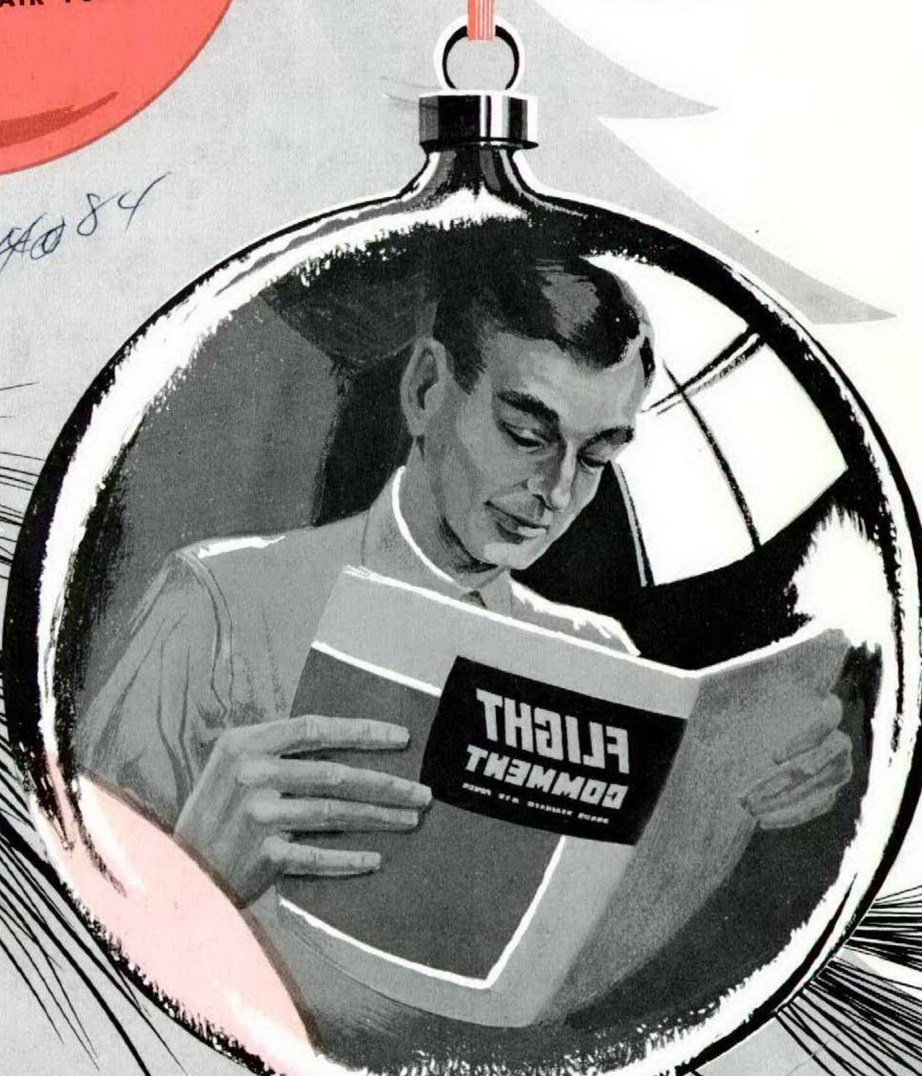
NOVEMBER • DECEMBER • 1958

FLIGHT COMMENT

ROYAL CANADIAN AIR FORCE



EDITORIAL

With the approach of the festive season, and the closing of 1958, it is satisfying to think back on all the good things that have happened in the past twelve months, and to look forward to a pleasant Yuletide. We have had a good year—and we are happy to report that up to press-time, 29 more fathers, sons and boyfriends will be with their families and sweethearts this Christmas than was indicated by the previous year's accident rate. In other words, our fatalities to date this year have dropped by 29!

