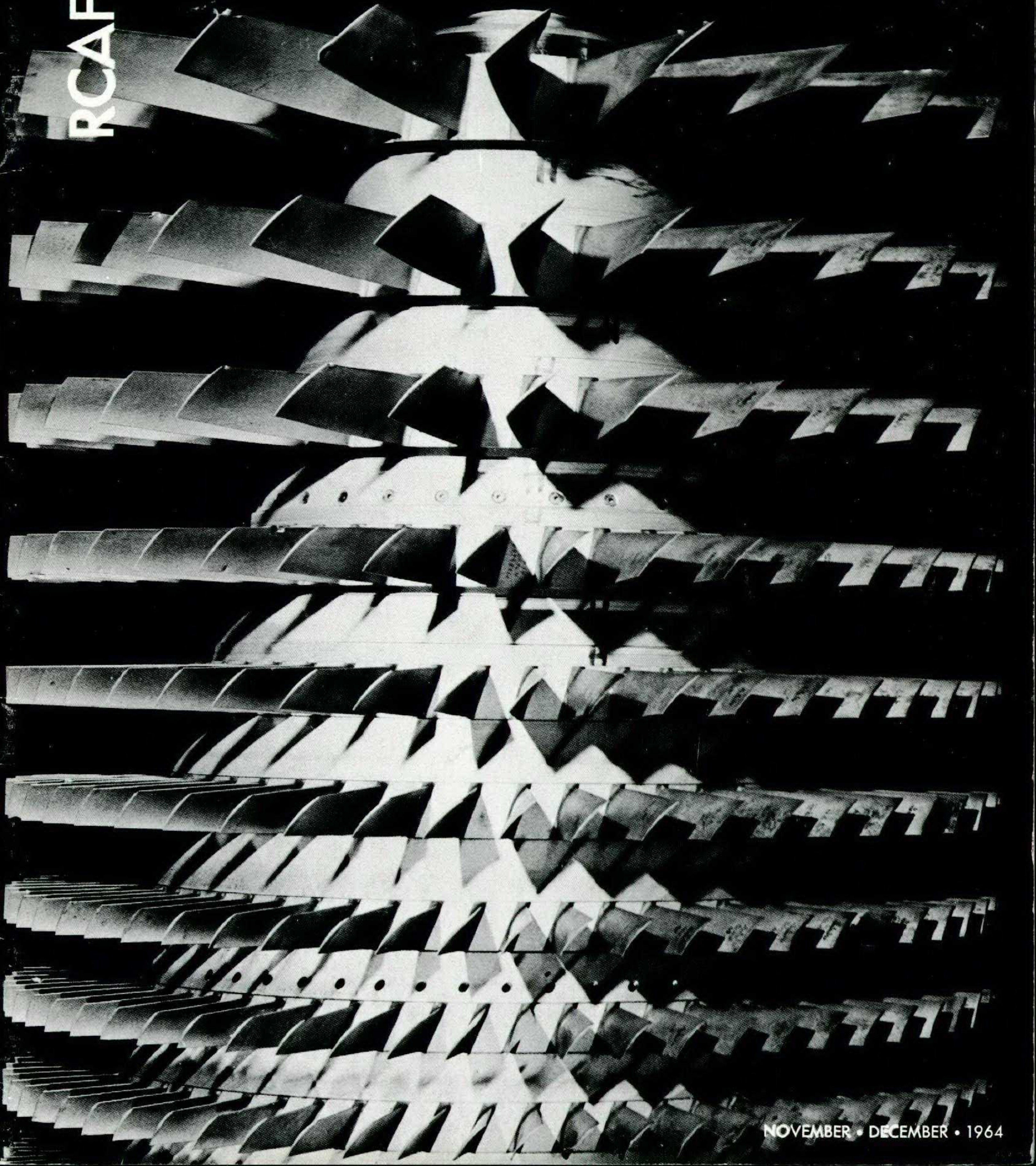
RCAF

FLIGHT COMMENT



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FLIGHT COMMENT

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Articles

Features

ROYAL CANADIAN AIR FORCE

DIRECTORATE OF FLIGHT SAFETY

HUMAN FACTORS

IN COLD WEATHER OPERATIONS

The Dakota droned monotonously through the cold winter twilight. Below, the snow-covered landscape stretched forth in a seemingly endless mass of whiteness. Occasional snowflakes from the overcast flicked against the windshield. All in all, it appeared to be a pretty routine flight. Inside the cockpit, the pilot and copilot went about their duties in a reasonably comfortable environment. However, each was beginning to show signs of strain from the long flight.

The copilot, a young flying officer getting his first real taste of cold weather operations, was speaking, "Jack, I can't raise anyone at base. I figure we're still about 30 minutes out. Do you think we can stay VFR or will we have to pull up into this stuff?"

The captain, a pilot who had made this same flight twice before, replied, "No sweat. That ceiling is still about 1000 feet and I can make out most of the features on the ground. I don't think we have anything to worry about. The map shows this area doesn't have any significant hills or mountains. We're in good shape. Besides, as you said, we should be there pretty soon".

A moment later the copilot asked nervously, "What was that? Did you feel a bump, Jack? Could we be picking up some ice?"

The pilot replied somewhat uncertainly, "Yeah, I felt it, but ice slinging off the props doesn't make a bump like that".

Seconds later the copilot exclaimed, "There it is again; what is it?"

The pilot, now also showing signs of nervousness, responded, "engine starting to run a little rough, but the RPM looks all right and all of the other instruments seem to be in order". Famous last words!

As the spray of snow settles, the badly battered Dak is revealed, resting at an awkward angle in the snow. What happened? These pilots had had their first experience with two phenomena, characteristic of the Arctic: grayout and a gross altimeter error. Because of these phenomena, they unwittingly flew their aircraft into the snow covered ground.

While the preceding anecdote is fiction, the phenomena are brutally real and have resulted in crashes like the one described. Lanc 999, although due to somewhat different circumstances is still at the bottom of a lake 165 miles NNW of Churchill. And last winter the pilot of a CF104, for unexplained reasons, flew into a snow covered lake near Cold Lake, Alta. You don't have much of a chance with a '104. How do such happenings come about? Part of the difficulty results from failure to recognize some of the human factor problems inherent in cold weather operations. However, all areas have their particular human factor problems.

When cold weather operations are mentioned, the pilot usually thinks of cold weather effects on aircraft. These frequently require special techniques of aircraft operation by the pilot. However, cold weather also has pronounced effects on the pilot's perceptual discriminations and ability to perform in the aircraft. We refer to these effects on the pilot and crew members as human factor considerations in cold weather operations.

Grayout and whiteout are two conditions associated with Arctic operation which have disruptive effects on the pilot's visual perception. Each of these conditions can lead to the pilot's complete inability to perceive accurately on the basis of contact visual cues. Whiteout and grayout result from a combination of lighting and atmospheric conditions that reduce the pilot's visual field to an indistinct or easily misinterpreted set of cues.

The grayout phenomenon occurs during periods of long twilight, particularly when the sky is overcast. Grayout does not affect perception of the horizon, as does whiteout, but rather the perception of near objects, the

HUMAN FACTORS

Cont'd

ground beneath the aircraft, and estimation of height above the ground. It is probably a more dangerous situation than whiteout, because a pilot may not even recognize that he is flying in a grayout condition.

In the anecdote, the pilots were flying in a grayout condition. They perceived their height above the ground as being several hundred feet, but the noise and vibration they heard and felt were actually the propellers of the aircraft hitting snowdrifts. Eventually, they flew into the ground and crashed.

Their altimeter indicated an altitude of over 700 feet. The pilots, however, didn't realize their altimeter was in error, on the dangerous side, by over 700 feet. They didn't know that large errors in pressure altitude, caused by cyclonic activity and below-standard temperatures, are common in the Arctic. Also, heights shown on charts are not that accurate. More importantly, from the human factors point of view, they did not realize that their senses might deceive them when they tried to crosscheck their altitude by VFR reference.

All aircrew must recognize that their sensory and perceptual mechanisms operate in accord with certain physiological and psychological laws and that our senses can play tricks on us, especially under unusual environmental conditions. Our best defence under such circumstances is to know when to expect these limitations and take appropriate action.

Cold weather operations bring about a number of other human factor problems, mainly those concerned with operations inside the cockpit. For example, more and more reliance is being placed on warning lights for aircraft system malfunctions. Occasionally cold weather can cause the warning light system to malfunction so that we receive insufficient or incorrect information. Therefore, it is a good idea for the cold weather pilot to crosscheck the engine instruments more frequently and carefully and to integrate and use all of the available information concerning the condition of the aircraft.

Many of the precise manipulative skills of the aviator, such as the positioning of switches, fuel selectors, and other controls, may depend very heavily upon feel for their correct performance. The wearing of heavy gloves or mittens may grossly reduce the feedback that normally occurs through the sense of touch. Bulky gloves and mittens may also result in inadvertent activation of switches and controls. Therefore, the cold weather pilot again is cautioned to crosscheck very carefully all of his actions when he is wearing such clothing.

