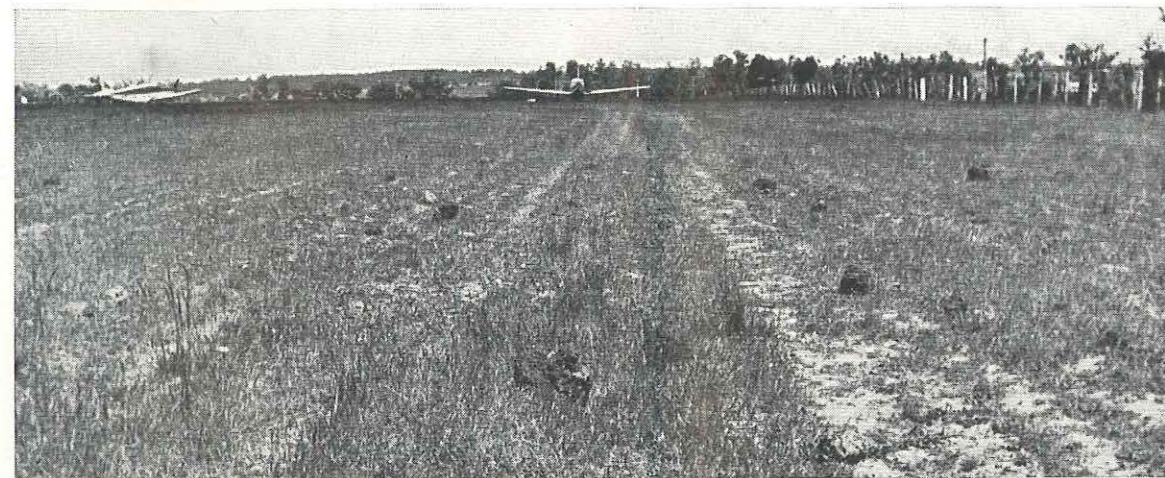
a turn. Because the end of the strip was soft all over, the pilot was forced to begin the take-off about 400 feet from the end. This left him approximately 830 feet of strip for take-off, with a further 400 feet of cleared over-run beyond the end of the strip.

As the take-off run progressed the pilot realised that the aircraft's acceleration was being retarded by the softness of the surface and he became doubtful that the aircraft would become airborne before reaching the end of the strip. He closed the throttle, then applied the brakes lightly, but the nose wheel gradually sank deeper into the rain-softened surface of the strip and the aircraft nosed over on to its back, coming to rest just inside the up-wind end of the strip.

The overturned 172 as it came to rest near the end of the rain-soaked strip. The softness of the surface can be gauged from the depth of the furrow made by the nose-strut.



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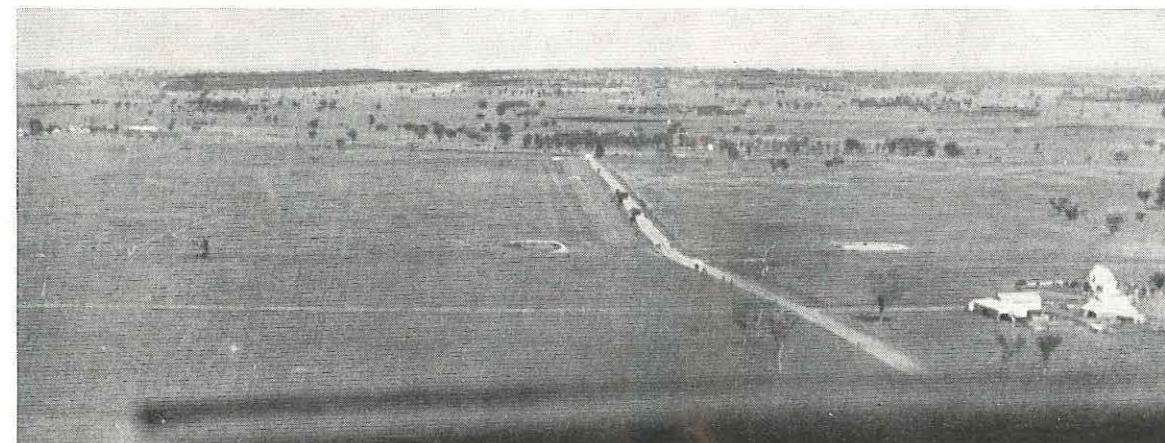


In the course of a cross-country flight from Armidale, New South Wales, to Dalby, Queensland, the pilot of this Mooney planned to land at the township of Deepwater, in the New England Ranges. Arriving over the airstrip at Deepwater, the pilot made a circuit to inspect its condition and carried out a normal approach to land, turning on to final at about 500 feet. The pilot made a normal touchdown on a mown area, but during the landing run the undercarriage struck some scattered rocks. The nose wheel strut collapsed, and the propeller was damaged.