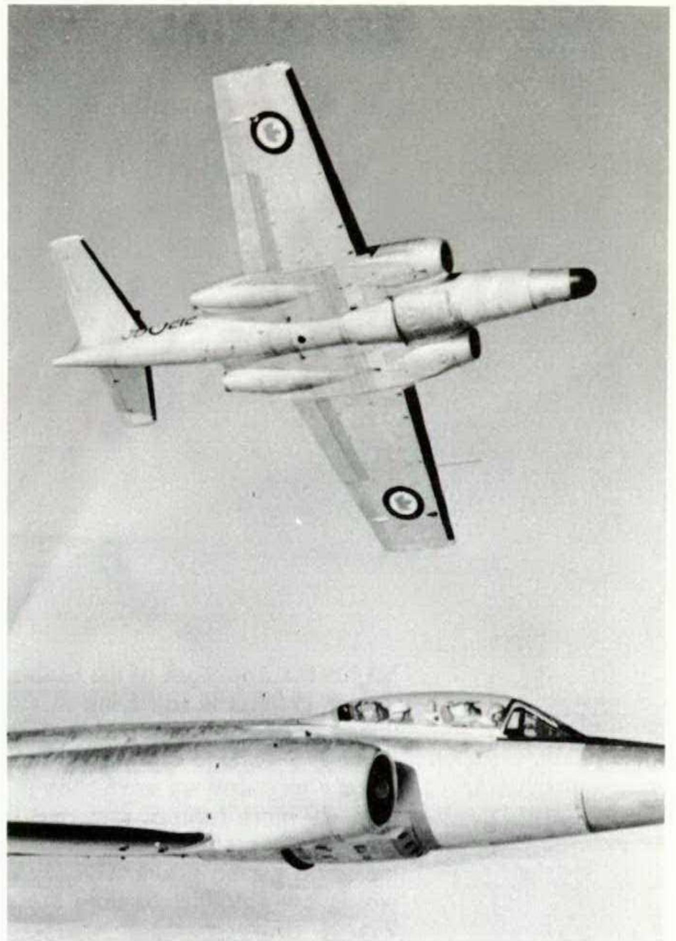
While this improvement in the accident rate is encouraging—and each individual who contributed to the trend is entitled to an inner feeling of satisfaction and achievement—we will have to make even more strenuous efforts to continue the trend in 1959. With every reduction in the accident rate, it becomes increasingly difficult to maintain the pace of improvement.

So let's look forward to a Merry Christmas for 1958, and by putting forth that little extra, guarantee an even greater feeling of accomplishment for Christmas 1959.

J. J. JORDAN, GROUP CAPTAIN
DIRECTOR OF FLIGHT SAFETY

EDMOND CLOUTIER, C.M.G., O.A., D.S.P.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1958

CANUCK FLIGHT SIMULATOR



F/O J. E. Jackaman

In February of last year the RCAF accepted the first Canuck "simulator", now known as the Canuck Operational Flight and Tactics Trainer (OFTT). Several others have since been installed at the various ADC bases in Canada and Europe. The first simulator has been in operation for nearly a year—long enough for comments to be made upon a variety of observations. The object of this article will be to illustrate the advantages of synthetic training in the OFTT.

Ancestry

Synthetic training is not new to RCAF aircrew. All pilots have at some time flown the old Link trainer. The Link, initially, was a basic instrument flying trainer. It is still used in this role at the flying training schools. A number of attachments, such as automatic radio compass and radio range, turned some Links into flight procedure trainers for more advanced use. However, the Link bears no resemblance in appearance or handling to any aircraft. Indeed, its convulsive responses to control movements have discouraged many aspiring perfectionists.

Pilots being processed through the jet training phase are introduced to the C11B Basic Jet Flight Procedures Trainer. This trainer represents a single engine jet aircraft of no particular type. It is used for practising advanced instrument and procedure flying. During this phase of pilot training, navigators destined for Canuck squadrons are using radar simulators for training in basic air interception techniques.

We have now moved into the age of "high fidelity" flight trainers. Sabre pilots have been flying the Sabre 5 and 6 Operational Flight Trainers for some time. These are complex electronic machines designed to simulate the two marks of Sabre, and almost every known emergency peculiar to these aircraft can be reproduced in the trainers. Hence they are excellent media for practising instrument flying and emergency and normal procedures.

