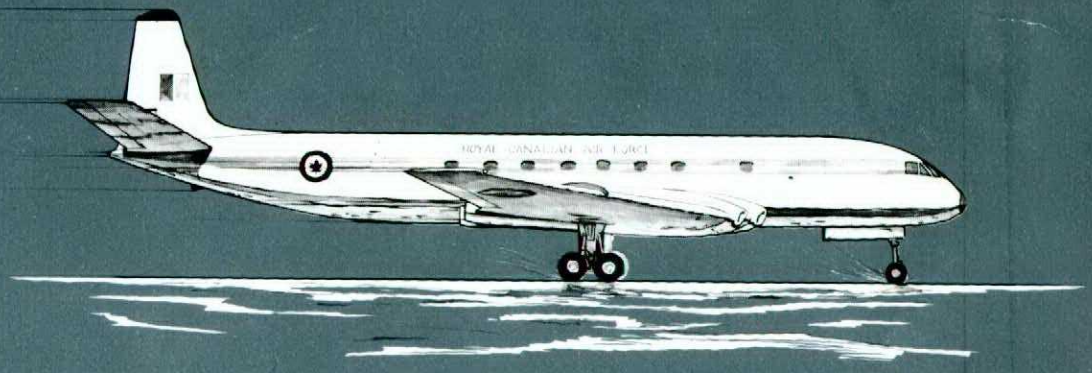
FLIGHT COMMENT

RCAF



MARCH • APRIL • 1962

FLIGHT COMMENT

March • April • 1962

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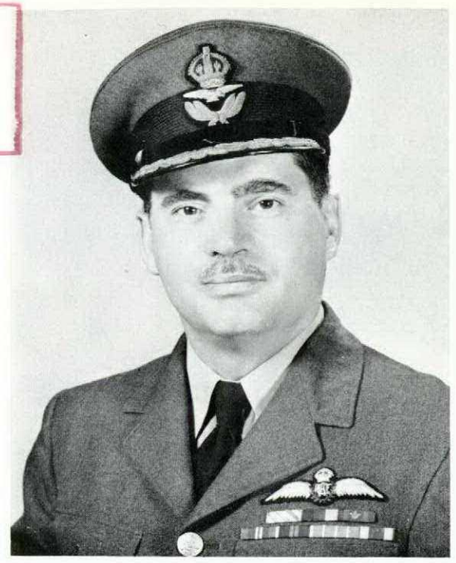
DIRECTORATE OF FLIGHT SAFETY



Amusing clichés about the "paper war" are commonplace, and everyone agrees with the wartime observation by Winston Churchill that we all have too much to read. We who fly are no exception, and therein lies a hazard which we must strive to remove.

It was decided a short while ago to increase our efforts to eliminate foreign object damage. Now, with the imminent formation of CF104 and CF101B squadrons, the problem is even more acute. A search for material on this subject revealed an excellently-written pamphlet produced and distributed by DFS three years earlier. The majority of the commanders approached had not heard of this report; of those who had, few had more than the dimmest recollection of the contents. All is not lost; the pamphlet has been dusted and redistributed, and follow-up action has been taken. This serves, however, to illustrate the manner in which valuable information can be buried to the detriment of our flight safety program.

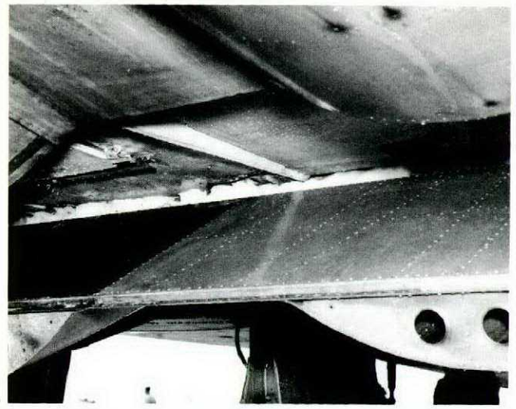
Another example is the ever-increasing number of flying orders, pilot instructions, engineering orders, etc. Amendments are piled on amendments until the aircrew or groundcrew who really needs to know the facts (and the regulations which can hang him) can hardly be blamed for missing the salient point.

What can be done about it? One suggestion is a regular clean-up in which all unnecessary material is discarded. Be like our wise acquaintance who takes everything out of his desk from time to time, and puts back only that which he really needs.

Another way to reduce the amount of paper—AOIs are a good example—is the development of an effective amending system to keep the volume down to manageable size.

There are, indeed, many ways to fight the paper war. But it must be fought, so the message can be put across to, and retained by, the men who need it—the pilot in the cockpit and the man with the wrench.

A. B. SEARLE, GROUP CAPTAIN
DIRECTOR OF FLIGHT SAFETY



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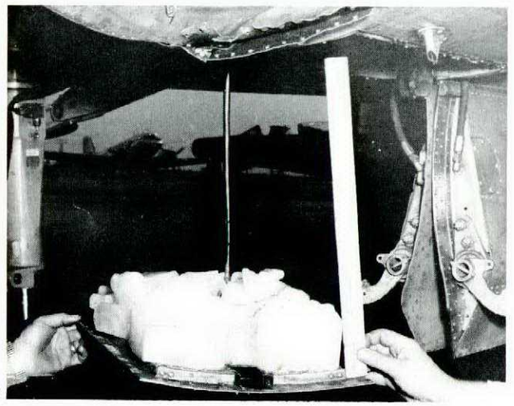

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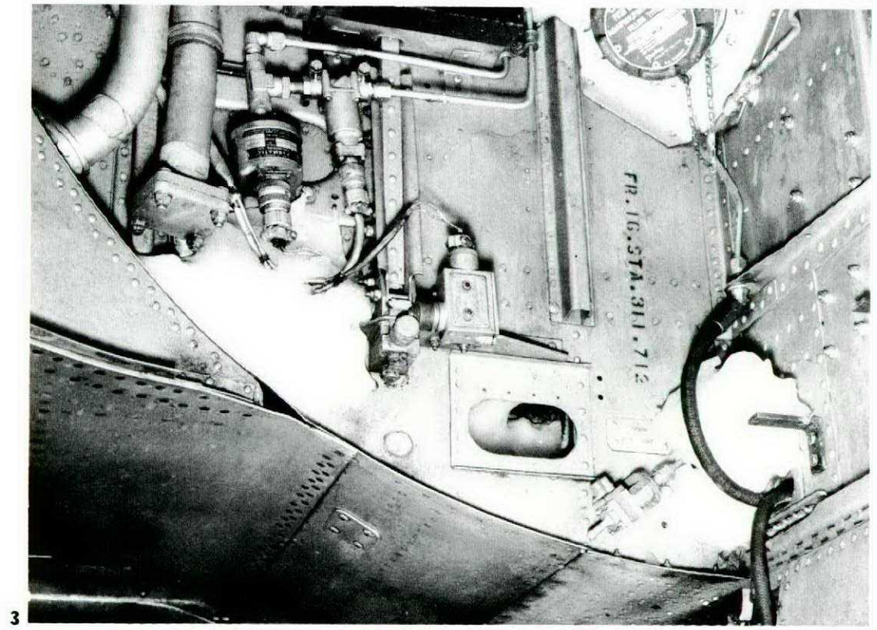
The photos on this page show what happened to a CF100 which took off from a northern airport with two inches of slush on the runway; temperature was 33°F. The pilot selected 25° of flap, and used more-than-usual back pressure on the control column, but still needed 5000 ft. of runway to become airborne. (On a dry runway and with similar temperature and wind conditions, 2600 ft. would have been sufficient.) During climb-out and throughout the flight, the pilot found that the aileron controls were stiff.

The photos were taken 2½ hrs. after landing; ground temperature when the aircraft landed was about 50°F, but dropping. No. 1 shows the reason for the stiff aileron control—the cable channel was completely filled with ice.

No. 2 shows damage to the fuselage caused by the flap closing on frozen slush. The block of ice was removed and was estimated to weigh 25 lbs. The flaps themselves were badly damaged. No. 3 shows the starboard wheel well. Note the ice that entered the interior of the centre section through the inspection holes.



3

SLUSH
HOW MUCH IS TOO MUCH?

by S/L T. M. Webster
DFS/AIB2-3

Thawing snow, or slush as it is commonly called, used to be regarded only as a nuisance and sometimes a hazard during landing operations. Today, however, slush on the runway is a real takeoff menace for high-performance aircraft, particularly the jet transport. In fact, the old ATC status symbol, the North Star, has had its problems with slush on takeoff; and just recently, a CF100 on an operational mission experienced control abnormalities and sustained damage from a takeoff in slush.

The lack of information on the effects of slush on takeoff performance is not easily explained, particularly in view of the conditions experienced each spring and fall on Canadian airports. Detailed information is not available as yet in any publications; most "dash-ones" state only that "Slush will increase your takeoff distance."

Various studies and investigations into the problem, including measurements of coefficients of friction, effects of tire tread design and tire wear, retardation force of slush, and effect of slush depth on takeoff distance (see Figures 1 and 2, from NASA), have indicated the need for extreme caution, particularly on takeoff.

Experience and tests show that aircraft with tricycle undercarriages have the most difficulty in slush. The nosewheel tends to dig in, and, at times, to pile the slush in front. This, of course, increases the slush drag—in some aircraft to values exceeding the engine thrust—and prevents the aircraft from reaching takeoff speed (see Figure 1). Further, the moment created by this drag, far below the thrust line, makes it difficult to lift the nosewheel; in fact, it is sometimes impossible.

