FLIGHT COMMENT

ISSUED BY

DIRECTORATE OF FLIGHT SAFETY

R.C.A.F. HEADQUARTERS • OTTAWA, ONT.

JULY · AUGUST · 1955

RESTRICTED

FLIGHT COMMENT

ISSUED BY
DIRECTORATE OF FLIGHT SAFETY
R.C.A.F. HEADQUARTERS • OTTAWA, ONT.

JULY - AUGUST 1955

C O N T E N T S

★ ★ ★

EDMOND CLOUTIER, C.M.G., O.A., D.S.P
QUEENS PRINTER AND CONTROLLER OF STATIONERY
OTTAWA

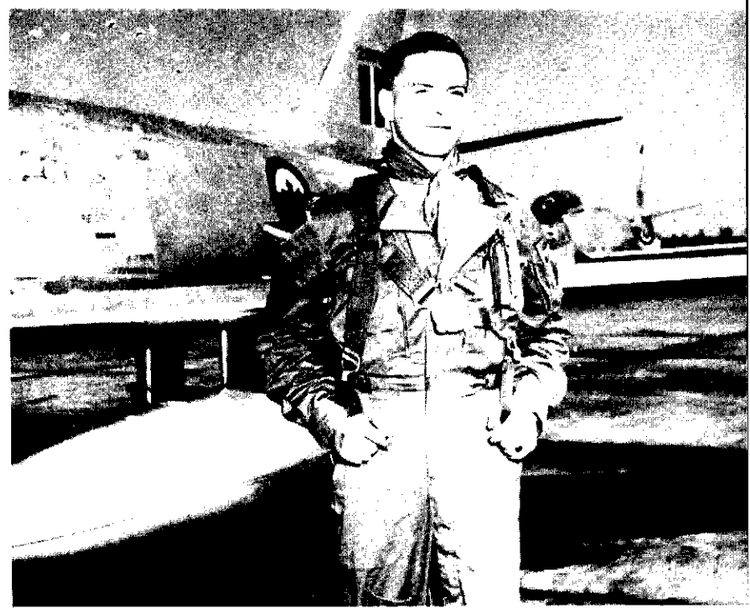
F/O C. R. HALLOWELL

F/O HALLOWELL was leading a section of three Sabres on an overseas ferry flight. Approaching Prestwick Airport on a beacon let-down the section was in close V-formation, flying at 1500 feet and 400 knots.

Just as the section turned starboard to join the circuit, F/O Hallowell's Sabre collided with a seagull. The force of the impact disintegrated the aircraft's canopy, shattered the pilot's outer helmet visor, and damaged the horizontal stabilizer.

Momentarily blinded the pilot lost control of his aircraft. The Sabre rolled to an almost inverted position and began diving at a steep angle. At approximately 500 feet the pilot recovered himself, regained control, completed his circuit and landed safely.

F/O Hallowell merits high praise for the skill he demonstrated in this emergency. But for his flying ability, the mishap might have been disastrous for both pilot and Sabre.

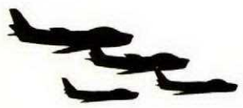


F/O S. E. BURROWS

F/O BURROWS, flying number three position in a formation of Sabres, was returning to base when the canopy of his aircraft shattered upon impact with a bird.

Although he was momentarily stunned by the impact and suffered facial injuries which left him temporarily blinded in one eye, the pilot chose to remain with his Sabre and attempt a landing. Over base he performed his circuit, safely completed his approach, judged his height on roundout by reference to aircraft near the end of the runway, and landed successfully.

F/O Burrows deserves commendation for his skill and the manner in which he conducted himself—making the decision to stay with his aircraft, flying it back to base, and landing it safely—despite serious injuries.



ACCORDING TO METHUSELAH

by W/C H. Bryant

NOT SO LONG AGO, we who are privileged to operate at station level were able to sit back fat, dumb and happy and periodically receive a piece of bumpf called "Crash Comment". We could also laugh like drains at some other person's misfortune. All this was great fun until some cookie at headquarters decided to change the name of this rag and call it FLIGHT COMMENT. Even this wasn't too much to swallow. But what really started the fireworks was the decision to have the articles provided by those of us in the field. This piece of manoeuvring is the slickest deal I have run across for a long while for getting out of work. The man who thought it up will go far; in fact he is deserving of a transfer to an establishment better left unsaid.

The Commanding Officer having received this monstrous edict immediately called his unit Flight Safety Committee into labor. This is only one of about a dozen committees that take up most of my waking hours and one more reason why my twenty-four hours' flying always has to be carried out on the last day of the quarter. (Got to have that flying pay or my large wife and small family will suffer from malnutrition.)

The problem of course was to find a sucker to write an article as commanded. This was more easily said than done and as coffee period rolled around we arrived at the inescapable conclusion that such a task rightly belonged to the most junior P/O on the unit. Having made this mighty decision we departed, each no doubt breathing a sigh of relief at having escaped a rather difficult task. (After all, who wants

Superbly trained and constantly alert

to stick his neck out?) Our relief was short lived, for time soon disclosed that no P/O had ever experienced a situation such as we required—that is, relating to aeroplanes. So we were called back into labor by the boss man.

Eventually it got to the point where one or two of we braver types volunteered to have a go (I like that word volunteered), and this, gentle reader, is where "yours truly" got into the act. The old story of the turtle not getting anywhere if he didn't stick his neck out seemed to fit the situation—and after all, who am I to tell the old man to go to hell?

For some peculiar reason a certain percentage of the personnel on this unit (99.9% to be exact) think that I am the Methuselah of flying in the air force. Admittedly I have been around for more years than I care to remember, but so too have a lot of others I could name. The big difference between us is that I haven't taken to wearing a wig or dyeing my hair as others have to conceal their age. Neither have I commenced a vocabulary of jet jockey words and sayings in an effort to deceive the kids. My chief difficulty is in getting past the MO and concealing my hearing aid. Seriously though, I could name names. For example, the other day the old man (who somehow or other managed to solo a T-33) referred to me as a "Spam Can type". My shoulders are broad however, and I just gave him a weak smile to let him realize I understood.

*

Oh yes! Flying Safety. That's what the boss said he wanted. Well, Flying Safety is a million things but basically it is all wrapped up in the following:

(a) The finest equipment available, maintained in a manner second to none.

(b) Aircrew who are superbly trained and constantly alert.

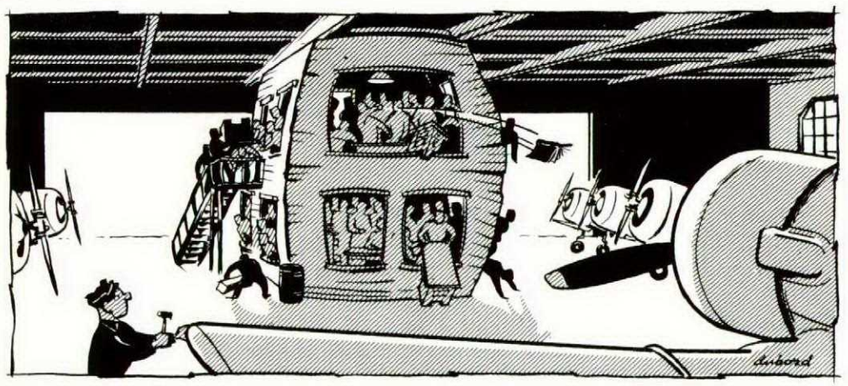
(c) Supporting equipment maintained, handled and controlled by personnel imbued with a desire to give nothing but their best, and with the safety of the aircraft and occupants constantly before them.

If these three conditions can be achieved, then the back of the problem is very badly bent if not actually broken. There are, however, a number of IFs and BUTs.

Let's take a look at maintenance. Periodically we read of an accident being charged against faulty maintenance, but for everyone we read about, an untold number are not revealed for a variety of reasons. In dealing with this type of incident I feel we are much too lenient with the personnel involved. The mere fact that an accident didn't take place should not be accepted as an excuse for not taking severe disciplinary action. This not only tells the offender in no uncertain terms that negligence will not be tolerated, but it is also an object lesson to the other fellow—a measure of what is in store for him if he lets his thoughts ponder on whether the girl friend will or won't and consequently fails to carry out a tool check after he puts the bits and pieces back on the engine.

There is also the fact that we have become an air force of offices. It is practically getting to the stage where an office complete with desk and telephone is standard issue with a set of sergeant's hooks. What has become of the Senior NCO who got out on the floor and not only set the example but showed the young'uns how to do it? They are practically as dead as the dodo, yet we admit to having a vast number of inexperienced boys trying to do a man's work. Under these conditions, incidents—both ground and air—are bound to occur.