A number of psychological and human factor problems are associated with cold weather operation that are not related directly to equipment operation. Obviously, cold weather can be extremely uncomfortable and can significantly decrease man's ability to function. Many people have the mistaken concept that the weather necessitates an immobile, indoor existence. As a consequence, such assignments often have a number of psychological effects on an individual's performance. The individual must be taught that he can operate effectively in a cold weather environment.

Several years ago, the US Army undertook a study entitled COLDSPOT. One of the principal goals was to determine the problems faced by the men on military operations in the Far North and to identify those problems for which human factors research might be of some help. Over 500 officers and men located at various US Army outposts in the Far North were interviewed. Several of the conclusions from these interviews are pertinent to aviation.

The effectiveness of any military unit is determined in large part by the motivation of the individuals and the morale of the group as a whole. Even with the best of training, the unit will not function effectively if motivation and morale are low.

In Task COLDSPOT, comparisons in motiv-

Some years ago when the RCAF first started using T33s for pilot training, a special study was made of several unexplained accidents where the aircraft crashed into the ground before the pilot could successfully eject. For the period under study, there were fourteen such crashes at two nearly identical training stations only 65 miles apart. An analysis of these crashes revealed two facts:

- **12 of the 14 happened during the winter although just as much flying was done during the summer.**
- **one station had nine whereas the other had only five.**

Why should nearly 90% of the crashes occur during winter and why should one station have nearly twice as many as the other? The methods and quality of instruction, the overall accident rate, weather, efficiency, etc, left nothing to choose between the two stations. They seemed equal in every respect. The only difference was that the station with nearly twice as many "out-of-control" crashes was located on the shore of a large lake that was completely frozen all winter, and five of the crashes were into the ice of that lake.

There may have been other factors, but certainly the phenomena known as "whiteout" and "grayout" must have accounted for some of the difference between the two stations and why there were far more of this type of crash during winter than during summer. Also, the long cold winter of the prairies may have contributed in other ways to account for the preponderance of winter accidents. The article "Human Factors in Cold Weather Operations" discusses some of these factors and should give pause for thought this time of year.

HUMAN FACTORS

Cont'd

ation and morale were made between officers and enlisted men of two different types of units assigned to Greenland. The groups differed in housing, food, entertainment, and working conditions. One group lived in barracks-type buildings; the other lived in canvas jamesway huts. Frozen and fresh foods were provided for one group versus frequent C-rations for the other. One group had entertainment facilities; and the other had none. One group worked normal duty hours in heated buildings; the other had long duty hours outdoors.

Contrary to common expectations, the group with good housing, food, entertainment facilities, and normal duty hours indicated a significantly lower level of individual motivation and group morale than the group operating under the more difficult conditions! Obviously, exposure to cold weather per se did not have a deleterious effect on motivation and morale. Additionally, comfortable facilities and normal working hours, in themselves, did not produce high motivation and morale.

What then produced the low morale in the one group? It appears that the major contributing factor was plain boredom, lack of change in the day-to-day activities. This group was assigned to Greenland for the sole purpose of defending the Thule area. They performed the same duties day after day, and frequently they were confined to their unit areas for relatively long periods. On the other hand, the high morale group was assigned as a support unit to various scientific research studies being conducted on or near the Greenland ice cap. Their day-to-day activities changed frequently, both in the nature and location of their work. This diversity of duties appears to have been important in producing high morale.

What should the COLDSPOT findings mean to aircrew and unit commanders? In the case of aircrew it is probably not so bad because there is a wider change in routine due to the changes in flying conditions associated with cold weather environment. But the supporting groundcrew, on the other hand, may settle into a non-changing routine and stay in camp day after day with little variation in their duties. It is with this group that motivation and morale problems are likely to crop up.

It is important that the commander of such a unit realize that a lowering of motivation and morale can easily occur as a function of the relatively isolated conditions under which the support personnel must work. It might be wise to systematically attempt to give breaks in the routine for each individual concerned. Leadership is extremely important in such a situation.

In some instances it is not possible to provide breaks in the routine. Selection and training may help minimize some of the difficulties. Unfortunately, little information, exists concerning the extent to which interpersonal conflicts and irritations are related to basic personality traits of the individuals involved and the extent to which they are common to all individuals. It is not known whether individuals can be selected who will tolerate this sort of environment more readily than others or whether individuals can be trained so their attitudes do not bring them into major conflict with their associates.

At the present time, we know a great deal more about the procedures of operating aircraft in cold weather than we do about the human factors involved. But this is a subject that should be of importance to all Canadians. In addition to the Arctic which covers so much of Canada, the winter environments of most of our Canadian stations can be pretty severe. Whiteout and grayout, of course, can occur anywhere there is snow, but during the winter, motivation and morale may also suffer and be much harder to detect.

Adapted from an article in US Army Aviation Digest written by Dr WW Prophet and Mr RE Schultz of the US Army Aviation Human Research Unit.

GOOD SHOW

LAC J SIMS

LAC J Sims AF Technician, St Hubert, was a crewman on a Dakota stopped overnight at a US base. In the afternoon, while off duty, the airman noticed a bad thunderstorm coming up, and became apprehensive about the secure tie-down of the aircraft. Without instructions from any source, he returned to the airdrome and as servicing crews were busy securing other aircraft he drove out to do the check himself.

By the time he arrived at the field the storm had broken out in full force. In knee deep water, lashing rain and three-quarter inch hail, the airman completed a secure tie-down of the Dakota. By his initiative and concern, LAC Sims probably saved the aircraft from sustaining major damage in the up to 70 miles-an-hour wind. This incident is indicative of LAC Sims's professional attitude towards his responsibilities and Flight Comment is pleased to award him a "Good Show".

F/L WD KOSTIUK

F/L WD Kostiuk, 111KU, Winnipeg, was captain of an Albatross operating out of Yellowknife, NWT. On the flight back to base, the port manifold pressure gauge did not respond to throttle movement. After consulting the flight technician, it was concluded that there was probably a leak in the manifold pressure line so that the gauge was only reading barometric pressure. For the remainder of the flight everything seemed normal, but as the throttles were retarded at touchdown, it was suddenly discovered that the port throttle had no control whatsoever over the port engine.

Quickly assessing the situation, F/L Kostiuk used a combination of port brake and starboard power to realign the aircraft. Then, using the technique of momentarily cutting the port mag switches, the aircraft was gradually brought to a stop in a straight line and shut down. "Good Show" to F/L Kostiuk whose quick thinking, airmanship, and knowledge of his aircraft certainly prevented what could have been a serious accident, especially when the infield conditions at Yellowknife are considered.

LAC GH DUCHESNE and LAC JPA GARON

LACs GH Duchesne and JPA Garon, of Stn Bagotville, were detailed to start a CF101. As the second engine was starting, the starter disintegrated and burst into flames. While LAC Garon used a CO extinguisher to fight the fire, LAC Duchesne signalled the pilot to cut the engines and installed ladders for the aircrew to escape.

As the first engine was shut down, fuel spilled to the ground from a dump valve, and it immediately ignited, spreading flames beneath the aircraft. Disregarding his own safety, LAC Duchesne took the extinguisher and fought his way under the aircraft into the engine compartment, ensuring that the fire was completely out.

The quick thinking and prompt response of these two airmen resulted in a speedy evacuation by the aircrew, and a valuable aircraft was undoubtedly saved from severe fire damage.

LAC DUCHESNE LAC GARON

FROM AIB FILES

CF101

ENGINE STARTER FAILURES

This problem has plagued the aircraft since its procurement. When the starter fails it usually winds up and disintegrates causing airframe damage and presenting a serious fire hazard. The RCAF has kept its starters modified to the latest series but the failures continue. It sounds preposterous but there just isn't a better starter available off the shelf.

The latest series of modifications, a steel containment clamp to prevent airframe damage and a fuel limiting valve to cut off fuel when air pressure falls below normal, have been ordered. The limiting valve is expected to improve the reliability, as most failures have resulted from low air pressure causing too rich a fuel-air mixture and over-temperature. The latest modifications are expected to be incorporated by Nov 64. In the meantime use compressed air starts whenever possible.

CF100

ENGINE FAILURES—THUNDERSTORM PENETRATION

Six CF100s took off in the early hours of the morning and penetrated a violent cumulonimbus (aren't they all). The results:

- 1 CF100 crashed
- crew ejected successfully
- 2 CF100s landed in emergency conditions on one engine
- 2 engines failed in flight during the mission
- 2 engines were so badly damaged it was a miracle they kept operating long enough to permit recovery
- 2 engines failed 10-1/2 and 13 hours flying time after penetrating the same CB
- 1 engine removed and inspected and would have failed in the next 5 minutes of operation
- 10 engines changed.

The ingestion of large quantities of cold water caused stator case contraction resulting in reduced stator blade tip clearances to the point of blade rub. Catastrophic damage can and does occur.

The fix for this problem is not simple and the only real and lasting one we can present here and now is: "stay out of CBs".

CF104

EMERGENCY NOZZLE CLOSURE SYSTEM MODIFICATION

Engineering Change Proposal OEL243 has received advanced approval by MRB (Mod Review Board). The ECP calls for inclusion of an emergency pressure activated dump valve in the ENCS. This will overcome the problem of nozzle lock during aerated oil conditions. Target date for the availability of hardware to units is in doubt at the moment, but the most pessimistic opinion sets the date as 1 Jan 65. We'll keep you advised.