With the introduction of the Canuck OFTT, one more phase of high fidelity simulation is reached. This trainer simulates not only the flying characteristics and almost all the known emergencies, but also the tactical aspect of Canuck all-weather flying. Complete simulation of the MG2 fire control system enables dummy rocket attacks to be carried out. Also, identification runs can be made on unknown aircraft under instrument conditions using radar only. Here we have a flight and tactics trainer which enables pilots and navigators to practise every phase of airborne operations from basic instruments to complex GCI coordinated air intercepts. The Canuck OFTT is the ultimate in a crew trainer. For the first time, RCAF all-weather crews can be taught air interception techniques by trained instructor crews providing helpful guidance and advice.

Mixed Reception

Introduction of the Canuck OFTTs at Air Defence stations was greeted with scepticism. Some aircrew have never completely accepted these machines. It is felt that most crews are aware of their own limitations and lack of knowledge of their aircraft, and consequently fear that these shortcomings will immediately show up during training missions. The fear of making an inexcusable error and being watched is uppermost. Thus, the greatest task of the instructors has been to persuade the average crew to accept the Canuck OFTT as a useful training aid. Emphasis has been placed on convincing personnel that it is neither a complex machine designed to replace actual flying nor a monster check pilot or observer. It is, and always will be, an excellent training aid to help those crews who have accepted it to obtain greater efficiency and professional ability.

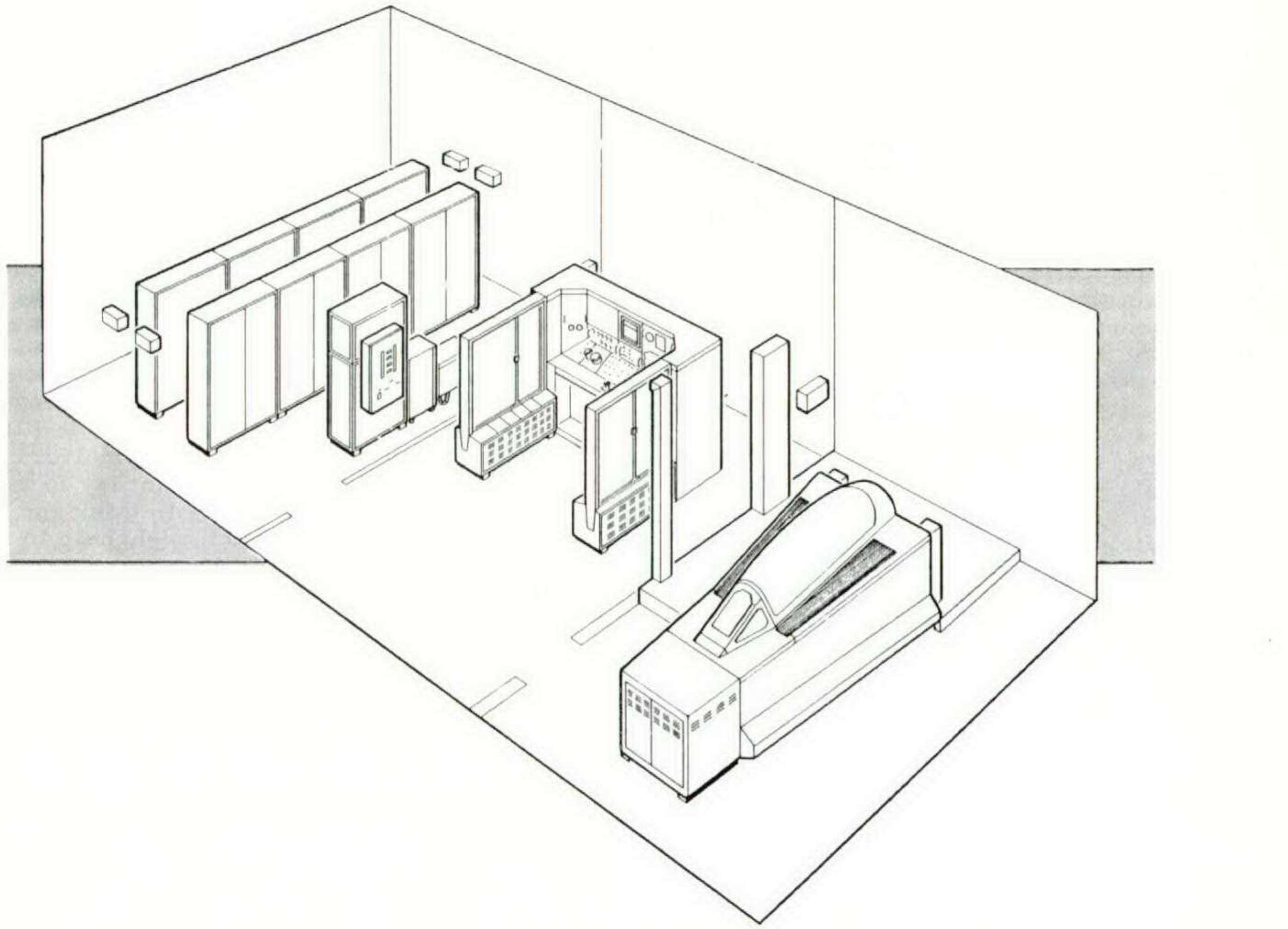
Unfortunately, many crews climbed into the OFTT with the sole object of finding inaccuracies in the simulation. Often their criticism indicated a surprising ignorance of the aircraft they flew, as in the case of the pilot who was indignant that thirty-five knots showed on the airspeed indicator when the simulator was parked, despite the fact that every Canuck he had ever boarded indicated thirty-five knots when stationary.