Let's have a back-to-the-floor movement. After all, how can the men we rely on supervise from behind a desk? Desks and offices are the curse of our maintenance institutions today and, apart from the paramount chief and his control personnel, should be ruthlessly abolished. What happened to the NCO who once upon a time ran his show from the floor? He wasn't afraid to get his hands dirty and he could lead because he had mechanical ability and a first class knowledge of his trade.



Desks and offices are a curse

Small things, like ashtrays

THE PILOTS aren't exactly blameless in this department either. Apart from a smattering of what makes an aeroplane tick (which they receive during their training), their interest and knowledge of maintenance is negligible. They don't know the difference between a hootnanny and a pogo stick and care less. Groundcrew types are only human and a little interest on the part of the flyboys when they are not otherwise engaged in the valiant game of knock-rummy will boost the morale of the lads on the floor if nothing else. Most of all, of course, a good basic knowledge of the aeroplane and its component parts may well mean the difference between life and death when the chips are down, and it costs nothing to acquire if only one displays the necessary interest and is willing to get out on the floor and have a go.

I have flown aircraft with many minor faults that had not been reported by previous pilots for the simple reason that they didn't want to arouse the ire of the servicing people. Small things, mind you, such as dirty ash trays and windscreens, improperly stowed equipment and the like—but this is the kind of negligence that makes one wonder if the important things are being neglected in the same manner.

I once got a few blurbs off to control on VHF, followed by complete silence. Investigation subsequently revealed that someone during the course of his inspection had forgotten to re-secure the high tension lead to the aerial. Imagine the consequences had this occurred above the overcast! Worst of all, as it occurred on the ground it was considered to be some kind of a joke. Concerning all these little faults I once said to an NCO in charge of servicing, "I'll bet you hate to see me come over to fly." To which he knowingly nodded his head in the affirmative. See what I mean? If YOU don't check up, who's going to?

Looking in on aircrew presents quite an interesting view. Of all the people I taught to fly during my nearly nine years as an instructor, many are now in very responsible positions and, needless to say, have the rank to go with it. I always was a dumb so-and-so but, regardless, after twenty-four years as a pilot I'm still alive; and up to a point that's what counts. Contrariwise the first pilot in the RCAF to get the chop in World War II was an ex-pupil of mine; and I often wonder even now if there was something I didn't do in educating that young man which

led to his early death. The pilot with a crew to look after might well ponder this point before and during each flight as well as at all times in between.

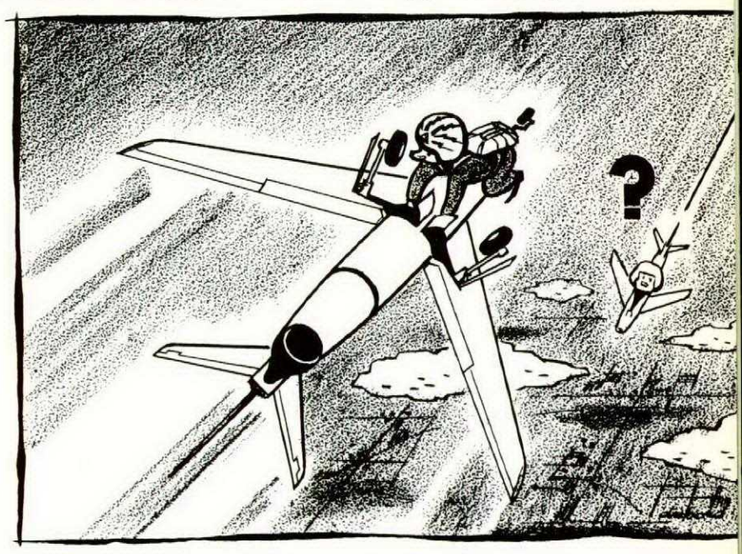
Every pupil I ever had was told in no uncertain terms that I could teach a hod carrier to fly an aeroplane. What they could do with it after they had tamed the monster was my chief concern. This called for initiative, sound judgment, perseverance, obedience and, let's face it, a certain capable recklessness based on daring and the old will to see just what the hell the aeroplane could do and what you could do to it without breaking it or your neck.

*

Pilots themselves have brought a load of regulations on their own shoulders and could do much to abolish them if they would settle down to business. A safe flight commences on the ground and requires a thorough understanding of what it is to accomplish. Once this is determined the planning can commence. This should include every possible point and consideration, together with all possible consequences and alternatives should the original conception of the aim to be achieved be denied either by enemy action or the elements, not to mention possibility of mechanical difficulty. Many a life, during the course of a flying mishap, has been saved before the flight commenced.

All too many pilots consider that once their initial training is completed, their wings presented and their position taken in a flying unit, there is nothing more to learn. Nearly all of these types end up in an early grave and I have attended many a sad procession which usually terminated back at the bar where we had one or two and talked over the unhappy loss of our late-departed brother.

The sooner young pilots realize that they are never finished training and that an aeroplane, like a dog, can and will turn on its supposed master, the longer and better are their chances of survival. No pilot should ever relax and sit back in his seat, feet up and the radio compass tuned to the Hit Parade. He should be alert, watchful, constantly calculating his position. He



Constantly reviewing the state of his aeroplane

should also be constantly reviewing the state of his aeroplane, engine and controls, ever ready to take emergency action on split second notice. This may sound elementary and "old hat" to you young duffers; but disregard this piece of advice and, if you are lucky enough to survive the consequences of doing so, you will have a changed outlook on the flying business.

Wasn't it just a short while ago that one of our aeroplanes flew into a mountain some eighty or ninety miles off track? I wonder how that happened and what the pilot's last thought was when the cloud turned out to have a "solid centre". Inexperience? Carelessness? Or a combination of both? What I have been saying is: never become complacent or satisfied with your so-called ability. Even the very best have more to learn and will readily admit it—and with becoming one bit complacent, periodically scare the pants off themselves. Does a pilot a world of good to have this happen occasionally. Keeps him on the bit.

The need to be ever alert and properly trained and to continue your training all the days of your flying career will not guarantee your life because incidents will and do happen. But these factors will go a long way toward promoting a long, grey beard. Most important of all they will give you the knowledge that you are the master of any potential enemy you may be called upon to fight; and this, my friends, is the purpose of your being taught to fly in the first place. In short, don't disappoint yourself or the citizens of Canada.

*

Considering supporting equipment, the "ifs" and "buts" become so numerous because of the variety and complexity of the needs of a modern air force that one hardly knows where to commence. One factor stands out, however, and that is the need for all concerned to be conscientious to the nth degree.

I would even put this to a large extent in front of technical ability. Give me the person who will admit he can't accomplish a given task for one reason or another as opposed to the bluffer. The latter is the one to look out for when the accident ratio starts to take an upward swing. The conscientious individual can be taught and guided into a position of outright dependability and to assume responsibility together with a high degree of initiative when the going gets tough. The bluffer is always the joker in the woodpile. I may be slightly prejudiced but once I catch a man bluffing I get that queer feeling that he isn't to be trusted under any circumstances. In other words, I'm a suspicious s.o.b., and it's a damned good way to be when it's your neck that's at stake.

Ever had a GCA controller give you a heading you know darn well is wrong? Or a controller give you an ADF bearing that has you headed

for the highest mountain in the area? Makes you think, doesn't it? Fortunately such boners don't happen very frequently and when they do they are invariably pulled by someone under training when you are flying visually. Still it gives you a sort of hollow feeling in the old tummy; and perhaps you start snapping off seat buttons when that same man is controlling you under IFR conditions. If you could only make your mind believe that he is one hundred percent reliable you would do what Confucius recommended for occasions when rape seems inevitable....

There is only one way to bring this about and we all share a responsibility in accomplishing it right from the youngest to the oldest member in the Service. It will call for a mighty effort on the part of every last one of us:

- We must ALL pitch in;
- We must ALL accept nothing but the best;
- We must ALL give nothing but the best.

Some of us realize these facts but an awful lot don't. If you're on the "don't" side then pull the finger and get on the team, because you could be the "X" factor in the next flying accident—the one responsible for much sorrow, a devil of a lot of expense, and a weakened national effort. This Flying Safety business makes you think, doesn't it?

The Author

W/C H. BRYANT, the author of this article, is CTechO of RCAF Station Comox. He has had 28 years' service in the RCAF and is on his 25th year as a pilot. With the exception of jets, which he expects to be checked out on in the near future, he has flown just about everything the RCAF has ever owned and some things they haven't.