It was found that the pilot had landed on an area alongside the airstrip and not on the strip itself. The area on which the aircraft landed had been mown more recently than the strip itself and this misled the pilot into believing the mown section was the airstrip. The airstrip itself was marked with white painted motor tyres, and, although it was heavily grassed, these markers were clearly visible from the air. It was obvious that the pilot had not taken sufficient care during his inspection of the area before landing. Had he taken the trouble to properly identify the boundaries of the airstrip before beginning his approach the accident would not have occurred.



Below: The mown area on which the aircraft landed, as seen on the approach. The strip itself is immediately to the left.



PERILS OF "LANDING ANYWHERE"

(Continued)

As stated earlier in this article, the Department's records show that accidents on unsuitable surfaces are not confined to any particular class of operation. If any reader has concluded that the problem under discussion is mainly concerned with private operations, the following instances involving professional pilots should put the matter in its true perspective:

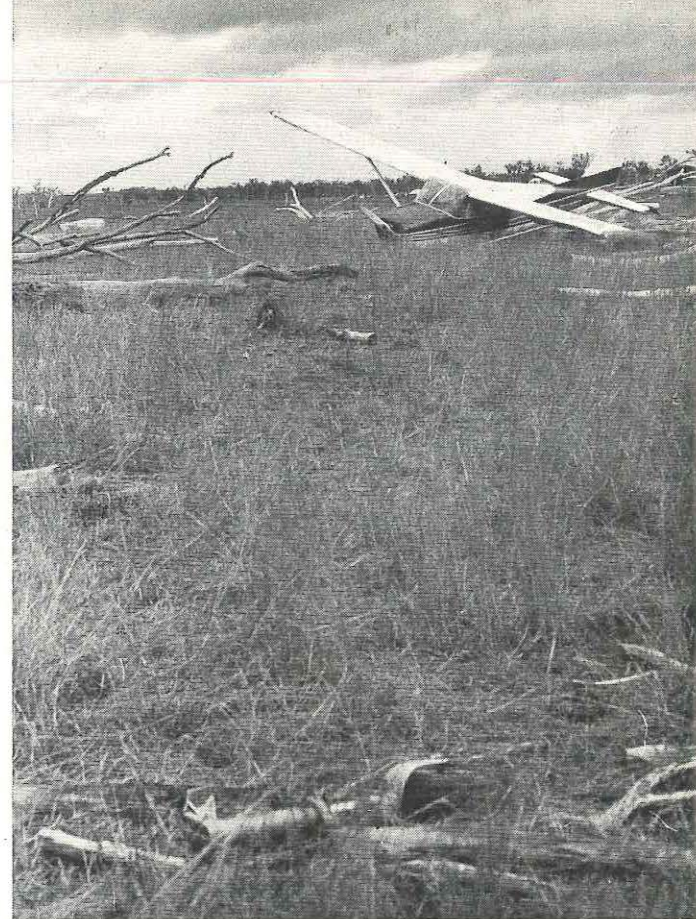
At Archerfield Airport, Queensland, a newly employed commercial pilot was assigned to fly his company's Cessna 172 aircraft on parachute dropping operations at Purga, eight miles south of Ipswich.

The airstrip at Purga, which is oriented north-east, south-west, was constructed during the war and was originally 6,000 feet long. The north-eastern half of the strip has since been abandoned and a fence has been erected across it to separate the abandoned section from the south-western half of the strip that has remained serviceable. The owner of the property on which the abandoned half of the strip is situated has strewn the old strip with logs and it has also become heavily overgrown with grass.

Because it was the pilot's first flight to Purga and he was unfamiliar with the area, he was briefed by another company pilot before departing. The briefing pilot sketched the area on a blackboard, indicating the serviceable south-western portion and pointed out the unusable section to the north-east. He also indicated the position of the fence across the strip and explained that the unusable portion of the strip was dotted with obstructions. The briefing pilot also suggested carrying out a low run to assess the state of the surface of the serviceable section before landing and that, if the pilot had any doubts about it, he should return to Archerfield.