C2 SEAT

Search for a "D" ring cable cutter to eliminate the disastrous results of a "death-grip" by the pilot after ejection is continuing. DAEng in conjunction with Canadair and a USA firm are looking for and studying commercially available hardware.

LAP BELT REVERSAL

Despite the fact that mod 55-50A-6A/12 "snuck" into the field without any advanced warning to the aircrew (did somebody say, "What's new?") the people responsible had the best interests of aircrew at heart. As you have no doubt been advised, CEPE static, airborne, and sled escape systems testing, has proven that lap belt reversal results in more rapid parachute arming, thus lowering the odds against the pilot in those "squeaker" bail out situations. Those pilots who are still sputtering in their beer over this one can take some comfort from the fact that a policy now in effect should preclude future mods getting into the field without some advance notice to operators.

TUTOR

FALSE FIRE and WARNING LIGHTS

A rash of false fire and overheat warning lights accompanied the first two months of Tutor flying by the military. The major problem has been a ceramic insert in the connectors of the fire and overheat detection cables. Any working of the cable or ordinary airframe vibration has caused progressive breakdown of the ceramic insert allowing a short circuit to occur between the core and the sheath of the detection cable. A modified cable has been produced by the manufacturer in which the guilty insert has been coated with a paste on assembly and, it is hoped, this will prevent the deterioration of this part. Tutor 26026 and subsequent aircraft are being equipped with modified cables on assembly. Other modified cables have been shipped to user units for installation in earlier aircraft.

CHIPMUNK

PROPELLER FAILURES

Metallurgical analysis by AMC Materiel Laboratories indicates that propeller and boss material meet specifications. All breaks are tension fatigue failures, originating at points of fretting near the trailing edges of the blades. National Aeronautical Establishment (NAE) account for the location of the break by considering the bending and torsion forces on the blade. The two forces cancel one another out on the leading edge but are cumulative on the trailing edge. They also consider that without the fretting to act as a point of origin the fatigue fractures will not develop. The present fix authorized by LOG D9608 20 Jun is to prevent fretting by protecting surfaces with Molytone IM anti-fretting lubricant. However, just in case this does not solve the problem, the market is being explored for another propeller. Meanwhile, watch those maximum RPMs.

YUKON

ACCIDENT DATA RECORDER—CRASH POSITION INDICATOR

Airborne ADR/CPI system trials were carried out in a Yukon during July, but came to a temporary halt due to electronic circuitry problems. It is expected that a fully serviceable system will be available by mid-September, and that subsequent air trials will be carried out in late November.

NEPTUNE

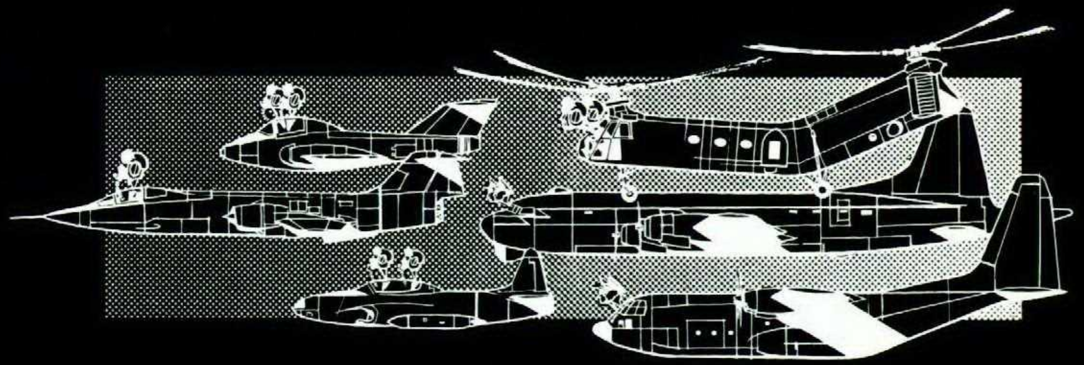
JET ENGINE THROTTLE ACTUATOR

The recurring problem of sticking jet engine throttle actuators should be rectified by the introduction of stainless steel actuator shafts. The replacement of existing faulty actuator shafts should have been completed by the end of September.

COSMOPOLITAN

FUEL METERING PROBLEMS

Since reverting to the use of non-additive fuel there have been no reported Fuel Metering Unit incidents. Does this mean that the problems were caused by the fuel additive? DFS feels we will have to wait a little longer to see.



HEADS–UP

LAC FJ COTE

A pilot on a proficiency training flight, in an Expeditor, landed at St Hubert. During the between flight inspection, LAC FJ Cote, AE Tech, of 104 KU informed the pilot that the exhaust stack on the port engine was loose. Further investigation revealed that the bracket which held the exhaust stack had broken allowing gases to escape inside the cowling and into the manifold heat plumbing. It appeared as though these gases had been escaping for some time as the inside of the cowling was covered with carbon. Although it was just about time for LAC Cote to go off shift he went to work on the aircraft and completed the job well beyond his normal working period.

LAC Cote is to be commended for his alertness in noticing this unserviceability which was not easy to detect and which possibly could have caused an engine fire in flight. He showed himself to be a very thorough and competent tradesman who willingly worked overtime to ensure the job was done right. Also, Flight Comment would like to say thanks to F/L JC Giles from Stn Trenton who took the trouble to tell us about the incident.

F/L JT PRICE

F/L JT Price of 3 Wing was on a bombing mission at the Capo Frasea range out of Decimomannu. On the second run while performing a visual pull-up at 600 kts and 3-1/2G, he heard a very loud noise and the aircraft began vibrating severely. He immediately slowed down and noticed two green lights on the main undercarriage and the red undercarriage warning light in the handle. At 250 kts he selected under carriage down and the nosewheel locked down. Number 2 in the mission checked the aircraft and noticed that hydraulic fluid was leaking from a broken line. The pressure of the number two hydraulic system fell to zero. F/L Price declared an emergency and made a straight-in approach and landed without further incident.

The CF104 undercarriage dropping in flight is a problem area that has received close technical scrutiny. Modification to the micro switches and striker arm have been prescribed and when completed, should alleviate the problem.

F/L Price is commended for knowledge of his aircraft and the emergency procedures. His actions reflect credit not only on his professional ability as a pilot, but also on the training program of his Squadron and Wing.

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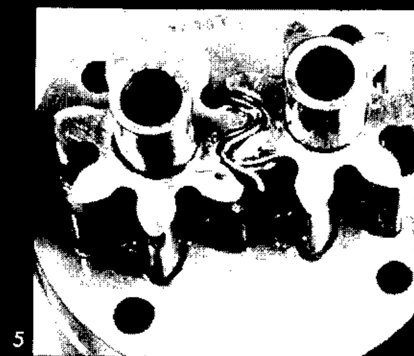
1 A small object passed through this CF104 and caused extensive damage to the compressor blades.

2 Stray washer in the oil pump caused the loss of a pilot and a CF104.

3 Bits of an airman's parka in a CF104 intake.

4 Bolt jammed the release mechanism so that the CF101 drag chute would not deploy.

5 Harvard oil pump seized during flight due to foreign object caught between gears.



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FOD

Some years ago, when the RCAF began flying jets, a new word became part of the everyday language of all who have anything to do with aircraft or airfields. The new word: "FOD".

Since that time the word has become increasingly important because each year it represents the loss of millions of dollars. The increased effort to control FOD has resulted in decreased frequency of occurrence but this is more than offset by the increased cost of each occurrence. Most Flight Safety committee members, will say "surely we are already doing everything that is humanly possible. There is nothing new to be thought of". But the fact is, regardless of how hard we have tried in the past, we will have to try even harder in the future just to hold the cost of Foreign Object Damage at its present level. Tutors, CF104s, CF101Bs and Yukons are far more expensive than their counterparts of a few years ago.

Also, we must not forget that FOD not only consists of sucking something into the intake of a jet. It can be a wrench left where it jams the controls, a washer dropped into an oil tank, or even gravel flying up and nicking a propeller blade. All of these combine to make FOD very expensive not only in dollars but also in decreased operational capability.

Stations which are flying our new trainer, the Tutor, have a special p.oblem; small objecis not worth bothering about before can cause damage to this aircraft because of the low intakes and the extreme susceptibility of the engine to FOD.

Another FOD problem that recently came to light involves the trusty old T-Bird. Since we began operating T33s, there have been only seven instances of the rotating guide vane fracturing and being sucked through the engine causing extensive damage. But of these seven, four happened since February of this year and these four, at least, were caused by FOD—by small objects that passed through the one tenth of an inch square mesh of the intake screen. These small objects, bits of gravel, etc, cause nicks on the rotating guide vanes. These nicks weaken the vane so that eventually it fails and goes through the rest of the engine. Unfortunately this may happen during a critical phase of flight causing the loss of the aircraft and crew.

In spite of all the emphasis FOD has received in the past it has got to receive more in the future.

WHO… ME?