His flying career includes service in the Far North, a stint as a pilot on experimental ship-to-shore airmail service, four years as an aerial smeller-outer of rum runners in conjunction with the RCMP on the Atlantic, and many other interesting and unusual types of flying commitments—at the conclusion of which he became an instructor at Central Flying School in 1936. He was one of the early NCO pilots and was commissioned at the outbreak of World War II. He was successively a Squadron Commander, Chief Flying Instructor, and finally Commanding Officer of a Service Flying Training School. He is a graduate of Empire Central Flying School (where he received a Distinguished Pass), the Rolls Royce Engine School, Derby, England, and the Royal Air Force School of Air Transport. He did not see operational service but when released from the training scheme be again proceeded overseas and was attached to 216 Group, 216 Transport Squadron (RAF) Cairo, Egypt. Following his stint there he became OC Flying and eventually Commanding Officer of the RAF Air Transport Command Station at Rabat Sale, Morocco.

When asked about the free-hand English used in his article he admitted he managed to sneak through Staff College (1944) but that apart from this mild experience, he had not been tainted by too much school learning but "just grew up in the Service". Anyway, he feels that writing reduced to a bundle of statistics isn't worth reading. (Our sentiments to a T. Future "volunteer" authors take note—ED.)

Eggbeaters and Lumps

by F/O D. H. McNeill

Expansion in the helicopter field occupied a large part of the RCAF's activities during the past year. Search and Rescue units have been equipped with the Piasecki H-21 and an all-helicopter flight, equipped with Sikorsky S-55s, has been formed. Many of us are inclined to take for granted the accomplishments of the helicopter in mountainous regions although the machine can be actually helpless in this type of terrain unless it is in the hands of a well trained pilot. This article will attempt to illustrate the problems encountered in mountain operations and explain how they are overcome.

There are several limiting factors that must be given consideration before flight planning:

- At altitude there is little or no available reserve of power. This naturally imposes limits on gross weight, range, and hovering and landing capabilities.

- Density altitude which continually changes with a change in temperature. On one day at a particular site the density altitude may be 5500 feet and operations with gross loads can be carried out with ease. The following day the density altitude at the same site may have increased to 7500 feet, making similar operations impossible.

- Winds are variable in rough mountain terrain and mild to severe turbulence is generally encountered.

- Blade stall (a condition which will quickly cause the pilot to lose complete control) and settling with power are potentially present to a much greater degree at high altitudes.

Winds

Helicopters, like conventional aircraft, must land and take off into wind; unlike them, this type of machine requires maximum power not only at takeoff time, but also for landing. Obviously, then, the more lift available from wind effect the less power required. In a downwind condition at low speeds the 'copter is liable to "run out of stick" and become uncontrollable in the horizontal plane; in a crosswind condition, since the machine is slightly top-heavy, there is a danger of tipping over.

On days when the winds are light in the mountains they are generally variable as well; a 180° shift in a matter of seconds is commonplace. In such conditions one cannot relax, but must remain all the more alert. Due to the slow approach speed of a helicopter when coming in to land, a sudden shift in even a 5 mph wind might cause the machine to lose all lift. On high ridges the wind is generally quite strong. As it strikes the base of a ridge it climbs violently to the top, travels across, and then descends sharply on the other side. The air on the windward side is also usually quite turbulent and there are sudden updrafts and downdrafts.

Where a valley terminates in a deadend it is not uncommon for the wind to blow from one direction on one side, and from the opposite direction on the other side. The wind simply follows the valley around. Where there is a sharp wall of rock and no surface wind, it often happens that there is a wind blowing at a higher altitude and that, upon striking the wall, it will deflect either down and back or up and over.

Because of the irregular formation of mountains, one cannot depend on the winds to flow always from the same direction. They will follow the valleys, surge up and down inclines, and be thrown back from higher peaks. At the intersection of valleys there is often a violent windshift accompanied by turbulence; and high winds are generally encountered at the point where a windless valley adjoins an open area.

Mountain winds are constantly changing direction not only in the lateral, but in the vertical plane as well. It is therefore important for a helicopter pilot to study these characteristics so that he will not be caught unawares.

Takeoffs

Helicopter takeoffs should be into wind whenever possible. If there is no wind and the aircraft is heavily loaded, it is advisable to set up a flare or smudge some distance ahead of the machine. Any sudden gust of wind will thereby be indicated, giving the pilot his cue for an immediate takeoff using this gust. If there is any doubt whatsoever about the aircraft's ability to handle its load, it should first be lifted off gently to determine both whether it will hover just above ground and that the load is positioned properly. When a helicopter hovers or moves close to the ground, a cushion is built up between the blades and the ground. The downwash of air from the blades strikes the ground, rebounds, and provides a cushion which acts as a great source of lift—and an invaluable aid in marginal takeoff conditions.

When the ground ahead is devoid of obstacles it is advisable to lift the aircraft to a minimum altitude above ground and then move ahead, staying low and using the ground cushion until additional forward speed is obtained to climb away. If the takeoff is downgrade, care should be taken to follow the contour in order to avoid striking the tail rotor on the ground.

Takeoffs from a ledge or cliff are accomplished in a different manner. First the load should be checked by lifting the 'copter into a gentle hover and then settling down again. The pilot should then lead slightly with the cyclic stick so that, as the aircraft leaves the ground, it will go immediately into forward flight. Care must be taken to lead with power and to take off on the final upsurge of power. The aircraft is then moved directly out over the edge where the nose can be lowered and airspeed picked up rapidly in descent. In the event of an obstruction ahead, this takeoff can be made sideways in the same manner. This manoeuvre will give the pilot an uncomfortable sinking feeling the first few times, but it can readily be seen that, once the aircraft is out over space and able to nose down and pick up speed, it is perfectly safe.

Alpine meadows are often found at high altitudes and give the false impression of being beautiful airports. When a takeoff is made

from one of them it means that there is no place from which to drop off and pick up speed. Here again the best plan is to nudge slowly forward, using the ground cushion to pick up speed and keeping the power down so that there will be a comfortable margin left for pulling up over any unexpected obstacles at the end.

Takeoffs in mountainous terrain should cause no difficulty, but the following questions are well worth ticking off before you shove off:

- Should I reduce my load?
- Should I wait till evening when it will be cooler?
- Should I wait until a better wind springs up? (One doesn't have to wait long.)
- Should I remove those possible obstacles from the takeoff path?

*

Landings

One's first action is to assess the wind. Smoke flares are a great help and can either be dropped from the helicopter or set off by ground personnel if the aircraft is going into a site never used before. Sites which will be used more than once ought to be marked with a wind indicator such as a flag. Ripples on water and blowing trees also make handy guides. If none of these methods is available, wind direction can generally be detected by the pilot if he executes a few turns and notes the changes in his ground speed.

Because it is frequently impossible at first glance to ascertain whether a proposed landing spot is level or not, it may be necessary to circle the area in order to assess it properly. Topographical and other conditions may prevent such an examination so that a precautionary run will have to be made. The next step is to decide the type of approach. Landings on top of a ridge make it imperative that the approach never be made into wind if the wind is blowing across the ridge. Downdrafts encountered on nearing the landing site will throw the aircraft down into the side of the ridge. The correct approach is effected along the top of the ridge, the aircraft being turned into wind just when the pilot is ready to touch down. By this means the helicopter rides the updraft, the big difficulty generally being to keep the aircraft descending. Great care must be taken to lead with power as the updraft effect may suddenly be lost when the aircraft is turned into wind. Setting the 'copter down as close to the edge of the ridge as is commensurate with safety will facilitate an easy takeoff.

When the selected landing site is on a peak free of obstructions the approach may be made directly into wind, although care should be taken to maintain sufficient altitude over the downwind edge so as to

minimize the downdraft effect. If the wind is fairly strong and gusty it may be advisable to make the approach from the side at an angle 45° out of wind. Manoeuvring in this fashion will minimize the hazards of downdraft effect and provide a sufficient margin for peel-off away from the landing site in the event of sudden wind changes or a lack of the power necessary for a well-controlled landing. If the site is on a cliff which has a sheer wall on one side and allows an aircraft to come in from only two directions, a normal approach may be made into wind. However, if the wind is blowing directly onto the cliff at right angles, a crabbing approach is necessary with a turn into wind just prior to touchdown. Sufficient room should be left to keep the tail rotor from striking the cliff wall when the helicopter turns into wind.