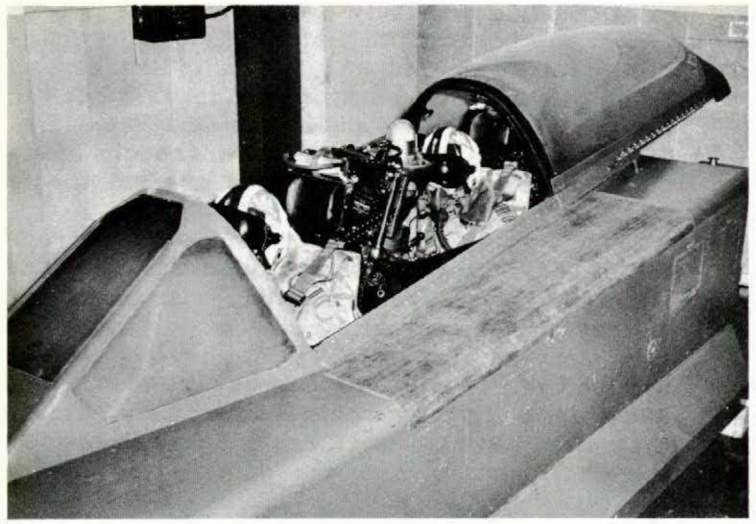
One criticism is directed against the complete lack of feel resulting from the absence of "G" forces. "G" force is not simulated as such because of obvious difficulties, though the "G" meter in the cockpit indicates the force being pulled at any one time. Initially this lack of "G" causes problems because it compels a pilot to fly completely on instruments; he no longer has "seat of the pants" feel to help maintain straight and level flight. This lack causes some pilots to overcontrol, and leads others to criticize stick forces and instrument reactions, despite the fact that all these aspects of the OFTT are continually checked to rigid specifications.

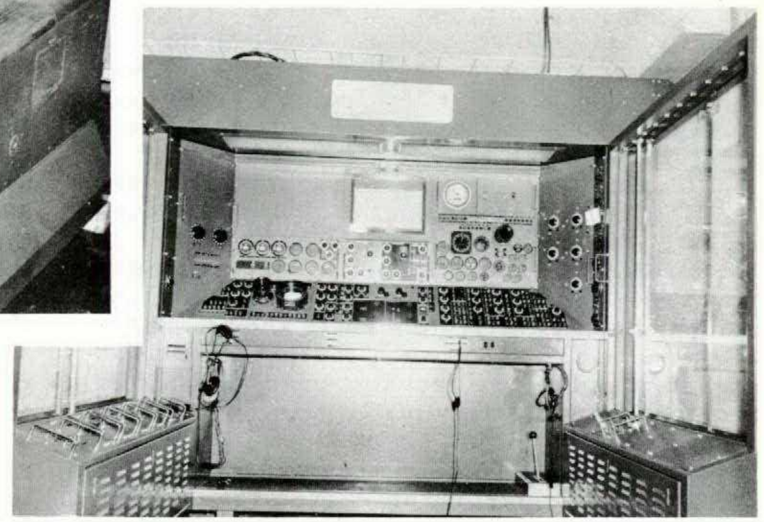
Thus, another task of the simulator instructor is convincing pilots and observers that the flight instruments and stick forces are identical to those of the actual aircraft. By their third trip, fortunately, most pilots have overcome the loss of feel due to the absence of "G" and are able to fly the machine accurately, though they often have to work harder than they do in the air.