From the US Navy we have a very refreshing account dealing with the merits of positive identification. The story appeared in APPROACH magazine and quite naturally was submitted by an anonymous donor who wished to pass on his experience to others that they might not suffer similar embarrassment.

My second hop of the day consisted of a ready CAP over the small-type carrier. The wingman and I had made about four orbits and began to get bored. Then, a photo F8U called and reported power troubles.

He said his airspeed indicator was erratic and that he was using an abnormal amount of power for his altitude of 32 thousand. I volunteered to join up and check his afterburner eyelids for possible trouble and also to check his airspeed. The photo F8U began a right-hand orbit over the ship at 32 thousand feet while I headed for a rendezvous.

His position was to be on the 180-degree Tacan radial, close in to the ship, and my wingman picked up a contact at this spot. I got a visual sighting and we closed on a photo F8U at about 30 thousand. It was in a turn, so everything matched: orbiting photo F8U near 32 thousand at the 180 degree radial near the ship - this had to be the plane in trouble. Unfortunately, it wasn't. And needless to say, I now know the merits of positive identification and I will never laugh again at stories about coincidence and unusual circumstances.

The plane I joined was another photo F8U with similar markings, but, from a different carrier. "My" F8U (as I endearingly call him from now on) was at about 200 knots, nose cocked up. After yo-yoing about his aircraft a couple of times I asked if he saw me. I heard the reply, "Yes". Here it gets confusing but interesting. Actually, as I asked my question the F8U in trouble had been intercepted by two other aircraft which were looking for a hassle. He answered "yes" because he assumed the two aircraft were myself and my wingman.

So now I eased up to the stern of My F8U to check on his afterburner. His nozzles were open and he was losing altitude. I told him to add power. The F8U in trouble replied that his altimeter indicated 32,000 but it might be a malfunction in the pitot system. But now the F8U which I was following really started dropping down and so did my heart. He was probably making an idle descent to his carrier, which by coincidence was 10 miles from our carrier.

I was convinced that I had the correct aircraft in sight and that he was in trouble. I followed him down, frantically telling him to put on more power and level off. After hearing these instructions the F8U in trouble was convinced he had terrible trouble and added power like mad.

Meanwhile, the small type carrier was listening to the conversation and things were in confusion. The flight deck was cleared for an immediate landing and Air Ops was debating whether they should order the F8U pilot to eject.

I followed My F8U below the cloud layer and he finally leveled at 600 feet. The ship asked the F8U in trouble what his position was and he replied that he was above the clouds. That did it! I frantically told My F8U, "Negative, you are below the clouds!" By now I was positive he had hypoxia and oxygen trouble and told him to hit his bailout bottle or take off his mask. My F8U and I were headed toward a carrier; he knew it was his but I thought it was my small-type roost.

Hysteria and confusion hit a new high with my next transmission. "Do you see the carrier," I asked. "Yes," the F8U in trouble answered, "It's way down below".

"Negative, It's dead ahead!" Exasperated, I closed to a beam position and told My F8U to take off his mask. The F8U in trouble said he couldn't because he had a high-altitude helmet on. I was alongside now, and looked more closely at My pilot and at his side number. The pilot I was staring at was wearing a standard helmet and the side number did not belong to an F8U off my carrier. A small flicker of recognition blossomed into a white-hot cauldron of comprehension. I sat there stunned and speechless. I didn't even have to look to know the carrier we were approaching was a large-type and not my small-type home.

I mumbled my apology, broke off, and couldn't decide whether to ditch now or just fly over the horizon into oblivion. My face was red enough to be mistaken for a fire-warning light. At this time the F8U in trouble was not sure whether he had hypoxia or not. He had his visor up and was rubbing his face and was on the verge of taking his gloves off to check his fingertips for possible blueness. The same two aircraft (still looking for a hassle) who had seen him originally, intercepted him again. The poor guy was now at 41 thousand feet, and still climbing (a result of my insisting that he was losing altitude).

When things were explained, the F8U in trouble came on down and got aboard safely. I also got aboard but my experience was not over and I had to endure the jeers of my shipmates.

See what I mean when I commented on the merits of positive identification? The boys haven't bought me a seeing-eye dog yet, but from the looks I get I expect that it is next on their agenda.

ALBATROSS RESCUE

by S/L RH JANZEN
OC 103 Rescue Unit

Rescue Unit 103 rescued one of its Albatross aircraft after it had broken through an ice fault on a ski training exercise on a lake. The way the rescue crew went about extricating Albatross 9308, is worth the telling since the lessons these men learned could be of use in another such rescue.

Pilots in two Albatross from Greenwood had been authorized to carry out snow and ice landings on a lake whose surface had been previously tested for strength. Both had made several touch and go landings before coming to a full stop. One Albatross turned to taxi back to takeoff position and suddenly broke through a fault in the ice. It came to an abrupt stop when the forward face of its main skid jammed against the edge of the ice. The nosewheel doors damaged by the ice were still clearly visible above the surface. The aircraft appeared in profile view to be in a slightly nose-up or squatting attitude.

The crew of the trapped aircraft confirmed that the hull was serviceable except for the damaged nosewheel doors and if released from its trapped position the bird could be flown back to base. Water had begun to pool on the broken ice surrounding the hull. Full engine power and JATO failed to extricate the aircraft which confirmed that the main skid was jammed against the edge of the ice. This chocking effect had to be eliminated.

As it was getting dark we postponed operations, but before retiring we took measures to prevent freezing around the aircraft. The CO, G/C RA Gordon, a mariner from way back, suggested that air be hosed under the aircraft throughout the night so that warmer water would circulate from below. This proved to be a simple and practical solution; a Cornellius air compressor did the job for two days as weather prevented rescue (not salvage) work the next day.

Uppermost in our minds was our concern to prevent hull damage. Several approaches were discussed and some tried. One was to employ salvage-type air bags to lift the aircraft clear of the hole in the ice. The bags were placed one on top of the other on a sledge under each wing, the sledges were to be pulled forward as the inflated bags began lifting the aircraft. The bags proved useless because they rolled away and could not be made to support the aircraft. We then began building platforms on the sledges so that a single air bag under each wing could be used to lift the aircraft. However, before this could be tried a genius stepped forward with a practical suggestion.

The suggestion involved use of the deadman that had already been placed under the ice

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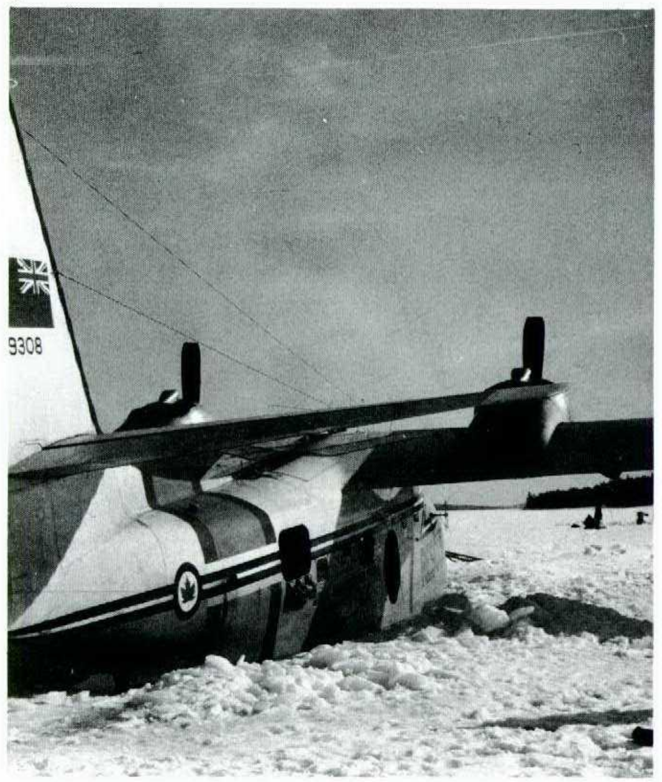

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1 The problem: how to get it out?

2 Full engine power and JATO failed to extricate the aircraft.

3 An unsuccessful attempt using air bags.

4 Clearing broken ice from around the aircraft.

5 Deadman anchor, and block and tackle plus engine power succeed in freeing the aircraft.

some 200 ft in front of the aircraft. A block and tackle was attached to this and fastened by a steel cable to the nose bollard. This rig could impart a forward pull on the aircraft. With tension on this cable the nose was lifted slightly by levering with an 8 by 8 at the nose jacking point. The nose lifted slightly and the ice was pushed underwater. The overrunning water gave the aircraft increased buoyancy. When the forward face of the main landing skid lifted clear of the ice, the aircraft slid forward about two feet on its main skid. After some more levering at the nose jacking point, a heavy beam was inserted crosswise under the main skid just forward of the nosewheel doors. Now, should the ice break again the main skid would not jam against the ice and restrict further movement.