Unless they are into wind, landings should never be made on mountain meadows; the approach should be lengthwise, and the pilot must be alert to the possibility of all wind effect being lost when his aircraft descends below treetop level. It is desirable to set the aircraft down close to the downwind end of a meadow to allow maximum room for takeoff. Obstructions on the normal approach into the windward side of a proposed landing site will force consideration of a downwind approach. This type calls for a bit of precision flying since the pilot must co-ordinate a reduction of speed, a steady rate of descent, and a 180° turn while making sure that his tail rotor is clear of all obstructions. However this is preferable to the straight, steep approach required on the into-wind side.

At least one dummy run should always be made, crossing the landing spot at approximately 10 mph. It will aid the pilot in judging whether the wind is adequate and the area level, free of obstacles, and spacious enough so that in an emergency he could abort and peel off over a good drop. While doing the run he should decide on the exact spot for the landing and note its altitude.

As there will only be a minimum of surplus power available due to altitude, and since the density altitude increases with temperature, the approach is the most important factor in a mountain landing. If the aircraft is still going at a fairly high rate of knots when the landing site is reached, it will be necessary to "flare" to reduce speed. This rather severe change in attitude requires additional power to level out and stop the rate of descent; and if the power is not available the aircraft will sink and strike the ground. Even if power is available there is a danger of striking the tail rotor; and the rapid changes in attitude and speed make it difficult to land exactly on the predetermined site.

Turning in on final is best executed at a height of approximately 400 feet and a minimum distance of 2000 feet. The final approach should allow sufficient distance to permit both pilot and aircraft to settle down.

The pilot then keeps his eyes on the landing spot, slowly reduces his forward speed, and increases power. From then on there is no rapid change in power or attitude, the goal being to arrive at the edge of the landing spot at a "creeping" pace so that the aircraft will come to a full stop "on the dot" at not more than a foot above ground. In this manner he will avoid any need for a flare, having slowly coasted to a stop; and in the event of there being insufficient power to hover, the aircraft has only one foot to sink.

Such an approach requires practice, although in reality is no different from the precautionary type of landing often carried out by conventional aircraft. The correct angle of approach in relation to the landing site is at first difficult to learn due to the varying types of terrain which give a false impression of altitude. However with experience the pilot gets to know the proper angle and minimizes all corrections so that there is little change in attitude right to the point of landing.

The weight of the aircraft should never be permitted to settle completely after touching down until one ascertains that the site is level and that the helicopter will not sink too far in soft ground or deep snow. Where adverse conditions exist it is no trouble to deplane passengers and freight while maintaining sufficient power to keep the aircraft level. Similarly it is possible to deplane loads where, although there is insufficient room to set the entire machine down, two wheels can be rested and the aircraft held there. When part of the weight of the machine is rested like this, very little power is required to hold it steady. Setting the aircraft down on an uneven site can be safely accomplished (after crew and passengers have been deplaned) by propping rocks or trees under the wheels to level it. The brakes should then be put on and the nose wheels locked.

Landing a helicopter in the mountains is definitely not a routine operation but any guesswork can be eliminated if the following points are always borne in mind:

- Make at least one dummy run.
- Remember to compute density altitude.
- Employ an approach from which a break-away can be made in an emergency.
- Make sure of wind direction and speed—and be prepared for a sudden shift.
- Make a smooth, gentle approach so that the aircraft comes over your landing site at one foot altitude and zero air speed.

General

Map reading is rather difficult in the mountains. It is preferable to follow a stream, a valley, or other known route, rather than to try cutting straight across. At low altitudes, picking one's way along an unknown route can be similar to a trip through the circus house of mirrors; and attempts to cross over the top can be foiled by winds and turbulence. There are certain positions where the utmost lift and favorable wind effect may be obtained. The pilot must learn to hunt these beneficial winds and updrafts as they will aid him considerably in increasing his aircraft's range.

Snow as always has a blinding effect and makes altitude difficult to assess. If possible the snow should be marked using spruce boughs or anything of a contrasting colour. Deplaning passengers should always be equipped with snowshoes as the snow is often 40 to 50 feet deep.

When the helicopter's sling is in use, very little benefit is obtained from ground cushion effect as the aircraft has to hover too high. At altitude it has been found best to kick the load free just before the aircraft stops and as the load touches. This does away with the need to hover at maximum all-up weight.

*

Among personnel having no experience with high altitude helicopter operations there is sometimes a tendency to either underestimate its critical aspects or to entertain an overcautious attitude concerning its inherent hazards. Actually, as in all types of flying, the helicopter's limits and maximum utilization are determined in the main by the habitual employment of good pilot judgment.

The Author

THE AUTHOR, F/O D.H. McNeill, has appeared in our pages before. He contributed an article entitled "Northern Ops", which appeared in the Third Quarter issue of FLIGHT COMMENT for 1954. He is at present a helicopter pilot with 108 Communications Flight, RCAF Station Bagotville, having been transferred there recently from 105 Communications and Rescue Flight at Namao Airport, Edmonton, where he had been stationed since 1951.

PV Aing

LETTERS TO THE EDITOR

A letter from TCHQ reads as follows: "..... The position of the alligator clip as pictured on page nine (FLIGHT COMMENT, JAN-FEB '55) is incorrect and dangerous. It should be fastened only to the seat harness. Otherwise, when the pilot attempts to kick away from the seat it will be held to his parachute harness by means of the alligator clip and the oxygen mask strap.

This will cause the seat to trail behind the pilot until the oxygen hose has stretched to its full limit and the clip breaks free. The delay could conceivably foul up the parachute if the pilot pulls his ripcord after kicking free of the seat.

The strength of the oxygen hose attached to the seat and the gripping power of the alligator clip on the mask tie-down strap have been tested at Trenton and appear to be sufficiently strong to cause a trailing seat".

Our article was written to remind aircrew of the precautions that should be taken to prevent inadvertent disconnects as well as to prevent injury on ejection. Some of the material on which the article was based was obtained from the USAF "Flying Safety" and included recommendations from Wright Aeronautical Development Center advocating attaching the alligator clip as shown. This was agreed with as it was considered more likely to prevent an inadvertent disconnect. (The last sentence in the paragraph at the top of page 10 of the article concerns the alternate use of the alligator clip.) Your system has merit in that once the quick disconnect has separated, there is no other attachment to the seat. However, there could be conflicting relative motion between the parachute harness and the seat harness which may induce an inadvertent separation. It must be remembered that the alligator clip has much more purchase on the seat harness than it has on the narrow cotton tape.

The merits of the attachment as shown are that it prevents inadvertent disconnects (which have occurred), and that the relatively small amount of snap pull required to detach the alligator clip from the tape is not sufficient to cause a trailing seat. It is interesting to note that several pilots did not make use of even the cotton tape to anchor their hose prior to reading this article. Both systems have their merits and, if followed, will provide the safety factor intended—ED.

R/T: IFR ASSET OR LIABILITY?

by S/L H. M. Pickard

The volume of IFR traffic in Canada has increased so tremendously during the past few years that the RCAF's facilities are becoming inadequate to deal with the ever-growing requirement. Traffic in the lower levels is swelling; and the faster, high-flying jets are creating additional control problems with their limited fuel ranges.

As newer facilities and procedures are developed to meet the changing situation, the problem of voice communication grows more complicated. Additional frequencies are becoming more difficult to provide and jamming is now so prevalent that a streamlining of R/T abbreviations is a current necessity. New phrases must be coined if the act of communication is to be proportionately bettered by the continually improving facilities which purport to serve it. Some R/T heard today is excellent—and some leaves much to be desired. How does your own R/T rate? Asset or liability?

Jamming of Frequencies

Dangerous flight conditions may be encountered if a pilot finds it impossible to obtain the information he needs from a controlling agency because the available frequencies are jammed. The problem is further aggravated by unnecessary checking of aircraft receivers and transmitters; and too often aircraft on the ramp are heard calling the tower for radio checks. Surely these can be made in conjunction with other necessary calls such as taxi, ATC and takeoff clearances. Such a reduction in transmissions would do much to relieve jamming.

Pilots approaching busy terminals are frequently heard calling a controlling agency repeatedly without success. They not only delay themselves—they contribute to frequency jamming throughout the area. We are all aware of the need to "listen out" before transmitting, but do we realize the full significance of this useful technique? It is not enough merely to listen for a second or two and then blare away. If we listen long enough to discover whether or not clearances are being given, or if the agency is listening to another aircraft reporting back a clearance and we wait until the clearance is acknowledged before attempting to call, it is usually possible to get through with a minimum number of calls. Delays, tempers and in-flight incidents can all be alleviated by just this sort of care and consideration.