One example occurred at Vancouver airport in 1953, when a TCA North Star attempted to take off in four to six inches of slush. The aircraft accelerated to a maximum of 104 kts; the pilot could not lift the nosewheel; the power was cut. The aircraft came to a stop off the end of the runway.

The National Research Council calculated that to take off, the aircraft would have to

FIG. 1 EFFECT OF SLUSH DEPTH ON TAKE-OFF DISTANCE
4-Engine Jet Transport
13,000 lbs Thrust/Engine; 210,000 lbs gross wt

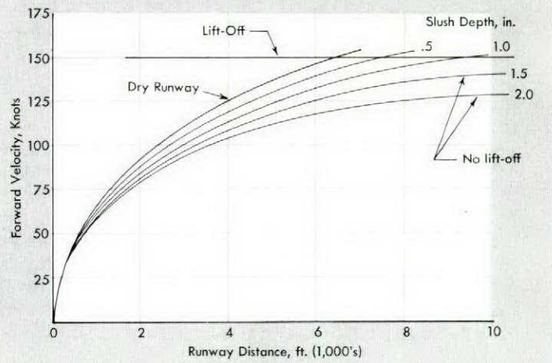
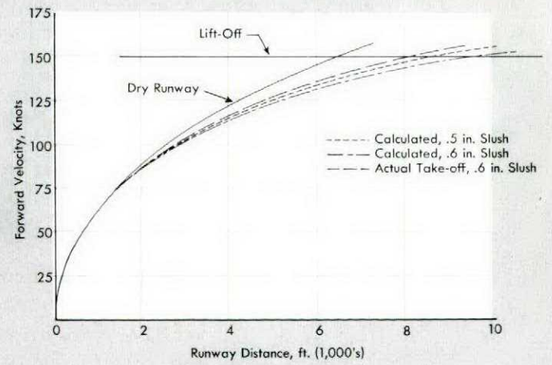


FIG. 2 CALCULATED AND ACTUAL TAKE-OFF DISTANCE
4-Engine Jet Transport
13,000 lbs Thrust/Engine; 210,000 lbs gross wt



remove 25,000 lbs. of slush per second. Under these conditions, the elevators would have required about 6° more travel to break the nosewheel free. Further calculations showed 2.4 inches of slush to be critical with regard to temperature and other conditions.

Again, a dangerous situation is created if the nosewheel breaks free of the slush and creates a high-nose attitude at a critical airspeed. The Boeing aircraft company carried out slush tests on its 707 transport; at all-up weight and no wind, 0.6 inches of slush was maximum. With weight reduced to 250,000 lbs., up to 1.5 inches could be negotiated at sea level. Critical factors were thrust, and the elevator forces required to lift the nosewheel.

According to an Air Ministry information circular, it is also possible to lose thrust because of slush ingestion in the air intakes (specifically, on the Comet). "While this may not cause damage to the engine," the circular says, "It has caused a loss of thrust by its upset of combustion."

A similar incident occurred in a CF100 in 1954. The aircraft was taking off in formation, and entered a large pool of slush and water on the runway. The pool was later found to be 2-1/2 inches deep where the nosewheel entered the pool at an estimated speed of 40 to 50 kts. It sprayed water up into the engine intakes in sufficient quantity to flame out both engines.

For the past two years, civilian operators of jet transports have adhered to a self-imposed restriction of "No takeoff if there's more than half-an-inch of slush-cover on the runway." When one operator was asked if his company could accept a one-inch slush-cover maximum instead of the present half-inch, he said no; other-than-performance damage was involved, and his company would maintain the half-inch limit. The "other damage" he referred to is possible damage to the underside of the fuselage, baggage doors, wheel wells, brakes, flaps, etc., from slush impingement.

Tests have been conducted on the impingement forces by slush-spray against the structural strength of the airframe. These tests revealed that the spray added further drag to, but did not damage, the airframe, but whether there is damage or not depends a great deal on the aircraft in question. The accompanying photographs show how slush-spray can pack into and around wheel wells, flap openings, and control channels, resulting in control difficulties and flap damage.

Apropos of all these tests, the Federal Aviation Agency is using a Convair 880 to measure the effect of slush on takeoff. The plan is to furnish data for an agency ruling to determine a Go/No-Go formula.

The National Research Council is also busy on the problem with experimental models, and we expect that CEPE will also be asked to help determine an RCAF policy. All the information available today is for jet-powered transport aircraft, where the problems are nosewheel lift and increased takeoff distance. Applying this information to RCAF aircraft in general is difficult, but until a rule is in effect we can conclude that:

(a) High-performance jet aircraft with tricycle undercarriages are much more susceptible to slush than slower piston aircraft, because of increased "slush drag." If you are captain of (for example) a Yukon or a CF101B next in line for takeoff, and you see (say) an Expeditor or a Harvard taking off safely on a slush-covered runway, don't assume that you'll make it. "Slush drag" varies directly with slush depth, and with the square of the velocity of the aircraft. With greater takeoff thrust and velocity, it may not become airborne at all, depending upon the depth of the slush. Even slush depths of one inch or less can make takeoff hazardous! The CF101B and the CF104 could both be very susceptible to slush.

(b) As slush depths increase, the aircraft's net acceleration is reduced, with correspondingly larger takeoff runs required. If a jet aircraft is to take off in a more than one inch of slush, the takeoff run could be doubled.

(c) Pilots should taxi slowly on slush and leave more room to stop the aircraft.

(d) If takeoff from a slush-covered runway is essential, the nosewheel should be lifted as soon as possible.

(e) After takeoff, pilots should, if practicable, operate brakes and cycle gear several times.

This scanty information does show that any operation in slush is dangerous, especially for jet aircraft. The greatest danger to RCAF types is that slush will freeze in the wheel and flap wells, and control cable channels, and cause serious damage and control difficulties. The possibility of damage to aircraft surfaces under spray impingement will limit the slush depth permissible for takeoff, even if the aircraft has the capability for takeoff in greater depths.

Pilot action to minimize the danger must consist in avoiding the cause. Flying Control and the Heavy Equipment Section are responsible for runway clearance. At most flying stations they are always on the ball; but if, for some reason, they cannot keep the runways clear of slush, the field should be declared unserviceable, and cleared prior to flying. This is one area in which co-operation between Flying Control, Operation, and MSE really pays dividends. An understanding of priorities should be reached early in the season; don't depend on nature to do your slush removal.

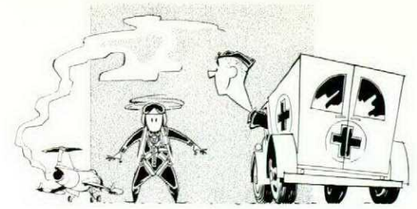
One conclusion is clear: Until we have more specific information on the effects of slush on takeoff performance, pilots won't be able to determine the capabilities of their aircraft. Don't take chances, then. Avoid takeoffs in slush; if this is not possible—if, for instance, there's a mandatory scramble—one-half inch should be the limit. In deciding for or against takeoffs from slush-covered runways, these precautions concerning the loss of performance, and aircraft damage, must be kept in mind.

Of course, too much "slush" at the bar can be dangerous as well! —but that's another story.

S/L "Tommy" Webster joined the RCAF in 1940 as an Equipment Assistant. In 1942 he re-mustered to aircrew, trained as a pilot, and served as a flying instructor, concluding his Training Command tour at CFS. He went overseas in 1945, but returned the same year to join the Tiger Force training for the war in the Pacific.

Webster was later Chief Instructor at the School of Flying Control at Grand Bend, Ontario, and was instrumental in preparing the only flying-control reference book at the time. He completed a tour on CF100s at Bagotville in 1956, and was then COpsO at Stn St Hubert, where he helped sort out the difficult control problems in the Montreal area.

Last year, S/L Webster was transferred to Stn Stoney Mountain as CO. He is now at DFS/AIB where he is employed as an Inspector of Accidents.



NEAR MISS

DISTRACTED

An experienced pilot had been through a number of radio failures during his trip in a C45. His aircraft was signed out serviceable; he had taxied to the end of the runway, and had completed his checks, when the radio reception became garbled again. What happened next is related below in his own words.

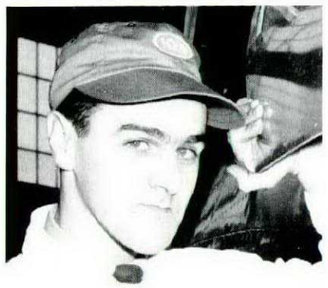
"While taxiing back to dispersal the radio was switched to ground control, and, to my surprise, reception on this frequency was good. I then decided to return to the takeoff point, where takeoff clearance was obtained. At 150 ft., the port engine began to splutter and surge. The carburetor heat was placed immediately in the Full Hot position, because I suspected carburetor ice. This was confirmed, because within 30 seconds, normal power returned.

"I had suspected clear, moist air conditions, and it had been my intention to set the carburetor heat prior to takeoff. Because of the many radio malfunctions throughout the trip (supposedly rectified each time), annoyance, with resulting frustration, blurred my thought, and I forgot my original intention to use carburetor heat on takeoff.