Shortcomings Exposed

The ability of the Canuck OFTT to simulate most known emergencies has brought some significant facts to light. On one occasion an attempt was made to give all crews a practice total hydraulic failure. From observations made during these simulated emergencies it was found, in almost all cases, that the pilot's first reaction to hydraulic failure warning was to select hydraulically operated dive brakes. This was presumably done to lose speed as







quickly as possible. This naturally aggravated the situation and caused flying controls to lock; in one case, sufficient hydraulic pressure remained to put the dive brakes out but not in.

Several pilots, some with over five hundred hours' Canuck time, operated the wrong levers for gear and flaps when using emergency air. One pilot, who managed to lower his gear hydraulically before failure, did a flapless approach because the emergency air for flaps failed to operate. On examination of the cockpit afterwards, it was found that the emergency undercarriage lever had been selected instead of the flap lever. At least four crews attempted to use the emergency undercarriage selector button in the rear cockpit—a purely electrical emergency procedure. The final classic was the pilot who "crashed" because he could not find the de-boost handle.

On another occasion, practice fuel emergencies were given to all crews. Once again a sad lack of certainty became evident when several crews brought on double flameouts as a result of muddled thinking and indiscriminate cross-feeding. It was difficult to believe that crews with so many hours on type could make such paramount handling errors.

Observers, too, have shown considerable lack of precision, both in the operation of their radar sets and in basic navigation. One observer was sixty miles off track after only thirty minutes of flying, despite serviceable navigation instruments and accurate radio aids. The obvious, though unhappy, conclusion is that some crews survive a tour of operations only because they have never had to contend with an emergency.

Simulated ECM (electronic counter-measure) is another phase of training covered with the OFTT. This aids observers to work through and overcome the various types of mechanical and electronic jamming. The high speeds of modern bombers and fighters place stringent demands upon instrument flying and radar handling. There is no time for muddled thinking or confusion. Even small errors made by all-weather crews during interceptions often cannot be rectified in time to prevent a missed attack.

And Thrifty Besides

With the OFTT it has been possible to try new air interception techniques, various methods of broadcast control and other tactical experiments either too costly or too difficult to work out in the air. Post-flight debriefings, with charted details of each interception carried out, plus flight paths of fighter and target on the recorders, give ample material for comment and advice. Discussions also play an important part in stimulating crews to think and to bring forward new ideas which might help to improve our air defence capability.

We may conclude from the foregoing comments and observations that all-weather crews require constant practice in air interception and emergency procedures. The Canuck OFTT was designed to provide exactly this sort of experience safely and efficiently—and at a small fraction of the cost of airborne training. With capable instructor crews available to offer guidance and advice, the OFTT will prove invaluable in improving air interception techniques and insuring against costly, and sometimes fatal, mistakes.

S/L C. O. P. SMITH

S/L C. O. P. Smith was piloting a T-33 from Vancouver to Downsview. At 37,000 feet, in the vicinity of Lethbridge, he noted a drop in rpm from 94 to 88 percent. Fuselage and tip tanks were in operation, and all tanks feeding normally. Temperatures and pressures were also normal.

To remedy the situation, S/L Smith put the fuel system in "by-pass". There was no result, so he returned the system to normal. The fuel filter de-ice warning light was not on, but when he activated the de-icer button, it came on, then went off, and rpm returned to normal. Three or four times during the remainder of the trip the light came on again, but went out when the de-icer system was operated.