Changing requirements have made it necessary to coin new R/T phrases and many more will be needed in the future. Some of the new phrases heard today are concise and comprehensive while others are ambiguous and insufficiently descriptive. Perhaps a short review of some of the current R/T phraseology would be of interest.

The phrase "straight-in approach" has been with us for some time. What does it mean? Is it good R/T? Well, it is commonly used to describe a direct approach to an aerodrome, making use of suitable intersections, fan markers, beacons or range stations that are in line, thereby eliminating the necessity of completing a procedure turn. The phrase is also used to describe an approach where the track inbound from the facility to the aerodrome is within 30° of the direction of the runway in use and a circling approach or runway procedure turn is not required. Then again, under VFR conditions, a straight-in approach means a direct approach for landing without the completion of a circuit pattern. Three distinct meanings for the same phrase!—and reason enough for some of the existing confusion regarding straight-in approaches. Since lower landing minima are published for straight-in approaches (that is, when the track from the facility to the aerodrome is within 30° of the runway in use), the possibility of confusion becomes rather serious.

An interesting abbreviation of R/T often heard these days is "cleared to the outer marker, ILS runway 03". Upon receipt of this clearance a pilot might proceed to the outer marker via any one of the five or six authorized transitions, or he might proceed direct from his present position. There are many incidents on record where this particular ambiguity has caused "near misses". It is apparent that abbreviating the clearance by omitting the route is not good practice and may well prove disastrous rather than time-saving.

Reference to the confusion brought about by mention of the phrase "ADF" is scarcely necessary. To some this means proceeding along track making use of the automatic radio compass. To others it means making use of steers provided by VHF/DF equipment. It is necessary to check the context of the R/T conversation to determine the specific meaning of ADF. Obviously it would be better to use words that clearly depict the intended meaning.

Possibly one of the most unfortunate and overworked R/T phrases in use today is the word "penetration". This can mean entering a CADIZ or ADIZ. It can mean a heading for a climb through cloud. It can mean that portion of a jet letdown from initial penetration altitude to the commencement of the final approach or intermediate approach. Greater clarity—and therefore safety—would be possible if different words were used to describe these various situations.

Each of these examples has weaknesses. They are ambiguous, lacking in clarity and description. They are conducive to errors in interpretation and therefore represent a hazard. An example of good R/T that has been introduced recently is the phrase "by the beacon outbound". This phrase is brief and descriptive and cannot be confused.

Remedy

What can be done to improve the situation? We can all appreciate the seriousness of needless jamming of radio frequencies and exercise simple precautions to minimize this weakness. Regarding the use of some of the established phrases that have become ambiguous, it might prove detrimental if pilots and controllers indiscriminately attempted a change since the responsibility for reviewing requirements and passing judgment lies with the proper governing authorities. However, we can all contribute to a sound, reliable voice communication system if we follow a few simple rules when faced with the need to develop new phrases. R/T should achieve brevity but not at the expense of completeness. It must be descriptive. It is not sufficient that just the pilot and controller concerned understand the meaning; it is essential that all pilots, military or civilian, who may be operating within the area be cognizant of the meaning. And it must have clarity. If the phrase is used to describe more than one activity associated with flight, confusion will be present.

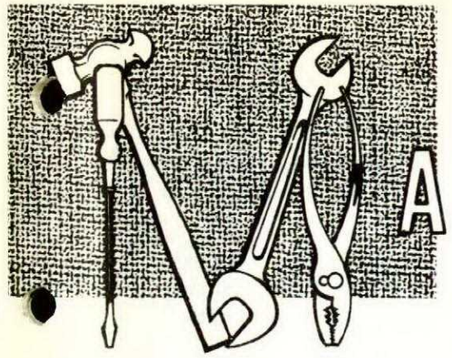
Until the day that ideal R/T is set up and operating, a pilot can extract a maximum of efficiency from the current system and make it an asset to his flying if he:

- **KNOWS HIS R/T PATTER**
- **SPEAKS SLOWLY AND DISTINCTLY**
- **LISTENS OUT BEFORE TRANSMITTING**
- **COMBINES BREVITY WITH COMPLETENESS**

The Author

S/L H.M. PICKARD is Command Instrument Check Pilot for Training Command.

Born in Moncton, N.B., S/L Pickard enlisted with the RCAF in June, 1941. Since graduating as a pilot he has been employed in all phases of pilot training and has been actively associated with instrument flying training since 1949.



MAINTENANCE

Paraphrasing an old refrain, "why is it so" that the maintenance errors which cause flying accidents follow the same pattern month after month?

In the past few years new and complex aircraft in increasing numbers have been introduced into the service. It would be understandable, if not excusable, if it could be said that unfamiliarity with this equipment was the major cause of maintenance type accidents. We could then anticipate a reduction in the number of these accidents as technical personnel gained experience on the new types. But this has not proved to be the case. In fact technical personnel can be proud of their record in coping with the problem.

There has also been a rapid expansion of the RCAF itself, combined with an increased flying commitment, both of which have necessitated a shortening of the training program for tradesmen and a reduction in the number of experienced personnel allocated to each of the flights. From a flight safety point of view such a condition is most undesirable and it was expected that an increase in maintenance accidents would be the unfortunate result. Again this was not the case, and we think it only appropriate that credit should be given to the tremendous job done by maintenance personnel since, in any program of expansion, it is they who carry the major burden.

Why, then, do we say that the above-mentioned factors have not contributed to the increasing maintenance accident rate? The reason is that the major cause of maintenance accidents has been and continues to be commission of those basic errors which a tradesman is taught to avoid in his very first lessons at technical training school: over-torquing of bolts; failure to properly secure a connection; failure to correctly fasten fuel caps, cowlings and inspection panels. Eighty per cent of the RCAF accidents whose cause can be traced to maintenance personnel are directly the result of these seemingly trivial mistakes!

Here in the Directorate of Flight Safety we never fail to be amazed when we learn of a technician who will repair a complex hydraulic system and then nullify his whole effort by improperly connecting a hydraulic line—a blunder which subsequently forces the aircraft to make a wheels-up landing; or of another technician who inspects and passes a jet engine as serviceable—and then fastens an inspection panel

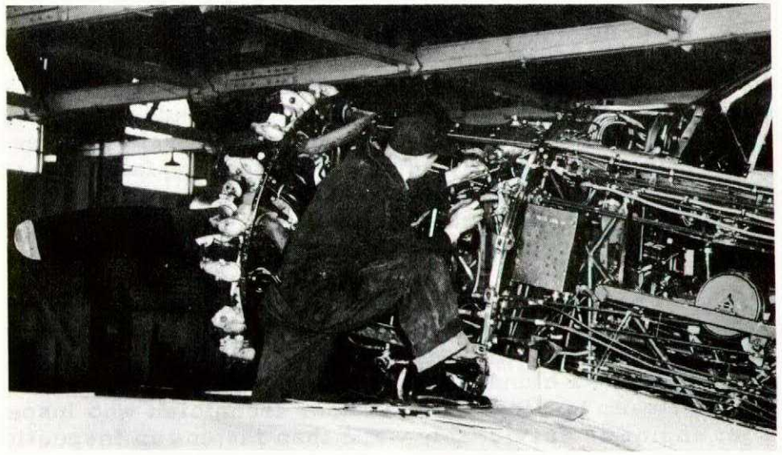
so poorly that it is torn off on the next flight. (Depending on her humor that day, Lady Luck may write off not just a panel, but an aircraft and crew as well.)

Accidents of this type would not happen if the technicians responsible paid more attention to the little things. As they say in the popular song, "Little Things Mean a Lot"—particularly when applied to aircraft accidents. As a matter of fact they mean the difference between a maintenance accident rate which we now consider too high and one which could be reduced, with a little care, to a negligible level.

That the problem is a serious one we all agree; but at present we are at a loss as to the solution. Perhaps the cause is lack of supervision; but whether this is due to an insufficient number of supervisory personnel or to a superfluity of paper work which keeps them desk-bound, we do not know. Whatever the immediate cause, the end result is the same. That direct supervision of work which ensures that the little things will not be neglected, is lost.

A certain amount of paper work is a necessary adjunct to administration in a modern Air Force; however, we feel that, for junior supervisors particularly, it must be reduced to the bare minimum. Personnel should spend a maximum amount of time on the floor—supervising. Paper work will increase from floor level upwards, but it should never reach the stage where even the engineering officer cannot spend a fair portion of the day away from his desk.