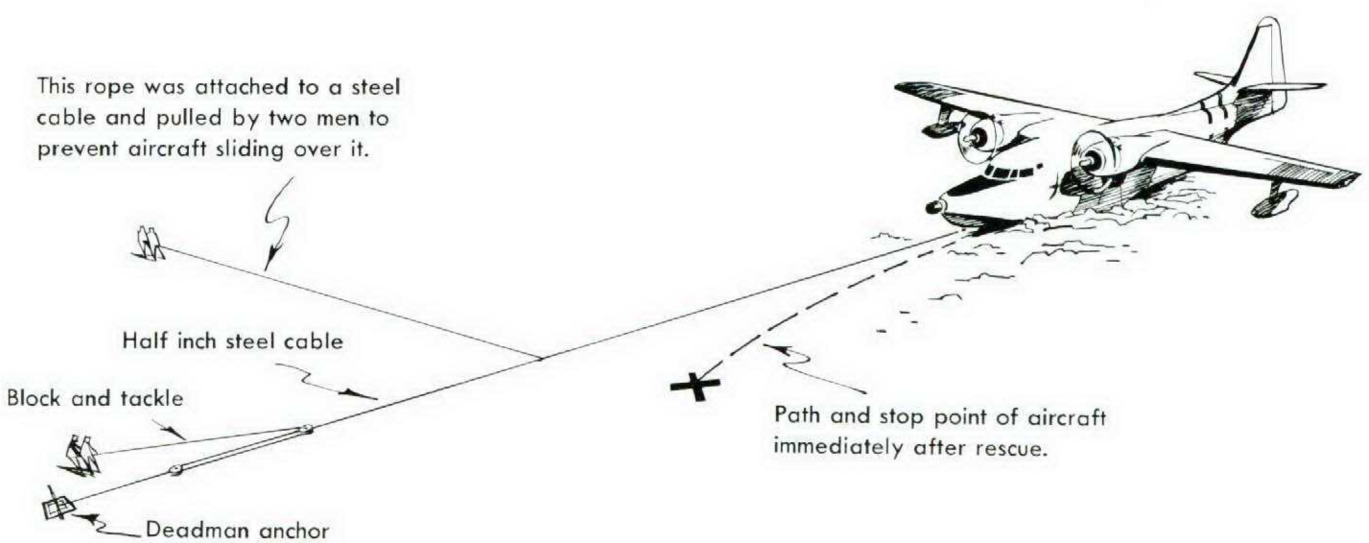
Having progressed this far, a feeling of optimism swept over the hard-working rescue crew. We removed all unnecessary equipment, radios and fuel to reduce weight to a minimum and a new grip was taken on the steel cable to get a maximum distance pull with the block and tackle. The hull was checked for water integrity. When all was ready, a final combination of engine power and block and tackle pull would be tried to complete the rescue.

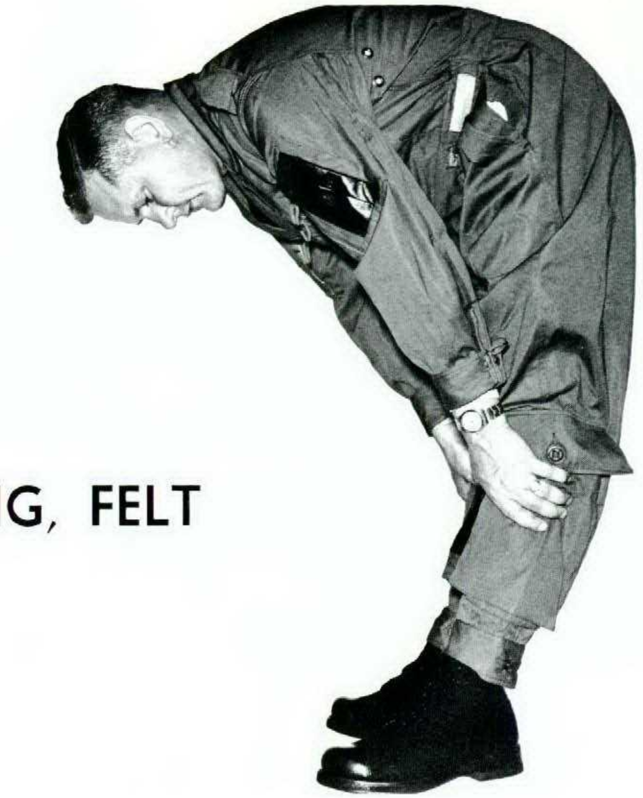
The engines were started, warmed up and checked. At a pre-arranged signal the block and tackle chaps pulled and the pilot began to open the throttles slowly. At about 35 inches of engine manifold pressure the pilot felt the aircraft start to move and opened throttles to full power. The aircraft popped out of the hole like a submerged cork, torqued to the left and was brought to a stop about 75 ft from the hole.

It had been previously decided not to test undercarriage operation before takeoff. The wheel wells were full of frozen snow and ice and since there was snow on the airfield at Greenwood an uncomplicated ski landing would be made.

After we landed we taxied onto a snow drift near the edge of the runway to make it easy to lower the undercarriage. Pathways were dug in the snowdrift to permit lowering the gear and subsequently to taxi onto the runway. Strangely enough, it took almost as long to get the aircraft onto its wheels as did it to rescue it from the lake. The damage to the nosewheel doors made them difficult to open. Portions had to be cut away to unbolt the hinges and remove them before the wheel could be lowered. The accumulation of ice and snow in the right main and nosewheel wells slowed the gear lowering process down to a snail's pace. When all three wheels were down and locked, engines were started and the Albatross was taxied off the snowdrift onto its wheels and back to the ramp.

The success of this operation can be attributed directly to a very hard working rescue crew. Our experience demonstrated that in a similar situation, rescuing the Albatross, need not be a long drawn-out process. Get yourself an ice pick, attach some good sturdy steel cable to a deadman in the ice, tie in a suitable block and tackle, do a little levering at the right time and when you're all set use engine power to get out. There's no substitute for good common sense and practical ingenuity.





BOOTS, FLYING, FELT

In the frantic search for national identity, we Canadians often lavish a disproportionate affection on things like the igloo, mukluk, Ookpik and such. Alas, while the article is genuine, the word "mukluk" is no more Eskimo than "chop suey" is Chinese. Whether or not you are culturally inclined, you should, as aircrew, be concerned about the komik (mukluk) this winter because the RCAF has now made available its best winter footgear thus far.

Those of us who overfly Arctic regions and sub-Arctic bush in winter have often debated as we climbed into our summer interim boots (and rubber galoshes if it's really cold), if this is really the intelligent thing to do. In the past, the ungainly and unsightly mukluk has made us turn to what we surely must admit is grossly inadequate footwear.

This winter there is little excuse for anyone wearing inadequate winter footwear. The RCAF has developed what the experts feel is the answer to our problems. The white cloth mukluk of former years, that is the old Eskimo type, is still the undisputed king of thermal footwear, but appearance, lack of quick donning and foot support make it less than adequate for flying purposes.

A few years ago, the interim blue-coloured "shortie" mukluk boot was introduced as an attempt to rectify some of the shortcomings of the Eskimo type. Based upon the comments and complaints of aircrew, a further improvement was introduced resulting in the present model: boots, flying, felt. About 6000 of these are now available in supply sections for issue on the usual first-come-first-served basis.

This type has been designed to satisfy the requirements of each command and will be adequate for the winter environment of most of Canada. However, for the extreme conditions of the Arctic, the mukluk is still your best bet. The new felt boot is black and built to standard boot proportions, and incorporates the latest improvements in the industry. Don't be fooled by its innocent appearance. It may not look much warmer than the old leather summer flying boot, but it really is. The substitution of felt for leather is the secret.

The Mae West has now by tradition become mandatory in certain seasons; this makes sense as it is an item of survival. Let's regard winter footwear in the same category. Unit commanders should promulgate mandatory periods for winter footwear. We have something good - let's take the intelligent approach and dispense with the bad habits of yesteryear.

PIREPS

A FORECASTER'S VIEWPOINT

by JF McIsaac
SMetO Stn Moose Jaw

Mr McIsaac has raised a very good issue. Why is it that pilots who are normally a pretty talkative group, seem so reluctant to report the weather they encounter except as it is relevant to the particular "hairy" story they happen to be telling at the bar? Mostly it seems that it just does not occur to pilots, busy with other details of flight, to report the weather unless it is very unusual. If the weather is as forecast (and sometimes it actually is!), most pilots don't report it because they figure there is no sense telling the forecaster what he already knows. But as Mr McIsaac mentions, confirmation of a forecast can be very important. In other cases too, it gets pretty difficult to describe over the RT a sky full of clouds of all kinds and shapes and you suspect that what you can see from your present position may not be common to the whole area. Therefore if you attempt to describe it, you may convey a completely erroneous picture. This suspicion is sometimes confirmed by the seeming reluctance of forecasters to put much credence in a particular PIREP.

In spite of this, if about to descend through 30,000 ft of cloud, it would be comforting to talk to a pilot that has just landed and have him describe the actual weather to you. So let's have more PIREPS.

How many times have you, as an aircraft captain, planning a flight through marginal weather, asked the forecaster for a PIREP on enroute and destination weather, only to find to your dismay that the answer was "none available"? Judging by the small number of PIREPS submitted to weather offices, could it be that the present crop of young pilots do not appreciate the importance of pilot reports, or the older, more experienced ones have forgotten the usefulness of these reports to aviation meteorology?