"This could well have caused an accident, probably attributable to aircrew error. Fortunately, it was only a Near Miss. Annoyance caused by the malfunctioning radio was well-founded; radio contact was again lost in flight, and regained on an intermittent basis only, about four minutes west of my destination."

The Command FSO said that: "This is an excellent example of how emotional turmoil caused by a series of annoyances and frustrations could result in an accident. In this instance, experience and training paid off. The captain, an experienced instrument check-pilot, interpreted the symptoms quickly and correctly, and applied immediate and proper measures."

This sort of frustrating situation can upset many pilots. Don't let it happen to you.



LAC J. E. SURETTE

During a between-flight inspection of a T-bird, LAC Surette, while using a flashlight to view the engine aft section through the tail pipe, noticed what appeared to be a small corner missing from a stator blade. To get a closer look he crawled up the tail pipe and found that one stator blade had been broken and several turbine blades were bent. He reported these findings to the servicing crew NCO; the engine was removed for closer inspection.

LAC Surette had scanned the September—October 1961 issue of Flight Comment, in which two similar occurrences were reported. By the conscientious performance of his duties and in the retention and application of what he had read and digested, LAC Surette discovered a malfunction which, if neglected, could have resulted in a serious accident. LAC Surette is most deserving of a Good Show, and we at Flight Comment are tempted to pat our own backs too.

LAC J. V. ERBS

LAC Erbs was detailed for starting and marshalling a Sabre. As the aircraft left the line, he noticed fluid venting from the underside of the fuselage, but not in time to stop the pilot from taxiing away from the dispersal. LAC Erbs did manage to get the tower to warn the pilot of the situation; the mission was aborted.

The pilot had no way of knowing that his hydraulic fluid was leaking away. Temperature and pressure checks carried out when clear of the dispersal area showed all systems operating normally. It was only after the tower called the pilot, and the aircraft was returning to the dispersal area, that a further check on the utility pressure revealed that it was fluctuating slightly and losing pressure gradually. The decrease continued until the aircraft was almost back to the starting place; the pressure then fell rapidly to zero. The aircraft was shut down immediately.

The number two in the formation could not detect the leak even after he was told about it. LAC Erbs, by his alertness and decisive action, probably prevented a serious accident, and thus merits a Good Show.

(LAC Erbs has received a letter of commendation from the AOC 1 Air Division.—Ed.)

F/L C. Y. SMITH

F/L Smith was captain of a Neptune which had just completed a low-level formation fly-past at the CNE airshow. The aircraft was in level flight at 2000 ft. and 200 kts. IAS when the 12-man dinghy suddenly released from its port storage hatch.

The dinghy streamed back and lodged against the port tailplane for about a minute, causing a severe control problem. With no warning, the aircraft yawed violently to port and attempted to pitch nose down; this was accompanied by severe buffeting and control flutter. F/L Smith applied full right rudder and aileron, almost stopping the yaw, and pulled the stick right back to maintain altitude—he actually gained 300 feet.

The power was retarded (jets to idle, 25" MAP) and when speed was about 140 kts., the dinghy worked away from the tip of the tailplane. The Neptune was then controllable with minor vibration; after checking for control at low speed, a normal landing was made at Trenton.

F/L Smith's problem was made worse, because, during the emergency, the pilots were unable to assess the cause of the trouble until it was reported from the rear seats. Two passengers saw the dinghy fly by the rear window, but first reported it as flames from a fire.

If the accident had happened a few minutes earlier, while the aircraft was leading the formation, the result might well have been a fatal mid-air collision. F/L Smith displayed excellent airmanship in recovering control of the Neptune and landing it safely. In all probability, his actions saved an expensive aircraft and a skilled crew, and he is most deserving of a Good Show from Flight Comment.

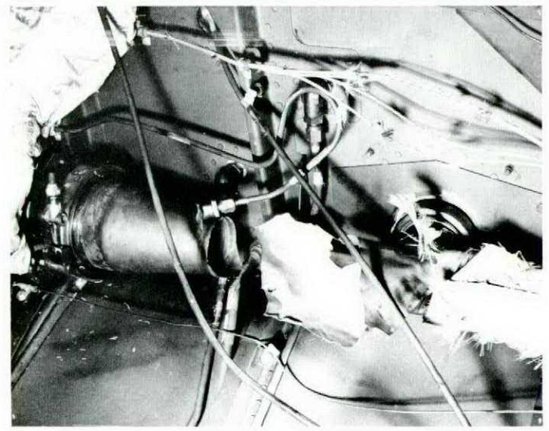
This tiny strand of wire activated the switch and blew the dinghy.

F/L J. W. STANTS

On takeoff from Cold Lake in a CF101, F/L Stants was notified by the tower that his nose gear was still hanging. As he throttled back, the engine fire-warning light illuminated, and smoke filled the cockpit. F/L Stants immediately selected 100% oxygen, flamed out the affected engine, told the navigator to prepare for ejection, and declared an emergency. Shortly after the flameout the fire warning light went out and the smoke began to clear from the cockpit; F/L Stants then proceeded with a single-engine circuit and landing without further incident.

Investigation revealed that a line which carried the 16th stage air to heat exchanger had ruptured, causing the malfunction.

F/L Stants at the time of the occurrence had a total of 6:00 dual and 5:35 solo in the CF101. By keeping cool and following correct emergency procedures, he saved the RCAF the price of a new CF101, and was congratulated by the AOC of ADC. He is most deserving of a Good Show from Flight Comment.



JEROME LEDERER HONOURED

Recipient of the 1961 Daniel Guggenheim Medal has been announced as Jerome Lederer, director of the Flight Safety Foundation and the Cornell-Guggenheim Aviation Safety Center in New York. Known the world over as an authority on aviation safety, Mr. Lederer received the award at the end of November at a ceremony organized by the American Society of Mechanical Engineers.

Sponsored by the A.S.M.E., the Society of Automotive Engineers and the Institute of the Aerospace Sciences, the Daniel Guggenheim Medal is awarded annually for the notable achievements in the advancement of aeronautics. In Mr. Lederer's case it has been given "for lifelong dedication to the cause of flight safety and his constant and untiring efforts to reduce the hazards of aviation."

His close association with aviation began in 1926 when he became aeronautical engineer for the U.S. Air Mail Service which started in that year. For 10 years he was chief engineer in charge of loss prevention for Aero Insurance Underwriters Co., and in 1940 became the first Director of the Safety Bureau of the U.S. Civil Aeronautics Board. He was appointed director of training of the U.S. airlines' War Training Institute at the outbreak of World War II.

The AEROPLANE
and ASTRONAUTICS

(Flight Comment does not usually copy news of civil aviation, but the above has been reprinted because our magazine often uses material published by the Flight Safety Foundation, of which Mr. Lederer is director.—Ed.)

AIRCRAFT FUEL SYSTEM ICING

by
S/L A. C. Drolet
DMEng

Much has been said and written about aircraft fuel system icing. This phenomena has been a matter of concern in the RCAF for some time. Each year, usually in late fall or early spring when moisture and temperature conditions are right, the problem has reared its ugly head.

It is the combined opinion of operations and engineering staffs at AFHQ that if EOs are rigidly adhered to by unit maintenance staffs, plus rigid and comprehensive inspections of ground storage and dispensing fuel facilities combined with aircrew educational programs on proper fuel-handling procedures when icing conditions exist, strictly in accordance with relevant EOs, AOIs and other orders, icing should practically become eliminated and cease to be an operational hazard of any major consequence.

Aircrew and groundcrew—play it safe! Don't become partner to a statistic because of failure in following existing orders on this touchy subject of aircraft fuel system icing.

(Some well-written technical papers on this subject that come to mind are "Ice Formation in Aviation Fuels by R.G. Davies of the products application department of the Shell Oil Company of Canada, Limited; and the article, "My Advice, Sir, Use The Fuel System Deicer", from USAF Aerospace Accident and Maintenance Review—April 1961.)

The Heart of the Matter

Adapted from FSO Kit

No longer is the RCAF manned almost exclusively by the "young tigers" of World War II. Ageing brings with it greater susceptibility to heart disease, and, as the following story by S/L "Anypilot" shows, it CAN happen to you. The moral is to get medical help right away so that the trouble may be diagnosed as soon as possible, and life expectancy prolonged.

Now for S/L Anypilot's story:

I haven't been at work for the past two weeks, and to dispel the comments of my friends who have said, "He just got a bundle from his rich uncle and isn't as conscientious as he once was," or, "He's serving 30 days on a driving rap," or, "His wife clobbered him and he's recovering in private," I am forced to admit that "I had a heart attack."

It all began about a week ago at work, with a kind of sharp pressing pain, deep-center-left, high in the chest cavity. After a time it subsided, and I thought, "Just some of that rib-roast lunch acting up—better cut down a bit." That evening, after the usual cocktail, leg-of-lamb dinner, and my favourite apple pie and ice cream, the pain began again, persisted, and gradually extended to my left arm and hand.

When the doctor arrived, he pulled a stethoscope out of his satchel, listened, probed, listened again, and two minutes later announced that my blood pressure was 250.

This is a fairly good bowling score, but it is unacceptable as a blood-pressure figure. Minutes later, four husky men laid me on a little rollaway bed and toted me off to the hospital, where I was issued a tent like a nightie.

Heart attack! The term always has a tone of finality to it, but I managed to muster courage to ask the doctor.