S/L Smith decided to land at Portage to have the aircraft checked. As he was passing Lumsden intersection, the rpm fluctuated again, and the ice warning light came on. Then the rpm dropped to 70%. Remedial action had no effect, so an immediate clearance to Regina was requested. The aircraft was crossing Regina radio range outbound at 18,000 feet when the engine flamed out.

S/L Smith turned inbound and homed on the range in order to stay in the vicinity of the airfield. He crossed the range at 11,000 feet, broke cloud over the airfield at 9000, and set up a forced landing procedure for runway 12. During this time, four or five re-lights were attempted. Two of them appeared to be successful, but the engine flamed out on both occasions after a brief re-light indication. On the final approach, at three to four hundred feet, one last try was successful. The throttle was left in "idle" position and the forced landing was continued. The aircraft crossed the button at 130 knots, finished its roll, and was taxied in under its own power. Investigation revealed severe water contamination in the fuel system.

S/L Smith merits our compliments for the superb airmanship he displayed in completing a letdown and landing under very difficult conditions. His knowledge of the aircraft, and the manner in which he handled the emergency, are well deserving of a Good Show.

F/O D. H. RIDDELL

F/O D. H. Riddell of 434(F) Sqn was leading a four-plane section on a practice battle formation exercise.

Just as he climbed through 29,000 feet, there was a loud bang, followed by a rumble from the engine that sounded like a compressor stall. When the bang occurred,

a small amount of smoke appeared in the cockpit, but cleared immediately.

F/O Riddell throttled back, advised the section of his difficulty, and switched to the emergency frequency. He then declared an emergency to Yellowjack who answered immediately, giving pigeons to base. The vectors were followed and the aircraft broke cloud at 22,000.

At 20,000 feet, 4(F) Wing was in sight and F/O Riddell advised that a visual forced landing would be possible. At 19,500, with a JPT of 325, he opened the throttle; but a mild rumble resulted, indicating a flameout. He at once increased speed to reduce height, set up a forced landing pattern, and made a well planned and well executed forced landing. Investigation revealed that a foreign body—a small piece of metal of undetermined origin—had caused the oil pump to fail.

F/O Riddell deserves a big hand for his ability in recognizing this engine failure, and correctly handling the emergency procedure and forced landing. His quick thinking and positive actions were responsible for preventing a serious accident.

NUMBER ONE!

The Sep-Oct Flight Comment carried a multiple Good Show in recognition of the most commendable safety achievement in RCAF history: Six RCAF squadrons, three RCAF units, and one Army observation post flew for 12 months without a single mishap. Together they established a record-breaking 50,000 hours of accident-free flying!

Included among those we cited was 427 Fighter Squadron which we are singling out again because it is the first squadron in 1 Air Division to achieve this record of an accident-free year of flying. Their attainment is especially deserving of praise when we remember that the squadron is engaged in operational flying in high performance aircraft.

The accompanying photographs are of the personnel whose skill and cooperation made this "first" possible: the aircrew and groundcrew members of 427(F) Squadron.

Take a closer look. They are merely humans—but humans with a difference. For twelve solid months they have managed to eliminate human error from human conduct—a feat we judge to be the ultimate in maintenance and flying skill, and the work of true professionals.

Reflecting on the quality of effort which each member must have contributed toward this safety record, we consider that the squadron is entitled to another "curtain call".

Gentlemen, take a bow! We look forward to seeing you "on stage" again in 1959.

WINTER LIGHTNING

George M. Busche
Senior Met Officer
RCAF Station Centralia

"Strike" One

"The whole incident could best be compared to having a giant firecracker exploded under one's nose—but without smoke and heat." This was the pilot's description of the blinding flash and loud report which interrupted an otherwise routine navigation trip one night last November.

Pilot and copilot were flying a Centralia C-45 between Clear Creek and London. They were on instruments at 5000 feet in fairly heavy cumulus and snow, and flight level temperature was minus 5° C.