Although he had been advised to conduct a low-level run to examine the airstrip before landing, the pilot was content to inspect the strip from a height of about 800 feet as he flew over it from north-east to south-west. The pilot then planned to land into the

Purga airstrip from the air looking south-west. The abandoned section is nearer the camera.



south-west from a left hand circuit and flew a down-wind leg at a height of about 600 feet, turning on to final approach at 500 feet. The point at which the pilot was aiming to touch down, however, was on the abandoned portion of the strip and some 400 feet short of the threshold of the serviceable strip. Not realising this, he continued the approach on to an area strewn with logs partly concealed by the long grass. Only after actually touching down did the pilot realise his mistake and then attempted to take off again, but the aircraft struck several logs in succession. The nose wheel and port main wheel were torn off, and the aircraft skidded to a stop on its nose. The impact was severe enough to fracture the fuel tank in the port wing, but there was no fire and the pilot was uninjured.

It was quite evident during the investigation that the pilot had been given an adequate briefing on the physical characteristics of the strip. How much attention he paid to this briefing is not known, but it is obvious that he did not heed the advice he was given to look the strip over carefully before landing. Inspection of the strip from the air showed that the usable portion of the airstrip was quite easy to define when viewed from a height of 800 feet, both dividing fence and the logs on the abandoned section being clearly visible. Despite the sound advice of his colleague, it was clear that the pilot had taken little care to identify the boundaries of the usable area before committing himself to a landing.

During an early morning ferry flight from Naracoorte to Parafield, South Australia, the pilot of an agricultural Pawnee encountered head winds and decided to land at an abandoned glider field near Murray Bridge in order to refuel. He had landed in this field several times before and was well aware of its characteristics. The southern half of the field was unsuitable for use because it was strewn with limestone rocks of various sizes, but the northern half had been cleared for glider flying and was quite adequate for the operation of Pawnee aircraft.

Approaching the field from the south-east, the pilot assessed the wind as northerly at about 10 knots and turned the aircraft to starboard to make a straight-in approach. The pilot did not think it necessary to inspect the field before landing because he was satisfied that he knew the line of demarcation between the cleared and uncleared sections. Approaching the field straight-in, however, the pilot was unable to distinguish the line of demarcation, because the sun was in his eyes, and the aircraft touched 150 feet short of the cleared area. After running about 75 feet the port wheel struck a large, partly buried rock and collapsed. The port wing then fell to the ground and the aircraft slid for 145 feet, ground-looping to port.

Inspection of the strip showed that there was 3,300 feet of suitable landing area available to the north of the stony area of the field and that there was no necessity for the pilot to have landed short. There is little doubt that if the pilot had carried out a circuit before landing and refreshed his memory on the exact location of the line of demarcation between the cleared and stony areas, he could have adjusted his approach accordingly and made a safe landing.

* * *

What then is the remedy for the shortcomings that are producing all these accidents? The problem may be diverse, but the solution is surely a very simple one—just this: First, a realisation that the modern light aircraft is not the "land anywhere" vehicle the sales brochures would have us believe; then care and commonsense in planning future operations, taking NOTHING for granted.

Performance charts are included in the approved Flight Manuals which the Department issues with the Certificate of Airworthiness of every aircraft (not to be confused with "Owner's Manuals" supplied by the manufacturers). These charts should be used whenever there is the slightest doubt as to the adequacy of the available length for the existing conditions. The requirements for authorised landing areas are set out in the Aeronautical Information Publications (AGA-4) and in the Visual Flight Guide (Page 178), and should be observed. These requirements are realistic, and it is significant that most of the accidents under discussion would not have occurred if the areas being used met the required standard.