We do not know whether we've hit upon the crux of this problem. We do know that something must be done to reduce the number of accidents chargeable to maintenance personnel. Comments from personnel in the field are solicited both on the theme of this article and on a solution to the problem itself. Perhaps a critical analysis of your own organization will supply the answers.



Sabre Flight Control Rate Check

In view of several unexplained "incidents" which have occurred involving "freezing" controls, aborted takeoffs and heavy landings, the following article is reproduced from North American "Service News" of February 4th, 1954.

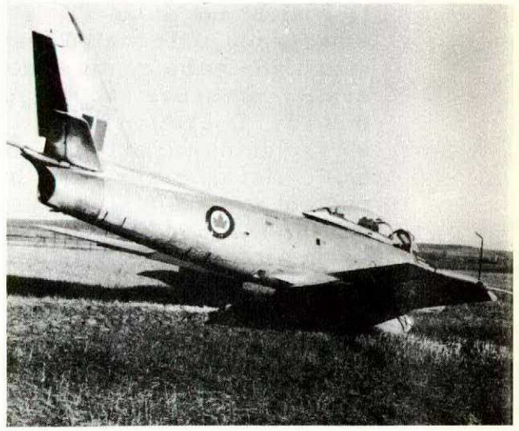
An F86F pilot, upon returning from a mission, reported very stiff control stick movement. The condition existed both on normal and alternate flight control systems. The airplane was later released for flight and flown by a different pilot. This pilot had difficulty in becoming airborne on an 11,000-foot runway and immediately declared an emergency. He stated that he had full stick travel but the horizontal stabilizer and elevators moved very little. A ground check with normal system pressure showed full travel of the surfaces as the stick was moved. Operation was slightly erratic, however, which was remedied by replacing the existing actuator with a new unit. NAA representative, C.V. Hershberger, has investigated numerous complaints of flight control system malfunctions and has discussed these conditions with pilots, maintenance personnel and applicable NAA engineers. The following information was derived as a result of these discussions.

Before the incorporation of irreversible control systems, both the rate and maximum rate of control movements were more or less directly proportional to pilot effort. This is not true of full power systems. In full power systems the rate of control movement will vary with pilot effort only until the actuator valve is completely open. Any additional effort on the part of the pilot will not result in a further increase in rate of movement. Thus, the maximum rate obtainable is not determined so much by pilot effort as by the hydraulics and kinematics of the system.

With a "conventional" system almost any malfunction which could occur that would limit the maximum rate would also be readily apparent at some lesser rate. It would be difficult for it to continue undetected. But the same is not true of malfunctions that could occur in a full power system. With the latter, should there be some restriction in the rate of flow of hydraulic fluid, it will not be noticeable until an attempt is made to move the controls faster than the restriction will permit. Also, this will be the maximum obtainable rate under any conditions, regardless of pilot effort. Thus the need for a maximum rate check should be obvious.

Failure to lift the nose wheel during takeoff can often be traced

to improper synchronization of the stabilizer actuator control valves of the normal and alternate control systems. If these systems become unsynchronized, the available control valve displacement is reduced, which means that the rate of travel of the stabilizer, instead of being a normal 20°-per-second rate, may be as low as 7° or 5° per second. Since the normal rate of 20° per second was established on the basis of what was needed for normal control movement on takeoff and landing, a reduced rate will certainly restrict airplane response. The same effect will occur if restriction in hydraulic flow is caused by improper tightening of quick-disconnect fittings. Experiences show that this particular unsynchronized condition can easily "fool" a pilot, and at the same time escape detection by maintenance or accident investigation personnel. Whether the pilot encounters the malfunction or it escapes him and causes an accident will depend on his individual technique—and also on the occasion of a need to move the stick at a rate faster than the maladjustment will permit.



It is during takeoff and landing that a pilot is most apt to move the stick to full deflection. Should it refuse to move at a rapid rate, he will apply "plenty of pressure" and get the impression that he has it "all the way back". Because of the short time and the surprise element, it is easy for the pilot's impressions to differ from the facts as to how far the stick actually moved. Since a ground check will show that the stick can be moved all the way (but ignoring the fact that it can be moved only at a slow rate), the exact nature of the malfunction will remain undetected. The next pilot to fly the airplane may use a slower technique—or will have no occasion to move the stick in a hurry—so that he may not encounter the trouble. Such malfunctions may have caused some of the "mysterious" accidents that have occurred. Following are three of the more likely causes.

▲ A pilot during takeoff lets the airplane attain more than the normal speed for lift-off, using more than normal the amount of runway to attain this speed, and expects an immediate response to a quick back pressure against the stick. He is surprised when the nose doesn't jump up for him. Because of his surprise—and with the runway rapidly disappearing—he may fail to notice that the stick never actually came back very far. And, instead of maintaining a back pressure that would slowly bring the nose up as fast as the malfunction will permit the stick to move, he relaxes that pressure and resorts to applying it both fore and aft in an attempt to bounce the nose wheel off, unaware that he is not receiving the usual amount of stick travel for all his exertions. Since these events all occur in a relatively short time (and while the runway is fast disappearing) the pilot makes the decision to abort.

▲ A pilot is coming in for a landing and, instead of making a smooth level-off from the proper altitude, waits a little too long so that a faster movement of the stick is required to accomplish level-off in time to avoid "flying into the runway". Seemingly "plenty of back pressure" is applied—but the airplane flies into the runway anyway. A ground check shows that the stick will move all the way back and that full deflection of the control surfaces can be obtained. The pilot swears that he "had it back in his belly" (that is his honest impression), but the net result is another "mysterious" accident.

▲ A pilot comes in for a landing and uses the technique of "feeling for the runway" by moving the stick back and forth, more or less overcontrolling in both directions. The stick moves back at a faster rate than it goes forward. The aircraft balloons because the stick will not go forward at the rate expected. Because of the short time involved and the element of surprise, the pilot fails to realize exactly what happened.

These instances are limited to malfunctions of the longitudinal control system but various difficulties could also result from improper adjustment of the aileron actuators. Any time that a pilot complains of a "stiff stick", hard landing after levelling off too late—or of ballooning, or of the nose failing to lift—it is suggested that the control system be specifically checked for proper synchronization or restriction (rate check). The stick should be movable in all directions to full deflection at a normal rate (20 degrees horizontal stabilizer travel per second at 2700-3000 psi). This is the maximum rate at which the controls of an airplane can be moved.

A practical rate check can be easily performed in the field but, because it is a comparative check, its validity will depend upon either the individual's experience, or on correct comparison with the majority of other serviceable aircraft on the line. With normal hydraulic pressure in the system, both the longitudinal and lateral controls should be moved at the maximum possible rate. If the rate obtainable is noticeably slower than normal, a search should be made for mechanical or hydraulic malfunction, following the instructions outlined in the applicable maintenance handbook.

CANADAIR SIC

near miss

JUST ONE OF THOSE DAYS

The following narrative is submitted on the chance that the pilots who read it may avoid what could easily be an embarrassing situation. There is no doubt that others have had similar experiences, but to my knowledge nothing has ever been written about a trip over this particular route in the circumstances we encountered.

We were to fly an Expeditor from Trenton to Winnipeg with a refuelling stop at Lakehead. Our load consisted of two passengers and a crewman; and since we were to be away from home for two weeks, there was consequently considerable luggage aboard. I mention this because our weight with all tanks full was just under the maximum allowable.

Preparation for the trip was normal with one exception: our batteries went dead just before taxiing out and this delayed our takeoff by about 45 minutes, necessitating a second, fuel consuming warm-up. The met briefing showed the weather to be far from good but not what seemed bad enough to postpone the trip. We were to have a head wind of 20 to 25 knots most of the way, and all airports enroute were to be in the vicinity of IFR limits, with the exception of Lakehead which was forecast to be "1000' and five miles". Our best alternate was Armstrong.

So, at 1230, we received clearance and took off. Our clearance, incidentally, was to climb to and maintain 10,000'. On the climb, which was through slightly over 6000' of cloud, we encountered very light airframe icing but considerable carburettor ice. Upon reaching our altitude we found ourselves in and out of cloud tops (mostly in them), with a solid overcast below us and some high cloud above. It was necessary to use some carb heat so we chose to set it at "plus 10", which I believe is pretty well standard practice in Expeditors in January.

As the trip progressed we found the various weather broadcasts giving ceilings and visibilities far below IFR limits. For example, Gore Bay was "100' and 1/2 mile", these limits being somewhat lower than was forecast. Since any height lower than 10,000' would likely result in icing difficulties, we decided to press on at our original altitude.