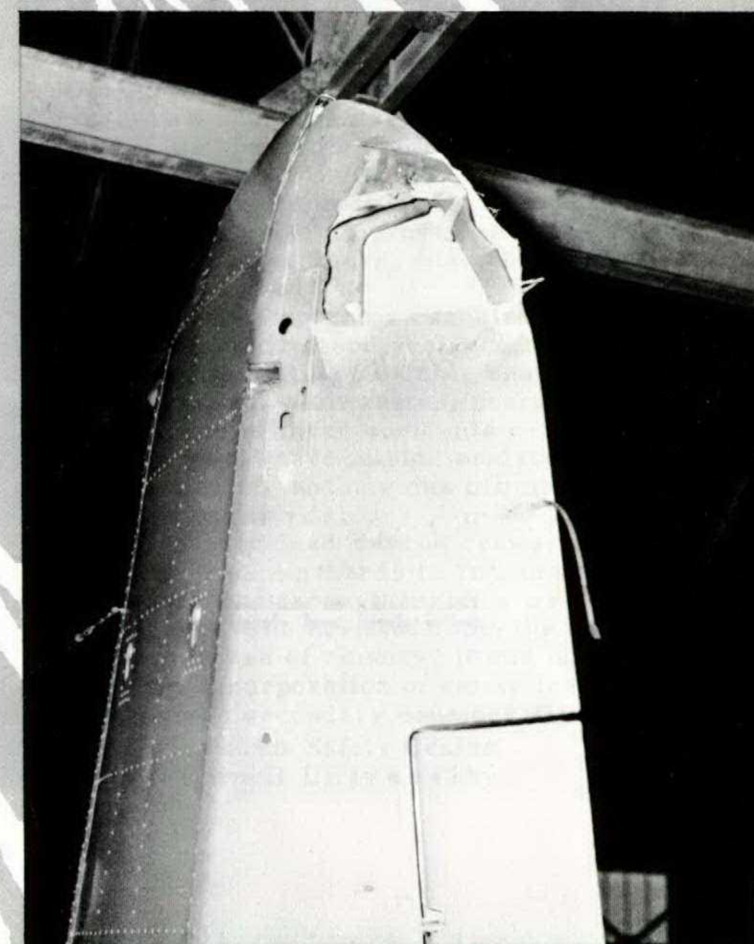
Until the incident occurred, there had been nothing particularly unusual about the flight. Poor radio reception, considerable static, and some St. Elmo's fire; but no indication of thunderstorms or lightning. Across the whole area was a westerly flow of Arctic air, made unstable by its passage over Lake Huron. The cumulus, based at 3000, topped at 12,000, was general. Aircrew personnel at two ground locations in the area did report some thunder and lightning, but such storms as there were must have been pretty small affairs.

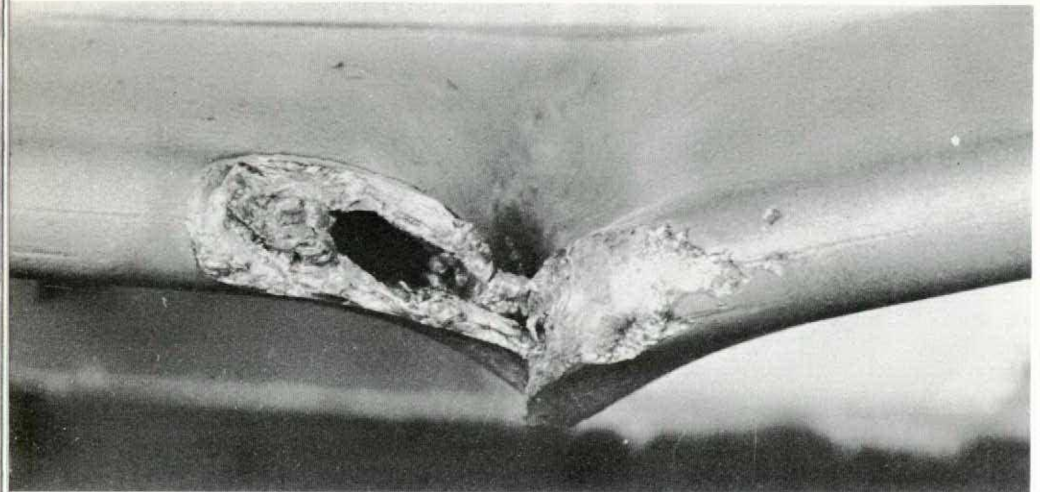
After the flash and bang, the aircraft continued to operate normally, although static still made reception of the London radio range almost impossible. It was only during a post-flight inspection of the aircraft at Centralia that the damage was discovered. Fabric on the upper portion of the port rudder frame was punctured and torn, and a large gash in the rudder frame itself showed definite signs of burning and fusing. Next, the two top rudder bearings appeared to be stiff and rough; on being split open they revealed arcing damage. Finally, burn marks up to 1/4 of an inch in diameter were found on the starboard propeller hub, and minor pitting on one starboard propeller blade and the engine cowling.