"At the moment" he said, "It appears that you have a coronary." (I have always associated that word with coroner). I always "knew" that it couldn't happen to me—friends I have lost to heart attacks, but they brought it on themselves by over-exertion, and everybody who knows me has suspected that the word "over-exertion" didn't apply to me.

Now, however, I have joined the ranks. It was the heart, all right. The doctors checked, probed, punched, and photographed all of those vitals known as lungs, liver, kidneys, colon, and several others that I can't spell or even pronounce. They were all as sound as possible, after years of wear and tear.

But more hard news was to come. "We'll have to cut the weight 30 pounds, and absolute rest is necessary." This pronouncement meant no more mashed potatoes and gravy, no more pizza, no more barbecued ribs, and no more of those midnight parties or early morning duck-hunting trips, either.

"You're going to have to trim up this body as well as the activity, ol' boy", I said to myself. "Besides, you'll have to sweat out whether or not there's permanent heart damage."

They didn't ask, but I could have provided a list of "heart damage" which had taken place over the years. There was the time, for example, when Miss Svelte, my beautiful fifth-grade teacher, explained that she was being married to another. There was the time when "Shep", my favourite pup, was trampled under the hoofs of a runaway team, and was ceremoniously buried under the box elder trees. Again, the organ must have been damaged by heartburn following a party. Tumultous flip-flop certainly caused strain when a voice at the other end of the telephone announced, "This is an investigator for the National Revenue Department." Of course, there were those times too when the heart was nearly bursting with the loss of someone I loved.

During the last while I have become an expert on heart attacks. It seems that there are two major kinds: a coronary thrombosis, which is a clot and is usually severe and dangerous, and angina pectoris, like mine.

Angina pectoris affected me with sharp jabs of pain in the upper-middle chest area; these sharp spasms then extended through the chest and down the left arm to the tips of the fingers. Injury to the main (coronary) artery, the heart walls, or the valves can result. These symptoms are frequently caused by squeezing or strangulation of the heart or artery—sometimes brought on by a huge bulge of the lower abdomen, or, frankly, an out-and-out big stomach.

It is revealing to learn what 800 calories per day can do to a figure. First, there is the item of 20 pounds, most of it taken from the waistline. The figure in silhouette—when it can be displayed—will no longer be a spectacle for pity and apology. Then, too, there is the figure represented $-signs, which will add to the wealth of my tailor, what with his major project of re-cutting all of my clothes.

Most of all, I am grateful for this second chance. For years the doctor had advised me to trim down the mid-section. For just as long my wife cajoled, ridiculed, and denied my gastronomical demands. Until now the joy of eating deafened my ears.

Today, I am a believer.

MAINTENANCE PROFESSIONALISM

Fifty years ago there were three recognized professions—medicine, law and teaching. Today, up to our eyebrows in technology, we think of any occupation requiring exacting training and the application of skill, as a profession. Without natural intelligence, plus extensive training, you couldn't be a maintenance man. You are working at a profession.

Unfortunately, merely working-at-a-profession makes no one a "professional", for the professional is one who measures up to the standards of his profession.

What are these standards? Very simply, they are three: The conscientious application of your skill to the work at hand; careful adherence to the methods, procedures and techniques prescribed; and performance with a sense of responsibility to yourself, your colleagues, your organization and your country.

All of us talk a great deal these days about the dollar cost of defense—so many million dollars for this weapon system, so many million dollars for that one. Well and good, for dollars are vital. But remember that dollars alone can achieve nothing. They are effective only when coupled with your trained mind and your skilled hands—your professionalism.

You are one man in a long chain of men, from the theoretical physicist who puts the system on paper and thinks it might work, to the operator who puts the system into the sky and proves that it will work. But it will work only when each man along the way is a professional.

APPROACH

SPRING IS HERE . . . . . OR SHOULD BE

F/O FLIP PHINGERIN SAYS: "In spring, I think about flying only 50% of the time—but when I do I concentrate! (And I also concentrate on the other 50%)"

Thoughts of spring include the usual ideas of better flying weather, and getting rid of the mukluks and heavy winter suit. The winter underwear, too—because if you've been smart you've been wearing it. But if the weather proceeds according to schedule you'll be able to take it off soon. Records indicate that by May 1 the average overnight temperature south of the Mid-Canada Line is 32° (freezing)—so don't stop wearing "long-johns" and the winter flying suit on the same day.

Spring is a time of renewed activity—in the home, in the RCAF, and in nature. Whatever your personal plans, it is the association of the RCAF and nature that affects flight safety.

Spring is also the time when birds build their nests—in trees...eaves...and aircraft! (See Operational Hazard "Birdhouse" in this issue.—Ed.)

Although the coming of the warmer weather may bring many advantages and satisfaction with it, there is still much danger if our guard is let down. The severe weather conditions of the winter haven't been replaced completely. March and April are the best flying months in the Arctic but winter hazards such as blowing snow and "whiteout" conditions still prevail.

In some regions of Canada spring advances more rapidly than in others. With this advance there is an increase in water content as well as in temperature, with the result that cloudy skies become more prevalent throughout most of the country. As spring progresses the freezing gradually lifts from the surface and is found at progressively higher altitudes. This, however, does not mean that the danger of icing is passed; indeed, moderate icing occurs more frequently at the middle altitudes where temperatures may be below freezing.

Although freezing rain isn't associated with spring, it can be found over the Maritime provinces during March and April. Churchill, Manitoba, has known freezing rain or drizzle conditions during April and May, and even as late as June.

As warm, moist Atlantic air begins to flow across the cold waters of the Labrador Current and the Gulf of St. Lawrence in the spring months, extensive fog is quite common in the Maritimes and Newfoundland. Some airfields in these regions can be fog-bound for several days at a time.

Surface winds can also be a problem in Canada during the spring months. Mean wind speeds are relatively high over the Atlantic Coast and higher winds are also common over the Prairie provinces. In late spring, a few tornados have hit the southern interior areas.

In any season the weather across Canada from British Columbia to Newfoundland is quite varied, and each region has its own peculiarities. Spring flying can be just as hazardous as flying in the other seasons. Icing, fog and high surface winds take their tolls just as easily as the blizzards of winter or the thunderstorms of summer.

Other hazards, which perhaps are best described as the aftermath of winter, must also be considered. Some of them, with us from October to June in many parts of Canada, are frost patches, icy areas, and humps or ridges of decaying snow or ice, all of which combine to catch the unwary.

The chief spring dangers are found around the runway, and some of them are difficult, and even impossible, to correct—soft overruns, soaked and gummy infields that look like and have the properties of aged porridge, and, in some northern areas, disappearing runways. Take extra care to insure that aircraft operate only on the runways, because undershoots and overshoots are doubly dangerous. Watch those slippery patches when taxiing—they're deadly. In the north it's simple: no runway, no aircraft, no problem.

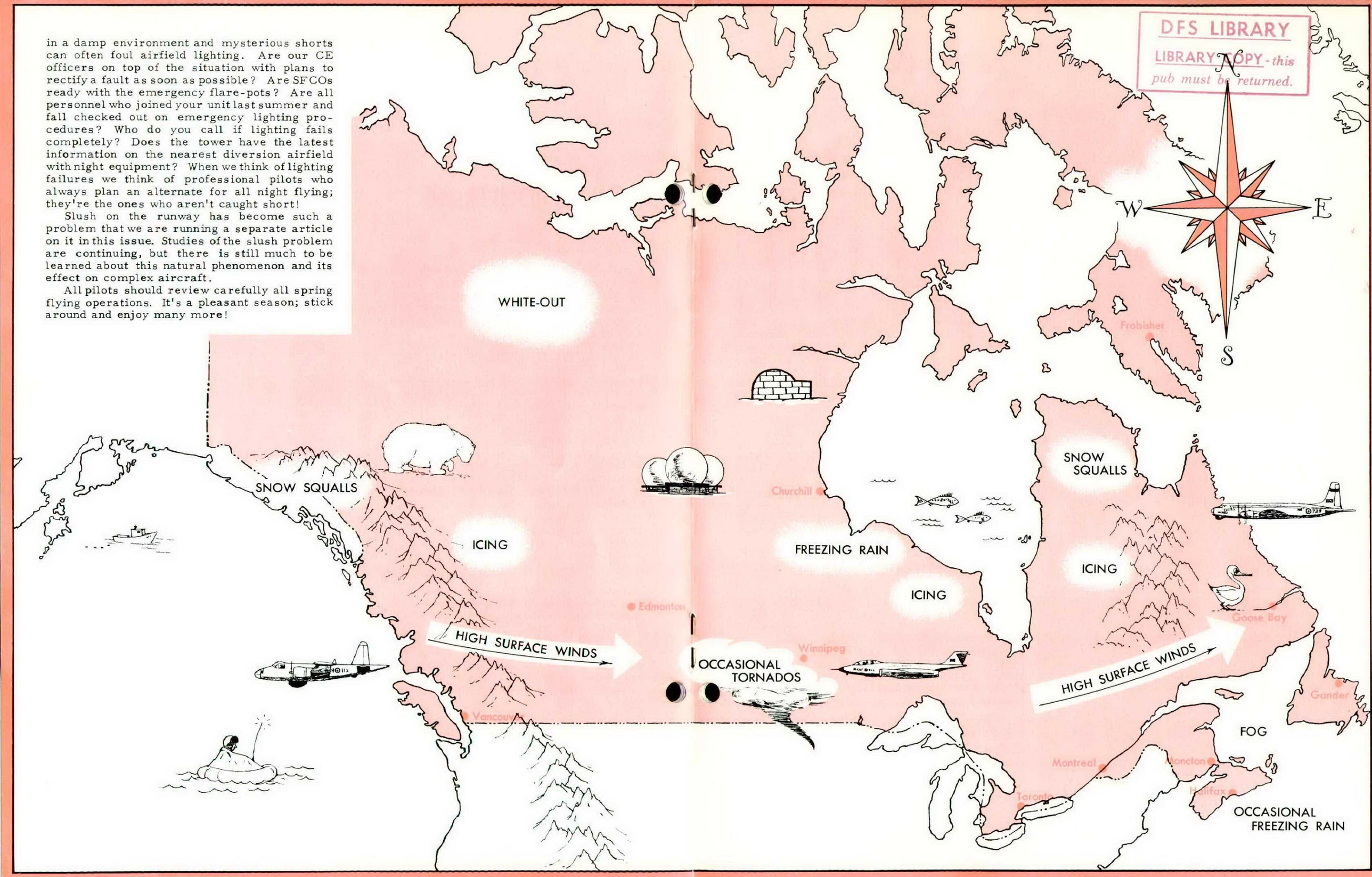
Electrical currents don't operate efficiently