Roughly half way between Trenton and Lakehead we found our fuel supply lower than it should be at that point but concluded that our consumption would allow us to make Lakehead comfortably. As a precaution we did ease up somewhat on our carb heat, using it only when our manifold pressure showed signs of ice. However, after close to another hour's flying we realized that the head winds were increasing in strength. At this point we were still not too concerned about our fuel although certainly aware of the fact that our supply was going down. If any of the airports—Kinross, Grand Marais, or Houghton—were at least IFR limits, we would land for fuel.

As events proved, this was not the case. All airports between us and Lakehead were now socked in. We definitely could not turn back; so all that was left was to fly the aircraft as close to range as we could, using carb heat only when absolutely necessary—and hope.

Luck was with us. A fairly strong west wind was blowing at the Lakehead, there was consequently no lake effect, and cloud in the area had practically cleared. We broke cloud just east of the western shores of Lake Superior and went straight in. Our rear and nose tanks were drained completely and our front tanks had less than half of one-tenth remaining. The Expeditor holds 235 gallons. It required 204 to fill the tanks. We could not have made it to our alternate; and had the winds been 10 knots stronger we would not have reached Lakehead.

*

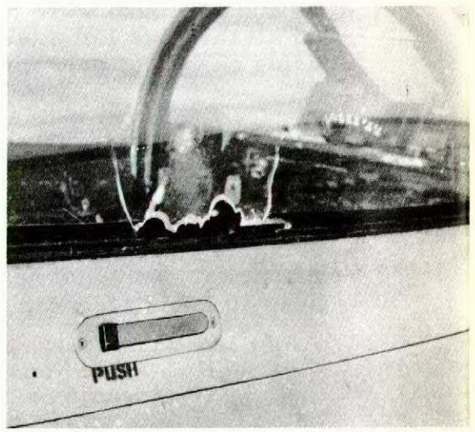
After landing and talking the situation over, the conclusion we came to was that, in weather conditions such as we had encountered, we should not have left Trenton bound for Lakehead in an Expeditor. On the other hand, had we used the carb heat more sparingly, and had it not been necessary to warm up twice, we would have landed with at least a few more gallons remaining.

The lessons to be learned from this report are self-evident. We are grateful that the pilot concerned had the initiative to write up his experience, thereby giving others the chance to benefit from his mistakes. Admitting one's mistakes sometimes takes courage; but if lives can be saved by doing so, then the value of the effort is beyond estimating.—ED.

Accident Resumé

It Could Be Lethal

On a formation air-to-air firing sortie, the pilot looked into the cockpit of his Sabre MK V to adjust the trim on his second pass at the flag. When he raised his head he saw that a collision with the flag was imminent and took violent evasive action. During the manoeuvre he inadvertently squeezed the trigger and fired a short burst. Two rounds struck the tow aircraft and the pilot was slightly injured by shattered plexiglass from the fractured canopy. The pilot of the attacking aircraft violated range orders in having his guns "live" during a dummy pass at the flag. In trimming the Sabre he allowed his attention to be distracted from the target until his position became hazardous.



Collisions and Stall Tests

During a four-plane tailchase, number three overtook number two at the top of a loop and collided with him. Number two, hit in the cockpit section, spun straight in. Number three called to say that his own aircraft appeared intact and returned to base. Arriving there he requested a gear check, and while manoeuvring to line up for the low pass by the tower he lost control and crashed. The pilots of both aircraft were killed.

The subject of tailchasing was covered in the article "Formation Collisions" in the Mar-Apr issue of FLIGHT COMMENT. It is good practice and not dangerous provided each pilot acknowledges his responsibilities to others in the formation.

A thorough preflight briefing is essential. It should emphasize the importance of a uniform, safe interval between aircraft, the dangers of rapid power cuts or use of divebrakes without warning, and of "pressing on regardless" even though unsure of the position of the aircraft ahead. The leader can reduce some hazards by ensuring the adequate spacing of the formation before commencing the exercise, by using a constant power setting, and by minimum use of divebrakes. Too often an over-enthusiastic leader misinterprets "tailchase" to mean "airfighting" practice.

Should following pilots find themselves dropping back, judicious and early use of power should do the trick. "Cutting the corner" may appear effective, but judgment of rate of closure is difficult; and in addition you may find yourself starting a vertical manoeuvre with less airspeed than the leader—with embarrassing consequences!

If you find yourself overtaking rapidly, then by all means slow down; but plan a rapid avoiding manoeuvre and get on the R/T to let the others know you're "dragging your anchor"! Remember, the aircraft behind may climb YOUR jetpipe unless you warn him. Though the airwaves should never be cluttered by idle chatter, a few words in a tense situation could save a life—perhaps your own! Above all a tailchase is still a formation practice, so maintain formation techniques of smooth, co-ordinated control and throttle movements.

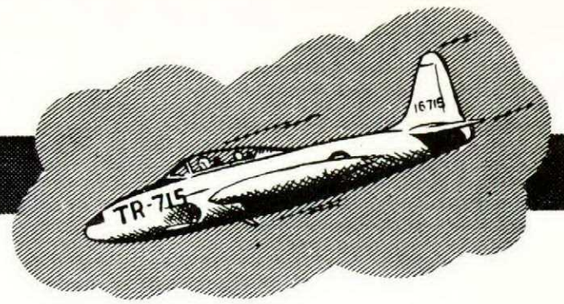
The second aspect of this accident boils down to airmanship and commonsense. Should you suspect, for any reason, that your aircraft may be damaged so as to affect stall characteristics, then:

- Carry out a stall test in your proposed landing configuration at an altitude sufficient to permit bailout in the event of serious loss of control (not below 10,000 feet in a high performance aircraft), and

- If possible have another pilot look your aircraft over for obvious damage. Sabre pilots, in addition, should keep a close watch on their control hydraulic pressures.

Should you decide that the aircraft is not controllable down to a reasonable approach airspeed then you will still have lots of time and space to take the "scenic tour".

T·33



Bearing or Reamer?

The T-33 was landing after a test flight when its port main wheel came off the axle. The pilot maintained direction with opposite brake and kept the aircraft on the runway. Technical examination revealed that during a periodic inspection a nose wheel bearing had been mistakenly fitted instead of a main wheel bearing. It subsequently failed or seized, machining away the wheel section sufficiently to permit the whole assembly to slip off the axle.

Another similar accident involved a T-33 which failed to become airborne when the starboard wheel fell off. Again in this case it was revealed that, during an inspection, an inner nose wheel bearing had been installed in the starboard main wheel instead of an outer main wheel bearing. The bearing failed and the wheel came off the axle. A fundamental of good maintenance is the proper identification of aircraft parts.

Don't Do It

The pilot was authorized for a local aerobatic flight in a T-33 from a temporary base 70 miles from his home unit. During a beat-up of his home field and his own residence the aircraft, travelling at high speed and low level, was seen to roll over and dive into the ground. The pilot and passenger were killed.

Deliberate contravention of orders is evident from the fact that the pilot had told his father and brother to look for him to "beat up the house". He had also told some of the groundcrew that he would do a Mach run across his home airfield. The local flight plan at his jet operating base did not authorize him to leave that local area. Command Instructions prohibit all flying below 3000 feet except in the circuit and the pilot had been warned about low aerobatics while carrying a passenger. In the words of the AOC ".....this accident is directly attributable to pilot error in circumstances where complete and flagrant disregard of regulations occurred."

MUSTANG

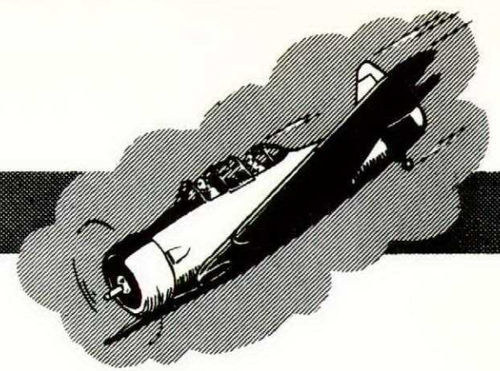
One For the Road

The aircraft was on a cross-country flight when it was observed in a gradual descent at high speed. It did not change attitude but flew into the ground and killed the pilot. The subsequent technical investigation did not unearth any mechanical failure or fault. It was disclosed, however, that the pilot had consumed a considerable quantity of beer prior to the flight; and an autopsy confirmed that the alcohol content in his blood was definitely sufficient to impair his flying ability. It seems ridiculous that pilots and other aircrew have to be warned about the inherent danger of flying soon after consuming alcoholic beverages. In the past year two fatal accidents were attributed to the fact that the pilots involved were flying while under the influence of alcohol. Remember the two dangerous periods when you're drinking:

YOU ARE UNFIT TO FLY

- while under the influence
- while getting out from under the influence

HARVARD



Inadequate Supervision

The student pilot was authorized to practise circuits and precautionary landings. Suspecting a brake unserviceability he delayed his takeoff. The aircraft was checked serviceable and the instructor again sent the student out as the weather was still considered fit for solo flying. By the time he was ready for takeoff the weather had deteriorated to below solo limits and dual only was ordered. Through error the student was given takeoff clearance. During a climbing turn the aircraft entered cloud where the student, through inexperience, became so confused that the aircraft crashed before he could regain control. The pilot was only slightly injured.