THE NEED FOR PIREPS

For proper analysis of surface and upper air conditions the World Meteorological Organization recommends surface stations being 75 miles or less apart and upper air stations not to exceed 155 miles. In Canada, the surface network satisfies this requirement only in some areas, since it is not feasible to establish such a network in a country of this size. Our upper air stations are very widely dispersed, being generally greater than 300 nautical miles apart. PIREPS can fill this observational gap and are thus very important.

Aviation meteorology is based on a complete and accurate description of the weather. Each met observer can see only a patch of the sky and then only the bottom of the weather. On occasion, the cloud may be obscured by snow, rain, fog, dust, etc, making his report of the cloud base often only an approximation. There is always a shortage of reliable information on cloud bases, tops and layers, so the forecaster is often required to rely on theory and experience for his assessment of the three-dimensional structure of the weather. This is why your PIREP is so important - aircrew see not only the base, but layers, and horizontal extent of cloud, experience turbulence, icing, etc. Even when there is no cloud to report, observations on turbulence, temperatures and winds aloft are always useful.

REPORT AT ONCE - NEEDLE THE FORECASTER LATER!

PIREPS may be used by Air Traffic Control personnel to warn aircrew of in-flight hazards, assigning airspace, and approving flight plans. They are of obvious value to other aircraft flying the same route, in avoiding hazardous flight conditions. When processed through the weather office, they can be used in preparing flight forecasts and refining briefings to help aircrew flight-plan with a much greater degree of safety and confidence.

A pilot report, first and foremost, benefits the pilot. Whether it improves a particular forecast, points out a flight hazard (or confirms the absence of one), in the end it is the pilot who gains. PIREPS are of most value when they are passed immediately by radio or in written form on completion of a flight. Too often, a pilot will wait until he corners the forecaster later at the mess using his PIREP (kept secret till then) to point out a poor forecast.

A WORD ON PRECISION

The forecaster who attempts to be precise beyond the capabilities of the science about such things as cloud tops and icing can lead to an unwise flight plan by the pilot. Understandably, pilots would like to have precise weather information but the crystal-ball technique by the forecaster can do more harm than good. However, the forecaster can achieve more precision by using actual observations on layers, icing, turbulence, etc.

PROP vs JET NEEDS

A word of caution: a set of weather conditions may have different effects on differing aircraft types. Since a turbulence or icing report from a slow-flying aircraft cannot be applied directly to a forecast for a high-speed aircraft, the aircraft type.altitude and true air speed are essential elements in any PIREP.

Jet aircrew are less concerned with layer structure than with the base and overall top, but their PIREPS on layer cloud can help aircraft flying at intermediate and low levels. In addition, pilot reports from all altitudes provide the Weather Service with information which may improve the understanding of atmospheric processes. The result will be beneficial to all pilots - even the ones who think they have it made.

A PIREP PLUGS THE OBSERVATIONAL GAP

Consider the case of an evening squall line. The scene opens at 2030 hours in the weather office of a western training station. The forecaster is preparing an area forecast for night cross-country flights. It is July; the major weather problem is thunderstorms. The forecast seems to be working out as planned: scattered air mass thunderstorms gradually dissipating; the weather reports indicate scattered cirrus, visibility unlimited. (No weather observing station is on the proposed route, the nearest one being some 100 miles to the west). Just prior to the briefing, a PIREP had been passed to the forecaster via ATC:

> "A squall line 60 miles west of the station orientated in a north-south line as far as the pilot could see. Aircraft diverted 25 miles north to find a thin spot, flight altitude 5000 MSL, turbulence heavy, squall line moving east, estimated speed 15 to 20 mph."

This was an excellent report. The forecaster now knows that a squall line has developed between weather observing stations. The OC, night flying, in consultation with the forecaster, cancels the cross-country flights and schedules circuit flying.

Note that the report was brief but complete; it gave the orientation of the squall line, its speed, and defined it as a line and not just a CB. In making a report, keep it brief but complete.

A VISIT PAYS OFF

It is late April at a training station; the weather is 800 ft overcast, visibility unlimited; the forecast calls for a layer structure to 30,000 ft. The flying program is a "washout" for student training, but suitable for IFR cross-countries. In the weather office at 1310 hrs, five crews prepare IFR trips below 10,000 and each crew, naturally enough, requests the tops of the lower layers - (forecast to be 5000 MSL). Some wanted cloud time, others wanted "on top", but all asked: "any PIREPS?" - the answer, "No!" They flight-planned on the forecast and promised to send back a PIREP. Two hours later, with the ceiling and visibility unchanged, several more requests had been received by the weather office for reports on the lower layer(s), but still no PIREPS. Despite a normally adequate pilot reporting program, the aircraft had not reported back because they were encountering conditions similar or approximating those forecast.

In the meantime, a controller requested information from a T33 arrival on let-down from 35,000 ft. A few minutes later the PIREP is in the weather office - tops at 32,000 ft, base at 3000 ft. This suggests solid cloud and indicates a major change in the cloud structure from that forecast. From such a structure, the forecaster would normally expect precipitation with a lowering of ceilings and visibility. This would call for an immediate amendment to the forecast, a warning to the flights, and possibly a recall of aircraft. Just before the forecaster hits the panic button, the pilot arrives in the forecast office to explain his report in detail. The pilot explains that there are numerous shallow layers above 5000 ft but he had not been able to record the heights. The information that the cloud structure was in layers was significant to the forecaster because it confirmed the forecast and indicated no amendment was necessary. If the T33 pilot had not followed his PIREP by a visit to the forecast office there is every chance that the training flights would have been cancelled or recalled on the basis of his report.

Many pilots show a complacency or lack of understanding of their in-flight reporting responsibility. This indifference can be frustrating to the forecaster attempting to gather this information. Perhaps an order in CFP 100 requiring aircrew to report all significant or hazardous weather conditions is needed. (Any views? - Ed)

PASS THAT PIREP

To obtain any real benefit from a pilot reporting program, weather information should be passed quickly to the forecaster for interpretation and used in briefing other flights:

- If on an Air Traffic Control frequency request that your PIREP be passed to the nearest forecast office;
- If on an RCAF frequency, pass the PIREP to the controller with the request that it be relayed to the Met Section; and
- Whenever possible, make it a point to visit the Met Section at your destination for debriefing by the forecaster.

DOES THE MET MAN REALLY CARE?

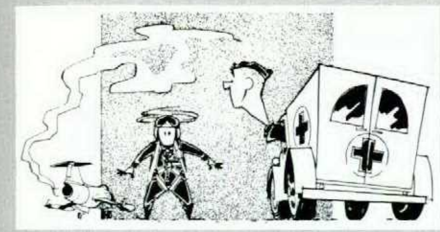
Admittedly, there are inadequacies in the Weather Service. For example, a PIREP may not get on the Met teletype circuits; being already overcrowded, they can't always handle this traffic. This should not discourage passing regular PIREPS because although not passed on they are extremely helpful to the weather office receiving them. Of all the information coming into a weather office there is nothing to equal a PIREP and forecasters place a great deal of value in these reports. You are right there in the thick of things - watching the ice form, being jolted by turbulence, dodging thunderstorms, riding a jet stream, observing the extent of cloud cover - no one is better able to assess the situation than you. Weather information is not classified so don't keep it a secret.

CHECK LIST FOR PIREPS

1 Aircraft type, altitude, true airspeed
2 Cloud—bases, tops and layers
3 Icing
4 Temperature
5 CBs
6 CAT and cloud turbulence
7 Ceiling and flight visibility on takeoff
8 Precipitation and type
9 Winds at flight level
10 Obstructions tq vision (smoke, haze, dust and fog)
11 Any unusual phenomena such as rotor cloud, funnel cloud that a pilot considers significant to flight or forecast operations.

ABOUT THE AUTHOR

JF McIsaac, Senior Met Officer at Stn Moose Jaw is a graduate in Math and Physics from the University of British Columbia. He has served as met instructor and forecaster at Trenton, Summerside, Winnipeg and 4 Wing. Mr McIsaac is familiar with the weather "up there" having flown many times in RCAF jets and piston aircraft across Canada, over the Atlantic and in Europe.



NEAR MISS

The T-Bird pilot had filed an IFR flight plan from Victoria direct Vancouver HL 500 to Moose Jaw. Clearance before takeoff from Victoria was: "cleared from Victoria to the Active Pass beacon at 2000 ft - contact Vancouver Centre after takeoff on 294.5 mcs". After takeoff, at 2000 ft, and homing the Active Pass beacon, the pilot made radio contact with Centre and was further cleared to turn to 025° and climb to 4000. Since the pilot was aware that Centre did not have radar contact he was a little dubious of the clearance. Consequently he asked if his original clearance to the Active Pass beacon was now cancelled. Centre confirmed that it was and told him to climb to 4000 ft. Passing through 3000 ft, while turning, an airliner passed about 100 yards to the left on a near collision course. The two aircraft missed each other only by luck, as neither pilot saw the other aircraft in time to take avoiding action. When the T-Bird pilot reported the near miss to Centre, they simply replied that "the airliner was VFR".