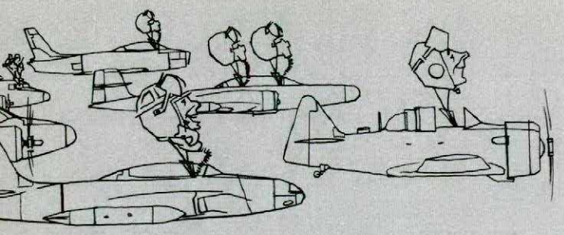
". . . soaked and gummy infields that look like and have the properties of aged porridge. . ."

in a damp environment and mysterious shorts can often foul airfield lighting. Are our CE officers on top of the situation with plans to rectify a fault as soon as possible? Are SFCOs ready with the emergency flare-pots? Are all personnel who joined your unit last summer and fall checked out on emergency lighting procedures? Who do you call if lighting fails completely? Does the tower have the latest information on the nearest diversion airfield with night equipment? When we think of lighting failures we think of professional pilots who always plan an alternate for all night flying; they're the ones who aren't caught short!

Slush on the runway has become such a problem that we are running a separate article on it in this issue. Studies of the slush problem are continuing, but there is still much to be learned about this natural phenomenon and its effect on complex aircraft.

All pilots should review carefully all spring flying operations. It's a pleasant season; stick around and enjoy many more!





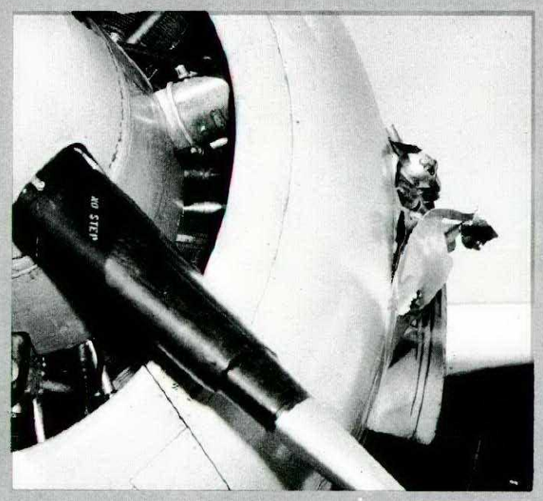
HEADS-UP FLYING

IMMEDIATELY

F/L D.W. Cox was captain and F/L W.C. Clarke was student on a Neptune carrying out a photo run on a merchant ship. Power settings were at 2300 RPM, torque was 110, and all engine instruments were normal. Then, a sudden sharp jolt was followed quickly by smoke from, and a fire warning light for, the #1 reciprocating engine.

The engine was feathered immediately with the E-lever. After landing, a large jagged hole was found on the port side of the engine cowling, with part of #15 cylinder protruding from the hole. The accident was assessed Materiel pending a strip report.

By feathering immediately, the crew very likely averted a major fire. This is an example of professional airmanship—heads-up flying at its best.



A CLEAN VERSE

Nuts and bolts
Lying loose
Can Blow a tire
And cook your goose.
RAMP CLEAN?

PREPAREDNESS

We know a Meridian, Miss., farmer who goes over his field the day before he starts plowing and kills all the rattlesnakes he can find. When we asked him if it wasn't a dangerous thing to do, he replied: "I reckon so, Son, but if I don't kill off the critters today when I'm looking, they are apt to get me tomorrow when I ain't looking."

This old farmer was never known to have been bitten by a snake. Why? He eliminated them. He took time to remove the hazard. He cleared the way so it would be easier and safer to complete his job. That was smart business then, and it is good business now.

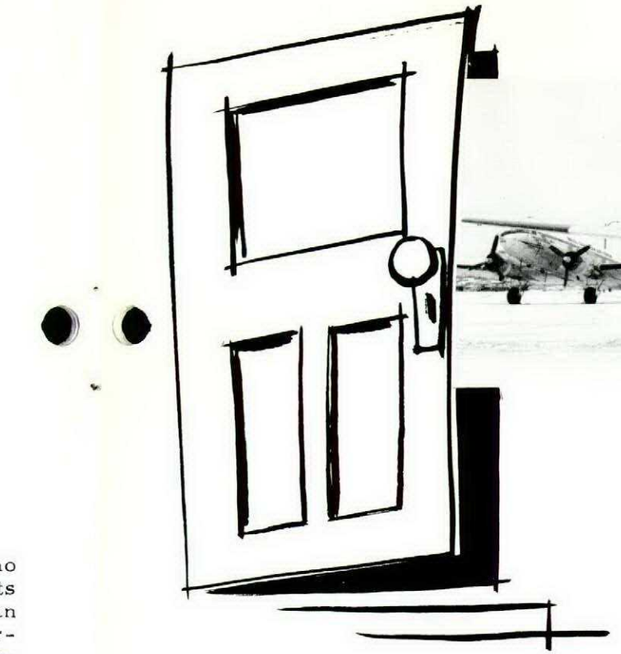
If we don't keep our eyes open for hazards and make it a point to remove them when we see them—then one of those accident snakes may get us tomorrow—when we "ain't looking".

PWC Guam TRADEWINDS

EVEN ODDS?

If you are careless, you have two chances—
one of having an accident and one of not.
If you have an accident, you have two chances—
one of getting injured and one of not.
If you get injured, you have two chances—
one of dying and one of not.
If you die—well, you have two chances!

Thanks to 11 TSU



THE FRONT DOOR

The RCAF aerodrome is judged by its front door, which is centered around the flight line. A heads-up Commanding Officer soon learns to spend some time each day in that area.

What is he looking for?

Prolonged delays in obtaining fuel and oil servicing equipment because of change of shifts, meal time, flat tires, fuel shortages, "Lots of vehicles but no personnel", and so on;

A lack of chocks, ladders, or steps—or, if available, the wrong kind of equipment, or materiel in need of repair or replacement;

Fuel, oil, hydraulic fluid, or alcohol caps removed long before the servicing department arrives—meaning that sand, precipitation, debris or other foreign matter can seep into opening;

Parking areas which are remote or inadequate;

An over-taxed duty crew with a "rush-rush" operation.

(This, in itself, is conducive to mistakes and oversights such as failing to replace receptacle covers, forgetting the static grounding, overlooking dirty windshields, omitting entries in aircraft records, and failing to remove tools and equipment around the aircraft); or

Visiting aircraft, most often with pilots unfamiliar with the unit, escorted at excessive speeds through areas with marginal clearances. (This is "asking for it".)

Superior transient maintenance is an obligation to travelling aircraft—and a good way of reducing the accident rate. A station's reputation is often built around its front door. Does yours creak?

(The above has been adapted from "Memo for Commanders", by Major General Perry B. Griffith, Deputy Inspector General for Safety, USAF, which appeared in Aerospace Accident and Maintenance Review for November 1961.—Ed.)

RED
FOR RESCUE

by F/L Philip Brown
DCEM/CEM4-4

We in the fire protection trade know that the last thing aircrew want to see on the field are our crash trucks. But accidents do happen, and with this in mind—but with the fervent wish that you may never need them—we would like to tell you what we have in our arsenal.

First, a brief history. Before World War II, not too much was done about airfield crash protection. The few fire trucks we had would respond if needed and hangar line crews would use available portable fire extinguishers from hangar lines.

With the advent of World War II, and the increased emphasis on flying, the need for some measure of crash protection was recognized. To meet this need, the "Canadian Crash Tender" was built. Although badly underpowered, this truck had several features that, for its day, were revolutionary. These included tandem wheel arrangement, all-wheel drive selection, positive drive lock selection, and power takeoff pumping. Its capacity of 300 Imperial gallons of water posed severe limitations, however, as larger aircraft came into service.

In the immediate postwar period, crash vehicles were largely ignored. The small nucleus of firefighters remaining in the service concentrated, for the most part, on structural protection. During this time, however, planning was taking place in a limited way. Limitations of the old crash tender were reviewed. Its difficulty in operating under below-freezing conditions were well known. The limited usefulness of "fog" (fine water spray) in combatting gasoline fires and flames from the new JP fuels was becoming more evident. The planners turned to the new extinguishing agent "dry chemical" as an immediate means. The present dry chemical crash truck was developed from tests and from a prototype truck nicknamed "The Monster."