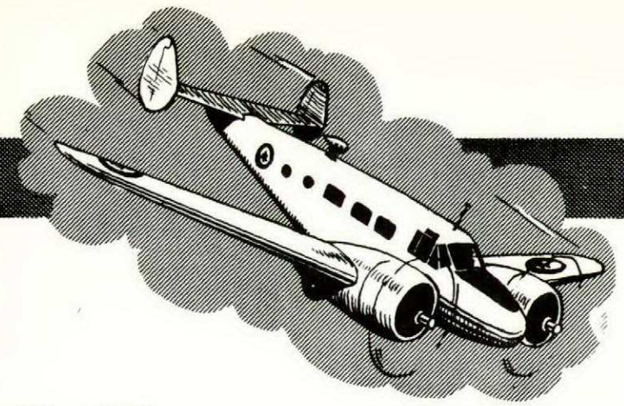
The primary cause of the accident is listed as "Briefing". Before authorizing the flight the instructor should have ascertained weather tendencies, warned the student as to the action to take in the event of weather deterioration, and advised him to remain clear of cloud. Closer supervision by the flight authorities was necessary to ensure the recall of all student solo flights and cancellation of all student solo takeoffs when weather conditions deteriorated.

"Pilot error" was also charged because the student lost control when he found himself in cloud. At his stage of training he had not received instrument training but had practised bad weather circuits so that he should have been able to remain clear of cloud.

Don't Relax Too Soon

The student accomplished a good, three point landing, and the aircraft rolled straight ahead for 150 yards before the tail came up and the propeller struck the runway. The aircraft came to a stop on its nose. Because excessive brake was not a factor in this accident, it must be assumed that the student relaxed after a successful touchdown, let the control column go forward, possibly used a little brake—and so ended up with his tail in the air. A relaxation of vigilance is also evident on the part of the instructor. Remember, the flight is not completed until the aircraft is properly parked and the engine(s) stopped.

EXPEDITOR



VFR vs IFR

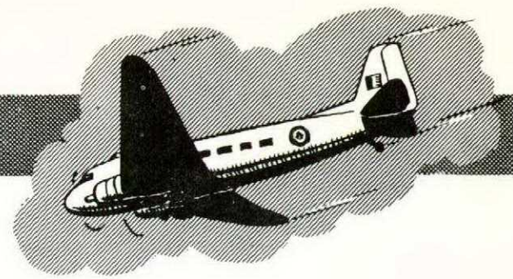
The pilot and two student navigators were authorized to do a night cross-country navigation exercise. The pilot filed IFR at an altitude of 5000 feet. Some four hours later he had completed the exercise and px-ed over a nearby beacon. He did not state his altitude but cancelled IFR and was cleared VFR to the airfield. Approximately three minutes later the Expeditor crashed ten miles from the beacon, killing all three crew members.

Investigation revealed that the aircraft struck the ground at a very shallow angle, in a level attitude, and at a high rate of speed. The forward visibility in the crash area below 3000 feet was reported by other pilots as nil because of ice crystal fog and blowing snow. The minimum safe altitude between the beacon and the field was 1800' and the height of land where the crash occurred was 800 feet. It is possible that the pilot misread his altimeter and was flying at what he thought was minimum altitude while waiting for improved visibility because the weather at base was VFR.

In view of the reported marginal weather conditions between the beacon and the airfield and the evidence indicating no technical failure, there is little doubt that the pilot, after cancelling IFR, encountered conditions of restricted visibility. Then, while attempting to maintain or re-establish VFR flight, he inadvertently flew into the ground. It appears that an emergency was not declared by the pilot to the crew as all seat harnesses were left undone and the student navigators wore no parachute harness.

This accident exemplifies the utter folly of cancelling IFR too soon in uncertain weather conditions—a deadly gamble no pilot should attempt. The subject was dealt with in our latest F.S. Memo, "Be Sure You Can Maintain VFR Before Cancelling IFR", although the pilot concerned in that incident managed to live through the experience. If you have any doubts whatsoever about the wisdom of switching over to VFR, then maintain IFR and complete the standard letdown.

DAKOTA

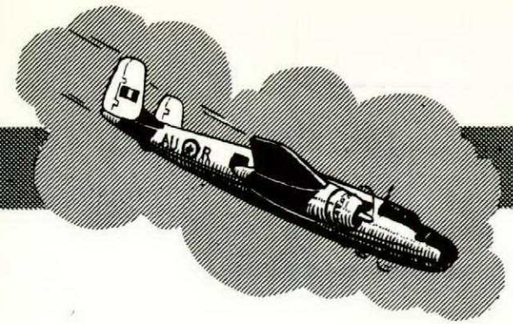


Night and a Strange Airfield

After landing on a strange airfield, the captain of a Dakota misunderstood taxi instructions given by a "B" stand operator. He taxied along an unlighted runway and approached an unmarked Harvard in the hangar area. Despite the use of brakes, the Dakota skidded on snow into the Harvard.

When landing at a strange airfield it is advisable to exercise extreme caution while taxiing. The use of landing lights will help. Furthermore, aircraft control instructions are to be issued by an FCO normally and not a "B" stand operator. The judicious use of obstruction lights and marshallers is essential at night.

MITCHELL



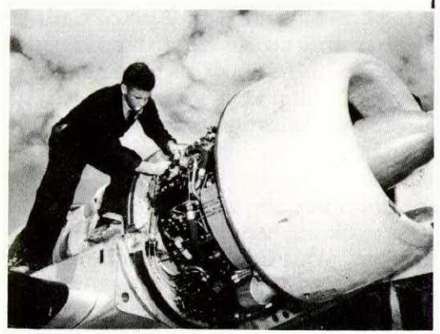
And Then There Were None

The pilot was authorized to air test a Mitchell. Approximately 15 minutes after takeoff the pilot, navigator and an aeronautical engineer were killed when their aircraft crashed on the ice of a river. Investigation revealed that the Mitchell had been flying at a very low altitude parallel to the river valley for a distance of at least seven miles. Then the pilot descended into the river valley itself.

Half a mile ahead was a ferry cable, strung across the river at a height of about 30 feet. The aircraft struck it, shearing off a portion of its port wing and port vertical stabilizer. During the subsequent investigation no evidence was found that would indicate malfunctioning of engines or flying controls.

The board of inquiry recommended that "all units be made fully aware of the serious consequences arising from violating flying regulations concerning unauthorized low flying." Many words of advice have been written about the sheer stupidity of unauthorized low flying—but still it continues. For this reason the accompanying photograph is earnestly dedicated to those of our readers who remain unconvinced by mere words.

THE SINGLE STANDARD



Most of us live under a single standard of manners and morals. We are as nice to our families as we are to the neighbors, and vice versa. We abide by the law even when we know there isn't a policeman in sight. We play the same rules on a solo round of golf as we do during a foursome. We would no more storm at a salesgirl than we would storm at our boss, although we may be tempted to do both on occasion.

In short, we have found that a pattern of decent behavior is necessary in our complex society, and that it is easier and safer to conform to a single standard than it would be to alter our conduct with every situation.

In the same way, things go best for the mechanic who operates under a single standard: the standard of true craftsmanship. He works in his particular way not because he is watched or because he is on an "important" job, but because that is the way his work should be done, that is the standard he has selected.

He is flexible, of course, and resourceful: he changes his methods and his pace as circumstances dictate. But he never changes his standard. He is always the craftsman.

MECHANICS BULLETIN
FLIGHT SAFETY FOUNDATION

priceless prose

QUOTED IN A LETTER TO THE EDITOR

.....after the latest spell of freezing rain, one of our pilots reported the braking action as, "nil, but very good in the snow off the end of the runway".

REPORTED ON A D14

.....The aircraft settled to the runway (undercarriage retracted) and the pilot expeditiously tidied up the cockpit as required by the situation.

DFS