Everyone knows, of course, that an IFR clearance only provides separation from other IFR traffic. But a mid-air collision with VFR traffic is no less tragic, and in this case, if the courses had been slightly different, the lives of everyone on the airliner and T-Bird would have been lost. It would have been a moot point as to which pilot should have avoided the other.

It seems to us that Centre, who must have been aware of the presence of both aircraft, have a responsibility to pass on traffic information to the aircraft involved. Sometimes, though, Centre may not be aware of the VFR traffic and in any case this Near Miss reminds us that when flying IFR and VFR conditions it is still extremely important to keep a sharp lookout.

WINTER WISDOM

Choose your engine run-up spot with care. Last year an airplane almost came to grief because of the spot its crew chose for run-up. It was snowing and the aircraft, already checked and found free of snow, was taxied out for run-up. There was a four engine transport ahead of it, and an appreciable delay in getting an ATC clearance. Just prior to rolling the co-pilot checked the wings again for snow. There was none. On the takeoff, however, the aircraft's left wing dropped abruptly and the pilot had to climb considerably faster than normal and with a goodly amount of right aileron in order to keep the wing up. Investigation indicated the underside of the left wing was covered with snow which had been blown back by the transport holding ahead of it.

For safety's sake, don't taxi or park close behind another aircraft when it is snowing or when there is snow on the ground. Before takeoff, carefully inspect the wings, top and bottom. Remember that frost and snow can be killers, and even that thin layer of frost that can barely be seen can buy the farm for you. Don't pooh-pooh it and think it will blow off. It might not.

FLIGHT SAFETY FOUNDATION

BARBITUATES and ALCOHOL

Research by personnel of the Aerospace Medical Division at Brooks AFB. Texas, on ordinary barbituates used to aid in sleep, suggests that these barbituates combined with an ordinary intoxicating amount of liquor leaves behind a lethal dose of nerve-depressant alcohol. This research seems to explain the mechanism of cases in which a man who has had a few drinks and a moderate dose of barbituates before going to bed is found seriously ill or dead in the morning. Up to now, doctors have had a hard time explaining what the trouble was. In cases where the victim died, coroners have had difficulty deciding between accident and suicide.

Play it safe! DON'T mix barbituates and alcohol!

AEROSPACE MAINTENANCE

ARRIVALS and DEPARTURES

F86, TOO TIGHT ON FINAL The student pilot had returned to base from a low-level navigation exercise. The student, who was leading a two-plane section pitched for landing. Witnesses stated that the aircraft flew a normal circuit but too shallow a turn on base leg put him in a position requiring a very tight turn onto final. On final turn, the pilot attempted to line the aircraft on the runway-heading using about 70° bank in a very nose-down attitude. Finally, he realized too late that the tightness of the turn and the nose attitude had put him too close to the ground. He tried to recover, but the aircraft stalled and crashed with wings level and a nose-high attitude. The pilot was killed.

Have you ever come around final turn saying to yourself "this isn't just the way I'd like it but I think I can hack it. Don't want the other fellows to think I had to overshoot"? Probably in your case you did hack it, but isn't it with a false sense of pride? If the final turn doesn't look good—go around. This is not the first fatal caused by a pilot attempting to salvage a bad approach.

EXPEDITOR — CROSSWIND The wind was varying from 10° to 30° off runway heading with occasional gusts to 37 mph—just within the aircraft's crosswind limits. The Expeditor touched down in what appeared to be a good crosswind landing and was rolling straight on three wheels, rudder against the wind. Suddenly a gust lifted the starboard wing; the pilot applied full power and aileron to level the wings The aircraft became airborne. Then just as suddenly, the gust died. The aircraft sank and the port wingtip hit the runway, damaging both the wingtip and aileron. However, the aircraft remained airborne and the pilot elected to continue the overshoot. He landed without further incident.

Although it is well known that the Expeditor can be tricky in a crosswind, there was no alternative but to assess this accident as pilot error. A more serious aspect of the error was the pilot's decision for a "go around" not knowing to what extent his aircraft had been damaged. With a 7300 ft runway he should have made every effort to keep it on the ground.

T33, FLAMEOUT The student pilot was on a short night navigation exercise. His position report over the last turning point was about on time and his ETA for base appeared correct. However, he shortly afterwards revised his ETA by adding 11 minutes to this leg which should have taken only 13 minutes! An ADF bearing was taken at that time and showed him reasonably on track; a heading check confirmed approximately the correct heading. Finally, 14 minutes late, he reported overhead (this was confirmed by a bearing check from the tower) and then requested an overhead procedure. As he was already holding up traffic behind him this was refused and he was immediately cleared for an ADF/GCA with instruction to turn to the outbound heading of 185°. The back bearing checked satisfactorily and the pilot switched to GCA. GCA radar contact could not be established and it was evident that the aircraft's IFF/SIF was unserviceable. GCA advised the pilot to home the beacon with his radio compass. Shortly afterwards the tower got a bearing that indicated the pilot should be steering 340°, and since he said he was steering 260° he was instructed to turn right to 340°. Actually the aircraft compass was reading about 80° left so that in effect this last instruction put the aircraft on a track of approximately 060°.

Neither the pilot nor the controller was aware of the unserviceable compass but frequent UHF bearings indicated that the aircraft was getting too far north in spite of continual corrections to the left. Finally the controller asked the aircraft's fuel state and "nearly fell off his chair" when the pilot replied 52 gallons! The pilot was instructed to climb immediately to 10,000 ft and since he reported he was over water, turn to 270°. As it was still not realized that the compass was unserviceable, this turned the aircraft almost directly away from the station. Finally GCA got a skin paint on the proper bearing and a left turn established positive radar contact at about 30 miles north. GCA began a "no compass" approach. At 25 miles the pilot said he had the station in sight and was descending. He was advised to stay at 10,000 ft but this instruction was ignored. Finally he reported level at 4000 ft and that he had the station in sight but could not pick out the runway (it is possible he mistook the lights of a small town to be the station). His range was 22 miles with 16 gallons remaining. At 17 miles he advised he had 8 gallons left and was observed to start a right turn. Shortly thereafter he reported "flamed out". The OC night flying instructed him to pull up and bail out at 180 to 200 knots. No further transmission was heard. The bail out was not successful.

Why did this unnecessary accident happen? The main culprit seems to be the unserviceable aircraft compass but on a clear night a student at this stage of his training should have easily been able to cope with that. But along with the unserviceable compass was the unserviceable IFF/SIF and although it could not be positively verified, it is suspected that the low level fuel warning light also was not working. Any one of these unserviceabilties should have been "no sweat" but together they proved lethal. It is disturbing to note that the IFF/SIF had twice before been reported unserviceable but was signed out with that familiar phrase "ground checked serviceable". Also the low level fuel light had not worked properly on a previous flight. This time the L14 said "light adjusted and ground checked serviceable". Thus the student had difficulty navigating because of his compass, GCA could not identify him until too late because of the IFF/SIF, and finally the student did not declare an emergency soon enough, possibly because the low fuel level warning failed to warn him of his low fuel state.

But most distressing, his ejection was not successful because his seat pack fouled his parachute. The seat pack connection to the parachute had not been done up. Thus, on ejection the seat pack was connected to the pilot only by the dinghy lanyard and emergency oxygen hose. The parachute canopy came out satisfactorily but the dinghy lanyard wound around the shroud lines so that the canopy could not deploy. Whether or not the pilot had purposely not done up his seat pack is not known, but it is suspected that he may have intentionally not done it up because of an erroneous rumour that the seat pack, if connected, would ride up over the parachute and prevent the canopy from deploying. The experts contend that this could not possibly happen, and furthermore, this unfortunate accident proves it can be lethal if the seat pack is not properly connected. The importance of using safety equipment exactly as instructed cannot be over-emphasized.

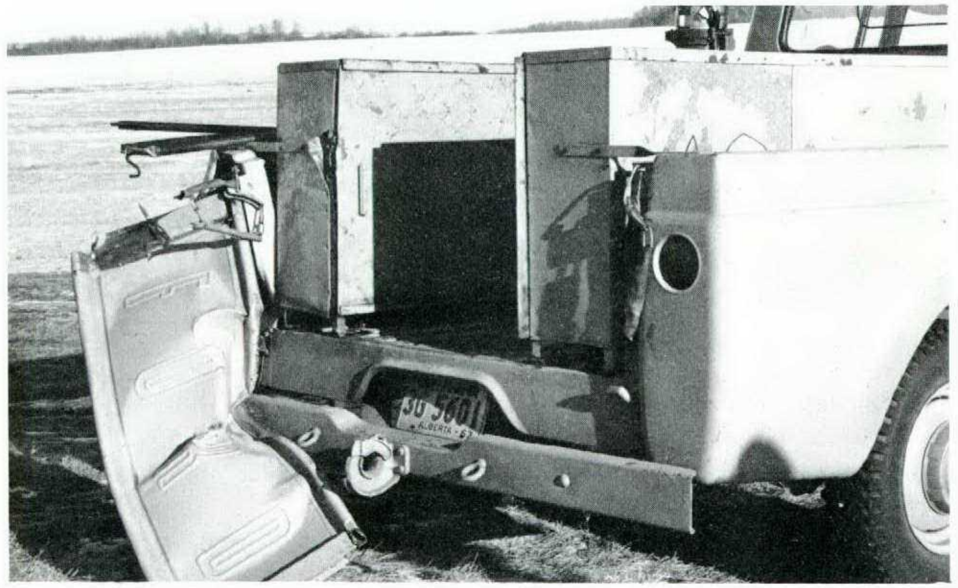
HARVARD, ORDERS DISREGARDED A Harvard instructor was on a routine instrument flight with his student "under the bag" in the back seat. The sequences were done on a predominantly westerly heading so that on their completion the aircraft was in the vicinity of Rocky Mountain House, outside the flying training area.