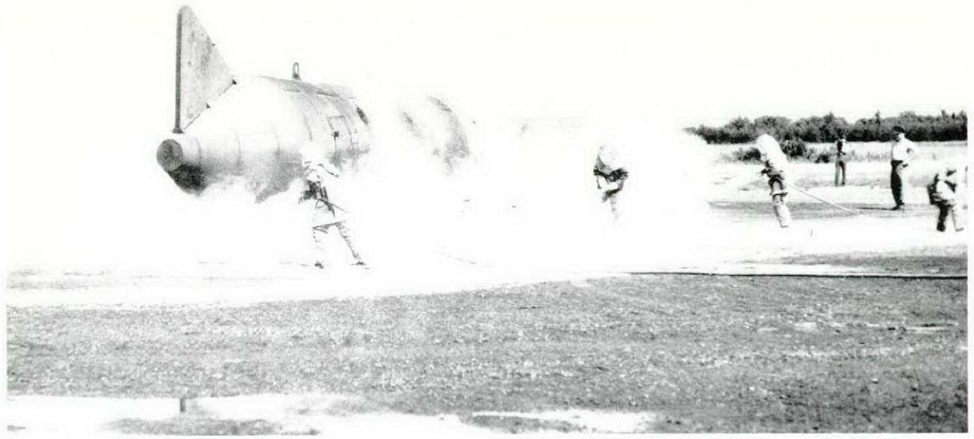
Classed as a "Light Rescue Vehicle" (LRV), the G13 crash truck is one of the most advanced vehicles of its type and capacity. With the advent of these LRVs, the RCAF became the first organization in the free world to use this method of large-scale crash protection.

The G13 weighs 10,800 lbs., accelerates from 0 to 60 mph in 45 seconds, and has a top speed of over 60 mph and a positive all-wheel drive. It carries 1,000 lbs. of extinguishing agent and four secondary extinguishers.

When in operation at a fire, with both handlines being used steadily, the 1,000-pound unit will last for slightly over a minute. Our firefighters very seldom use this all-out method once the fire is "knocked down", but usually conserve by using the on-off technique. Thus, duration of discharge is stretched to give follow-up foam trucks time to consolidate gains, and provide more permanent protection to the fuselage. A front-mounted winch, driven by a PTO, holds approximately 100 ft. of steel cable.

The LRV had to be followed by heavier artillery. The logical choice of an extinguishing medium for this purpose was foam. Although slower in application and immediate "knockdown" effect than dry chemical, foam would combine with dry chemical to produce a quick effect with an application lasting long enough to permit rescues. It is useless to keep the heat away from the aircraft's occupants for one or two minutes and then have a resumption of the fire. The remarkable heat-insulating and fire-smothering effects of foam have been recognized for many years. A rapid rate of discharge in the large quantities required was the only drawback.

The first class of foam truck or "Major Foam Vehicle" (MFV) was the G23 crash truck.



G13 Crash Truck (LRV). Clouds of dry chemical are dispensed. Three handlines are shown, one from a second truck. The mockup aircraft is a training aid at the RCAF firefighter school.

Its main attach armament is a turret, mounted on the cab roof, which discharges a thick foam stream or a cooling fan of water spray. In addition, two side handlines provide flexibility. To attack the front edge of the fire, two fixed-foam nozzles are mounted under the front bumper.

The G23 weighs 29,000 lbs., accelerates from 0 to 50 mph in 50 seconds, has a top speed of 56 mph and has the positive all-wheel drive. It carried 500 gallons of water, 70 gallons of foam, and 5 secondary extinguishers.

The large, low-pressure tires were installed after prototype operations showed an unfavourable off-runway capability with smaller duel rear wheels.

The truck produces 5,000 gallons of foam at expansions ranging from 7 to 1 to 10 to 1.

As new aircraft were added to the RCAF inventory, crash fire protection had to get new equipment to keep pace. Off-runway capability became more important, and greater quantities of airborne fuel over-extended the G23. The answer was the G19.

This latest MFV is constructed in England to meet RCAF performance requirements. This truck, the epitome of crash protection, is capable of generating over 9,000 gallons of foam, and can go off runways into almost any terrain. It can knock down four-inch trees, ford mud and water holes 18 inches deep, and proceed through a fresh snowfall of the same depth. Its two high-capacity handlines (1600 GPM of foam each) complement the turret (25000 GPM of foam) to produce a three-pronged attack. All-wheel drive, with each wheel independently suspended, gives it the mobility and agility of a tank.

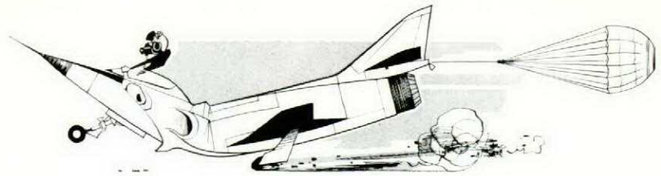
The 30,000-lb. G19 goes from 0 to 50 in 45 seconds and has a top speed of over 60 mph. It carries 700 gallons of water, 110 gallons of foam, and three secondary extinguishers.

G13 Crash Truck (LRV). The fire fighters "hot-rod". Dual carburetion and dual exhaust give this vehicle rapid acceleration. It carries a complete range of light rescue tools. The long box overhead carries a stretcher, pike pole, and 12-foot folding ladder.

Unfortunately, the G19 provided a few headaches, involving the serviceability of its prime mover—and when the prime mover won't go, the extinguishing agent doesn't get to the fire. Action has been taken to overcome these difficulties.

Researchers are continuing to look for new and better crash trucks. It is becoming more expensive to maintain the G23, and when expenses for repairs reach a certain point, it is more economical to buy new equipment. Among equipment being assessed carefully by both the fire protection and the mobile equipment sections is the jet turbine motor. We don't have to extol this to aircrew, but to the red-truck boys, this is daring research!

We always insist that our firefighters get to know features of your aircraft, so that they may operate with knowledge. How about accepting our invitation to drop over and have a look at the crash rescue trucks that may some day save your life?



OPERATIONAL HAZARD

BIRDHOUSE

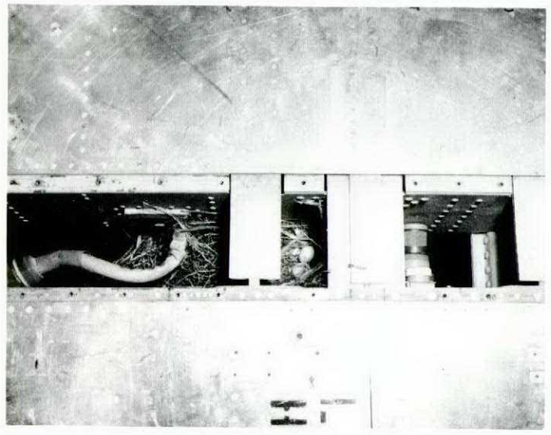
Feathered birds are well-known as a safety hazard when iron birds are in the air, but the photos show that they can also be dangerous when aircraft are roosting on the ground.

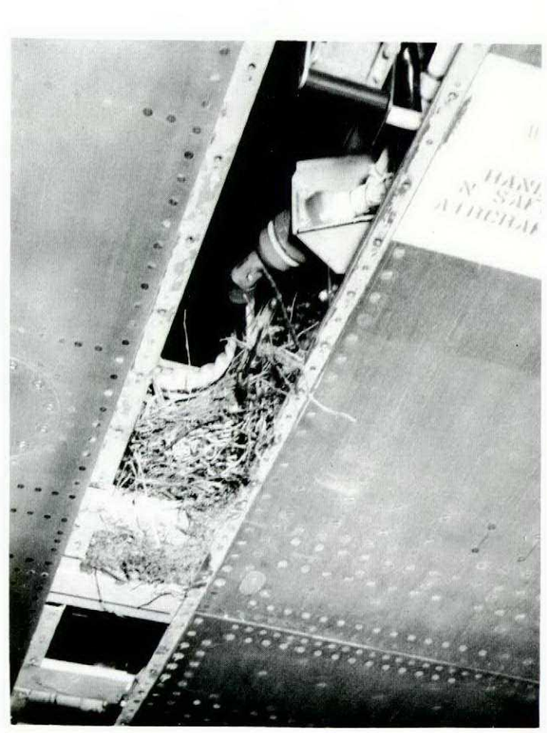
The pictures show the underside of a CF100 wing at rib 10, with the fairing strip removed from the wing-tip extension. It was here that the robins chose to build their nest for their four eggs. With the fairing strip in position, the nest cannot be seen.

The nest was probably built during one of the lengthy periods when this CF100 was on the ground and not flying, and when the arming access panel was left open. Fortunately, its location can not readily create a hazard to the operation of the aircraft—but this was dependent on the robin's choice of location, which could well have been in a more critical spot.

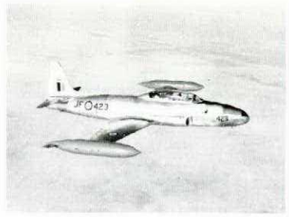
To prevent this sort of occurrence, the following is suggested:

(a) More critical inspection during PI and BFI of those hard-to-see places;
(b) Suspicion of this sort of hazard after an extended period during which an aircraft is on the ground; and
(c) Closure of inspection or access panels.