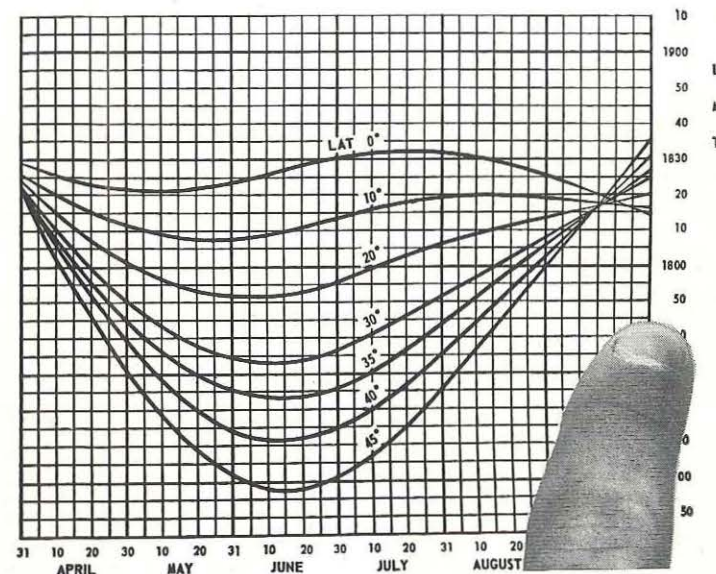


It should also be noted that pilots are required to "take all reasonable steps to ensure that the surface of the strip is suitable . . . and that a suitable means of determining the wind velocity is available at the landing area." These requirements also are entirely realistic. Obviously, if nothing is to be taken for granted, the surface of the proposed landing area must be inspected by someone who knows what he is doing. Experience shows that an opinion from someone with little or no knowledge of aircraft operations is of very doubtful value.

It is equally important that pilots be able to form a realistic assessment of wind strength and direction before committing themselves to a landing—misjudgment of wind velocity has been a factor in a number of accidents (see "Costly Landing on Agricultural Strip," page 10). There are a number of ways in which the wind can be assessed from the air—smoke, windmills, ripples on the surface of water, etc., but none are anything like as reliable as a windsock—the standard form of wind indicator for almost 60 years! It may not be generally known that windsocks suitable for use at private aerodromes are available from the Department and can be purchased at a number of government aerodromes throughout Australia.

Finally, in operations of this sort there is the matter of obtaining the owner's permission. Some pilots feel this is merely an irksome legality, but it should not be forgotten that a telephone call to obtain the owner's approval will usually ensure that the pilot has up-to-date information on the condition of the intended landing area. Accidents have occurred at otherwise suitable landing areas simply because the strip was being re-surfaced at the time and the pilot concerned landed without knowing it was unserviceable. There is also the point that it is a doubtful advantage to complete a highly successful landing in someone's paddock, only to have to contend with the ferocity of a bull, or perhaps to find you are going to be prosecuted for frightening the owner's stud rams!

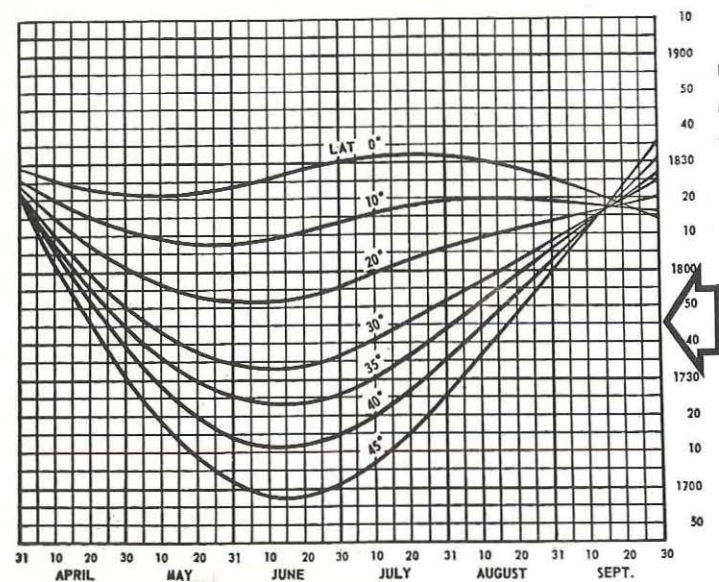
Finger Trouble...



A reader of the Digest has drawn our attention to a source of possible error when using the daylight and darkness graphs in the Aeronautical Information Publication and the Visual Flight Guide.