The instructor then took control and apparently decided he would impress his student with some extremely low level flying down the North Saskatchewan River on the way back to base. The student was probably impressed alright—at least it was low enough to hit some wires across the river. The damage, however, was slight and the aircraft was able to return to base normally.

This flagrant disobedience of flying orders is all the more deplorable when done in the presence of a student. On the other hand this student undoubtedly now realizes that unauthorized low flying is not only dangerous, it is certainly not conducive to a successful career in the RCAF.

HARVARD—AIRCRAFT vs TRUCK Just prior to the pre-takeoff run-up the student pilot had waved a pick-up truck to proceed past the run-up area on its way out to the runway. The run-up completed, the pilot then taxied to await takeoff clearance. Another Harvard was on the taxiway awaiting takeoff so the student taxied to a position beside the waiting Harvard. The propeller then struck the rear of the pick-up truck damaging the propeller and truck.

The student twice refers to his use of "S" turns in taxiing—"S" turns aren't much good in themselves, unless they're accompanied by a sharp lookout.



CF101B, GRAYOUT? The pilot in a CF101B joined the circuit to practise a full stop simulated single engine approach. He flew the circuit and approach faultlessly in accordance with all the instructions listed in the dash one. Speeds, power settings, use of flap, etc, were all perfect—but he made one mistake: he touched down about 75 ft short of the runway in 18 inches of granulated snow. On impact the port main landing gear sheared off. The aircraft skipped onto the runway and touched down about 1000 ft beyond the first impact point. The pilot attempted to keep straight as long as possible but the aircraft gradually settled down onto its port wing and veered off the left side of the runway. When it left the side of the runway it sheared off its nose gear. The pilot said he did not make a hard landing and the first clue that he had damaged the aircraft was when the port wing began to drop.

The OC had this to say on the D14:—"In view of the pilot's statement and the 18 inches of snow at the initial touchdown point, I consider that this heavy landing and subsequent damage was more the result of the drag caused by the snow than the aircraft dropping out of the sky. Had the pilot been over the runway rather than over the snow when he flared, this would have been a perfectly normal landing."

Although 18 inches of snow at 175 knots undoubtedly would produce considerable drag, the point is why was the aircraft less than 18 inches high 75 feet back? It's a sure bet that the pilot wasn't that low intentionally—he just didn't realize it.

This case has two aspects neither of which were mentioned in the accident report. The first is grayout, and the second is why was the snow 18 inches deep right up to the threshold of the runway? The case was closed simply that the pilot had made an error in judgment. While this of course cannot be denied, the accident serves to remind us how snow can play tricks on one's depth perception (see article page 1) and also the importance of keeping the undershoot areas reasonably clear of snow.

WHY THE SMELL?

Within the past few months, IAM has had reports from two field units stating that certain Type A-13A Oxygen Masks were found to have an offensive odour, which in one case resulted in the user becoming nauseated.

These units have been advised that the MSA Oxygen Mask Assembly will often have a strong odour when first unpacked. This is particularly noticeable on a newly manufactured mask, due to oil of wintergreen which is included in order to disguise the rather unpleasant odour of unseasoned rubber. Once the assembly is washed and allowed to air several days, only enough of the oil of wintergreen remains to create a pleasant odour within the mask assembly.

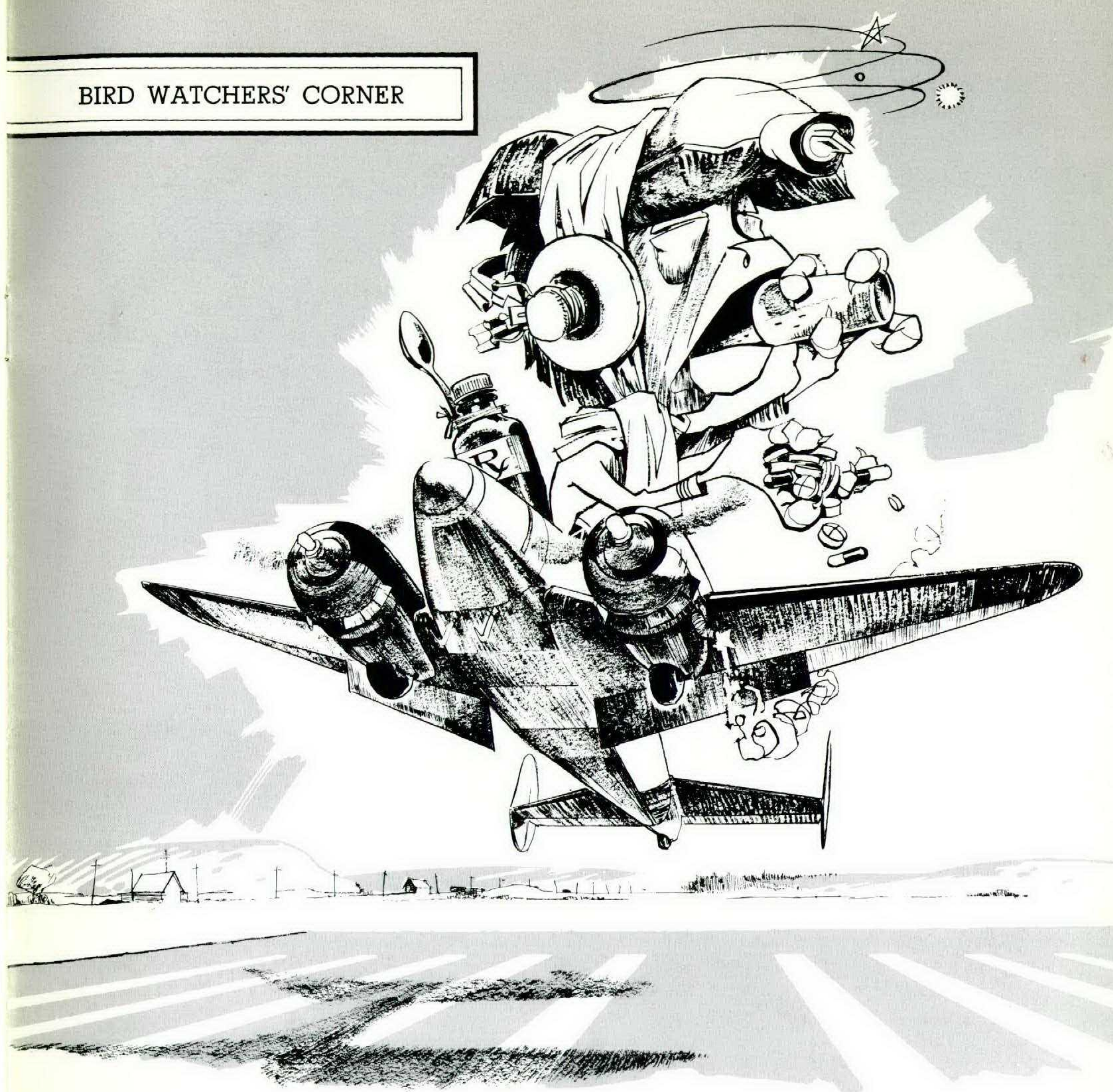
EJECTIONEERING

Recommended for required reading is a recently issued booklet entitled "Ejectioneering". There should be a copy available for all aircrew flying aircraft equipped with ejection seats. Be sure you get one. We hope you will read it many times and clear up with your FSO or safety equipment section, by discussion or otherwise any variance you might have on the subject. This is an area where being an independent thinker will get you nowhere, the odds are against you.

Extract from a 3AFS Gimli Crash Message: "Aircraft struck small hawk joining circuit".

Although Gimli still has a bird problem, apparently they have at least been able to get hawks to conform to the traffic pattern.

BIRD WATCHERS' CORNER



HYPED-UP HOP-HEADED HYPOCHONDRIAC

This decrepit bird is constantly bedevilled by a wide assortment of ills and ailments, both real and imaginary, which he attempts to alleviate by gorging himself on a diet of self-prescribed pills, potions, drugs, and lotions.

As a result of this unusual fare, he may be readily recognized by his erratic and unusual behaviour in flight.

The natural habitat of this bird is generally found in close proximity to pharmacies, drugstores, and medical dispensaries.

CALL: IFEELLOUSY IFEELLOUSY - THISOTTAFIXMEUP THISOTTAFIXMEUP

Contributed by: F/L JJB MacDonald

Roger Duhamel, F.R.S.C., Queen's Printer and Controller of Stationery, Ottawa, 1964

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