ARRIVALS and DEPARTURES



BE PROMPT WITH THE PINS

A T33 aircraft landing from a night cross-country flight taxied in to the ramp, was marshalled, and shut down by the pilot.

As the ground crew personnel were installing tip tank safety pins, the tanks were accidentally jettisioned. Fortunately, no one was hurt, although the ground technician was knocked down and the tank fell across his legs.

Investigation revealed that the accident was caused by the pilot in the rear cockpit. This officer was placing his flashlight in the left hand pocket of his flying suit with his right hand, and while doing so, the clip of his flashlight struck the "panic" button. Confirming this was a slight tear in the warning decal. Seat pins had been inserted, and cockpit lights were out.

Although it cannot be said that this officer was careless, the accident demonstrates that care is needed at all times to prevent such occurrences. Moreover, the more knowledgeable T33 servicing personnel insert the wing tip tank safety pins from the front or rear of the wing—and never pass a tank on the side until the pins are in.

GOOSE OR GANDER?

The Expeditor was on a night training exercise, flying the downwind leg parallel to the runway. The gear was down and locked. Everything was going smoothly until a severe bump jolted the aircraft. Instruments and handling characteristics showed nothing unusual, so the pilot called the tower, said that a bird strike was suspected and indicated that he intended to check the gear during the landing roll.

The roll was normal, and the aircraft was taxied back to the ramp and shut down. Investigation revealed that a Canada Goose had struck the stbd prop and the stbd scissors on the main gear assembly, bending the outer stbd main gear door. The accident was classified as "Acceptable".

This goose obviously hadn't read Flight Comment for March - April 1961, in which an article call "The Unguided Missile" appeared. If the bird had seen the piece, it might still be flying. As it was, it learned that goosing an Expeditor can create much fuss—and feathers!

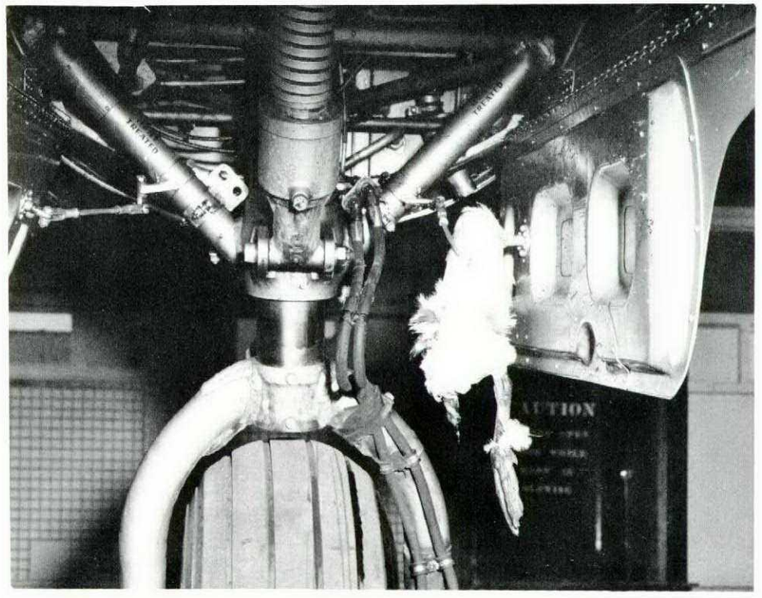
BOONDOCKS, HERE WE COME!

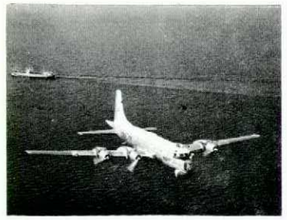
The Expeditor pilot started to take off on a 3,250-ft. runway, with almost no wind, and a temperature of 82°F. The airfield's elevation is 2,968 ft. After going about two-thirds the length of the runway the aircraft's tail was up, but it was not getting airborne.

The pilot aborted the takeoff with the result shown in the photographs. All three occupants were injured; the pilot and co-pilot were not using shoulder harnesses and suffered compound skull fractures. The Board found that the pilot had not considered the effect of temperature and load on his aircraft's takeoff performance, and was therefore responsible.

Had the pilot calculated the takeoff run, he would have known that he would need approximately the whole runway to become airborne. Another aircraft took off after with no difficulty.

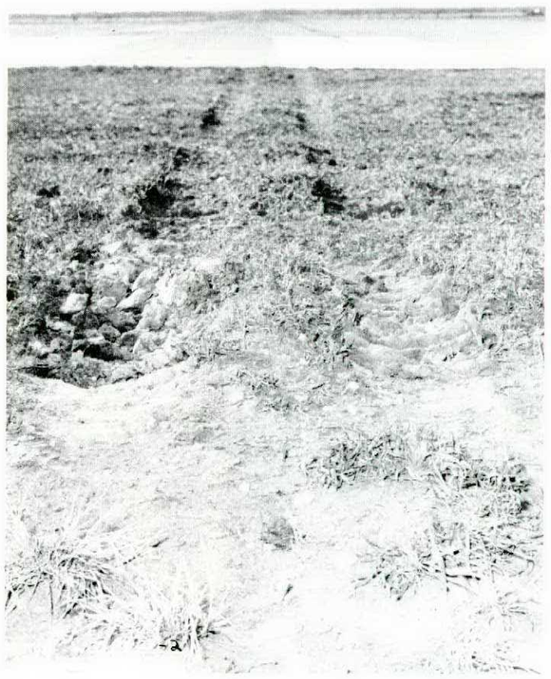
Don't forget to know the AOIs thoroughly—and don't neglect that shoulder harness.

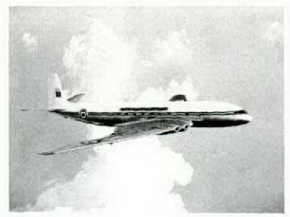




SHORT

An Argus made an approach and landing on a 7000 ft. runway. Wind was 10° off runway heading at 40 kts. The aircraft's port main wheel struck 60 ft. short of the runway, damaging port maxaret units and their attached hydraulic lines. Although the unit's CO stated in the D14 that an aircrew order had been issued several months before to discourage pilots from attempting to touch down on or close to the runway button, it would appear this pilot failed to heed the instruction. We recommend all pilots read "Over and Under" in the Jan-Feb 1962, issue of Flight Comment.





WRONG FITTING

The Comet was operating normally at cruising altitude when the co-pilot's and navigator's airspeed indicators suddenly increased to their maximum reading of 500 kts. The captain's ASI appeared to read about 20 kts slow. Altimeter and vertical speed indicators were not affected.

The captain decided to land at a nearby base; when the aircraft was inspected on the ground, a loose connection in the pitot-static system was found behind the navigator's panel.

The faulty line had been manufactured locally, and because of a lack of British spares a poorly-mated American Prenco fitting resulted. Total time since installation was 1712:35 hrs. Disciplinary action was not taken against the NCO involved; he had been released from the service.

Seventeen hundred hours with an accident waiting to happen! —and it could have had more serious results. The NCO's mistake was the primary cause, but why couldn't he get proper British fittings?

Ground crews should realize that an error like this is a time bomb waiting to explode. And who knows? Aircraft carry passengers; will you be aboard when the bomb finally blows?

VALUE

The pilot briefed his number 2, and proceeded to his Sabre to set it up for readiness. It was dark; the rain was pouring down. To protect his parachute the pilot placed it in the air intake until he had finished his walk-around (he normally left it on the wing tank.)

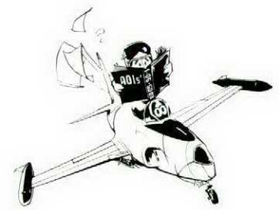
After finishing his walk-around, the pilot entered the Sabre, completely forgetting the parachute. He set the aircraft up when power was supplied, and then decided to drain the cockpit, which, on a Sabre, requires a runup. He signalled his intention to the ground crew and to the number 2.

During the runup, all temperatures and pressures were normal, no unusual sounds were heard, and it was not until the aircraft was shut down that the pilot remembered that he had left his parachute in the air intake. The engine was damaged when a small buckle was torn from the parachute and ingested.

Conditions were uncomfortable at the time of the accident because of darkness, rain, cold, and there were other diversions too. These, however, do not excuse, but instead accentuate the need for increased care at such times.

The pilot, a very experienced flyer, naturally felt like ten cents. RCAF pilots are worth much more; don't let forgetfulness sell your value short.

NEW T-BIRD AOIs



T-33 operators throughout the RCAF and DFS have become concerned about T-33 AOIs. Numerous amendments, and, at times, installation of new equipment without covering amendments, did not inspire confidence in pilots.

All personnel associated with T-33 aircraft will be pleased to know that a new and revised issue of T-33 AOIs, EO 05-50C-1, will be in the field around 1 May 62. This date was given as an "educated guess", and not as a firm commitment. The new AOIs are on the way—but there's a long way to go.

WHOOSH!

Flight Comment for Nov-Dec 1961 gave the speed range of the CF101B as 160 to 1200 "knots" instead of "miles per hour". The range in knots is 139 to 1041.

In 1957, a then-current world record of 1207.6 mph (about 1045 kts) was established by this aircraft, exceeding by 75 mph (65 kts) the previous record, which had been established by the RAF.