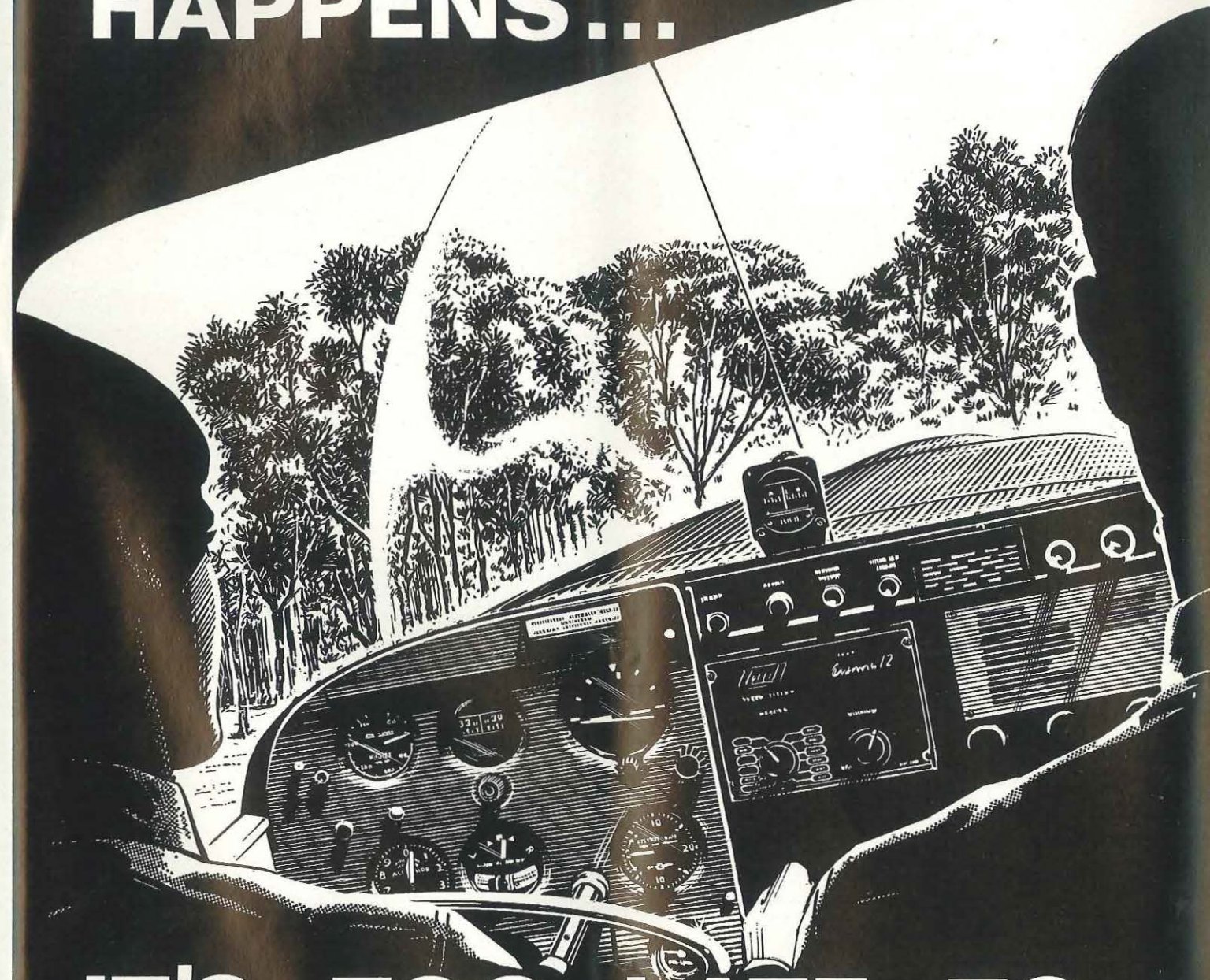
When reading across from the daylight and darkness curves to the local mean time scale at the margin of the graphs, it is possible to associate the reading with the hour numerals above the reading, rather than the applicable hour figures below the reading. In this way the graphs can be misinterpreted by one hour. The error is especially likely when running a finger from the curves across to the time scale. As shown in the photographs, the finger then covers the hour numerals applicable to the position on the scale as determined from the curves.

We appreciate our reader's interest in bringing this matter to the Department's attention, and action is being taken to eliminate the difficulty in the next reprinting of the daylight and darkness graphs.



The reading shown in the top picture could be interpreted as 1845 hours. As is clear from the lower picture, the true reading is 1745 hours.

WHEN THIS HAPPENS...



IT'S TOO LATE TO -

- Measure the length of the field.
- Check it against the requirements for authorised landing areas in the V.F.G. and A.I.P.
- Compute the distance required from the performance charts in the aircraft's flight manual.