Letters to and from the Editor are not official RCAF correspondence, and need not be directed through official channels. Unless otherwise stated, statements in letters and replies should not be construed as regulations, orders or directives.

Dear Sir:

Before getting down to the main purpose of this letter, I would like to express my congratulations to you for the continued excellence of Flight Comment. It is useful, informative

and to the point. Its distribution is looked forward to by all the aircrew officers and most of the non-flying list officers on this unit.

On page 22 of your Nov-Dec 61 issue, you have an item titled "Runway Utilization" which refers to an accident that occurred at this station and witnessed by the undersigned. You conclude that poor airmanship was displayed in this accident. In all fairness, however, you should have pointed out that the captain was in fact carrying out a "practice precautionary" or "short field" landing. A check of the records will show that the captain was "dead-heading" and, as is ATC policy, took advantage of this opportunity to carry out some training. Your conclusion is, therefore, incorrect in all respects as applied to this incident.

The undersigned wrote a detailed report on this incident and forwarded it to the parent unit, who likely attached it to the D14 when it was submitted. A copy of this report is attached for your information.

Finally, while the accident refers to a North Star, the picture tied to it is that of the C5 in flight.

In conclusion I still think you produce an excellent magazine, but I feel it only fair to suggest that if an accident is reported all its details should be included. It might be appropriate to suggest here that you give us an article, one of these days, on your theories with respect to incidents involving tires, brakes, retreads and tire pressures.

W K Carr G/C
RCAF Stn Namao

This incident was reviewed on receipt of G/C Carr's letter. No information about the practice "short field" landing had been sent to DFS in either the D14 or in a separate communication, and neither had a copy of his report.

In light of new evidence involving tire marks and pressures contained in this report from G/C Carr, the assessment is now under review, and, if necessary, changes will be made.

The case does reveal a weakness in the reporting of this accident. Remember:

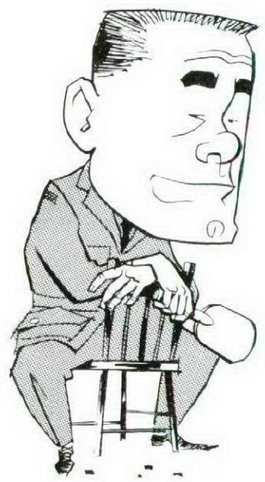
(a) include ALL pertinent information in the D14; and

(b) if additional information comes to light, forward it to AFHQ. There is no regulation against submitting further reports. If there is indecision, give the AIB experts the details to allow them to reach a conclusion based on ALL the evidence.

As a TV character of long ago said, "Give us the facts, man; we want the facts!"—Ed.

FAMOUS LAST WORDS

with
F/O Flip Phingerin



Senior Officer at Mess Dinner:
"I don't worry about Block Air Space—I just sneak through. Nobody sees me."

F/O Flip Phingerin says: "Let me know when that man flies—I'll play gnip-gnop!*

Overheard at AFHQ Jet Practice Flight:

"You can file any alternate you like—as long as you don't have to land there."

F/O Flip Phingerin says: "He'll be surprised where he ends up!"

More from AFHQ Practice Flight:

"Why check the weather? We're going anyway!"

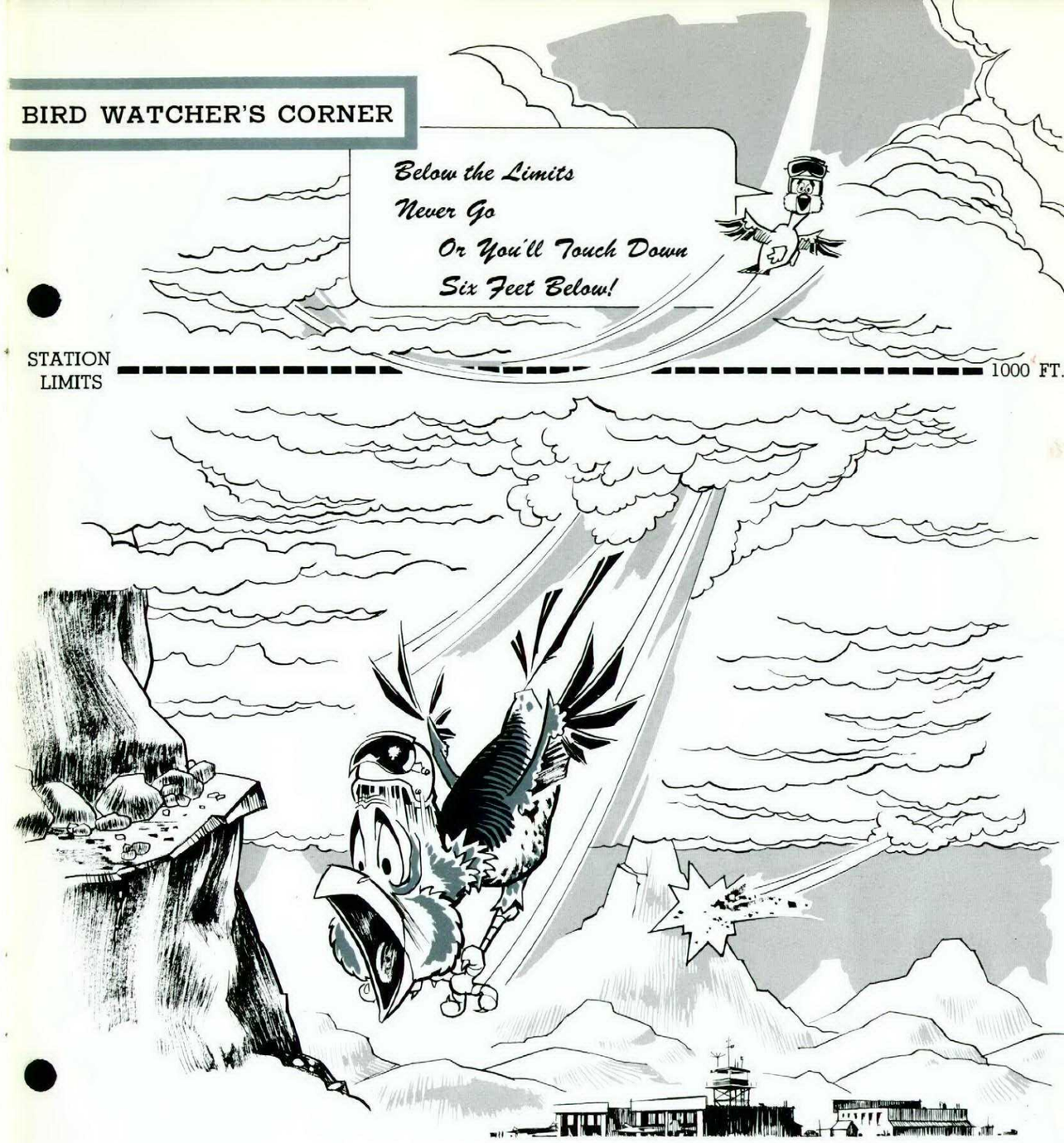
F/O Flip Phingerin says: "I don't read NOTAMS either."

Phingerin's Flip Fables: "Who is this fellow Gus Locke everyone talks about on windy days?"

"Why keep current? We're getting new equipment!"

*To learn why Phingerin says "ping-pong" backwards, listen next time you play!—Ed.

BIRD WATCHER'S CORNER



THE BELOW-LIMITS LETDOWNER

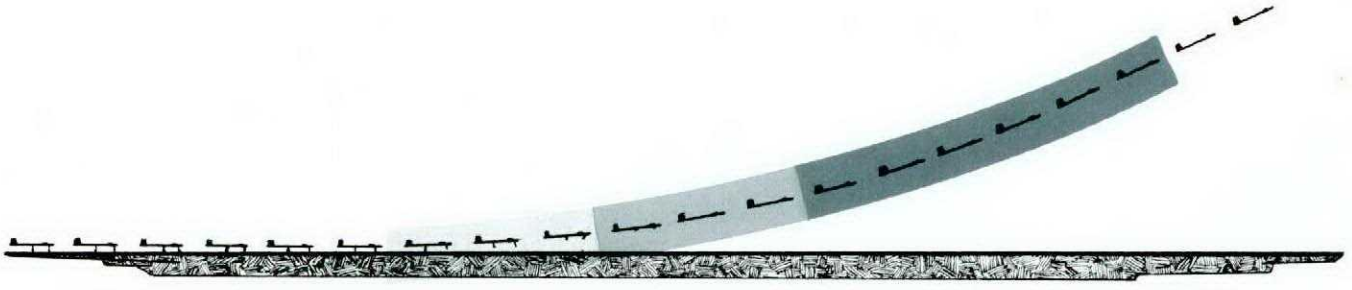
This suicidal species is a big let-down to his family and the RCAF because he insists on letting down below limits. His reward is a permanent roost below ground.

CALL: JUSTAPEEK JUSTAPEEK

JUSTAPEEKABOOM

DECISIONS!

DECISIONS!



THINK THIS ONE OUT BEFORE YOUR FLIGHT

Supposing you have a flameout or emergency on take-off which requires either immediate landing or ejection. At what point do you decide to eject, rather than to land on the remaining runway or overshoot area? Consider the aircraft you fly and the runway and overshoot area at the station from which you take off.

MAKE YOUR DECISION!

IF YOU'VE GOT TO GO
DON'T HESITATE