"Strike" Two

A somewhat similar incident involved a C-119 that was departing from Naples on a transport trip. The aircraft was being climbed through smooth altostratus cloud to 9500 feet. A few minutes after levelling off at altitude, a bright flash was seen and heard. A visual check of the aircraft revealed a hole, approximately 12 inches in diameter, in the fabric at the top of

Note tearing in fabric and evidence of buckling of the port rudder frame.





Burning, bending and fusing of the rudder frame show clearly in this blown-up view.

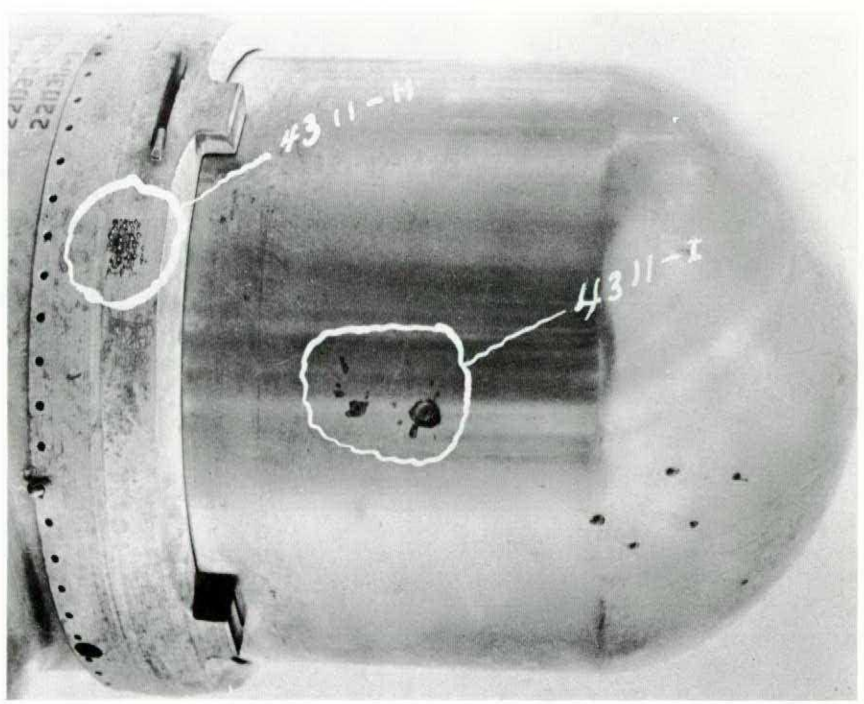
the starboard rudder. Despite this damage, the C-119 returned safely to base. Oddly enough, at no time throughout the incident had it entered a cumulonimbus.

Are They Really "Strikes"?

Did these two aircraft "intercept" a lightning stroke from a normal thunder cloud? While this traditional view might be a possibility, we must admit that it would be quite a coincidence if an aircraft arrived precisely at the right spot and at the right time to intercept such a stroke. Actually, the U.S. National Advisory Committee for Aeronautics (NACA) has found that, in 55 percent of cases of "strikes" on aircraft in flight (during a 10-year period), no lightning at all was observed in the vicinity before or after the discharge. It would seem that in a large majority of cases—and likely in the two cases cited here—the aircraft themselves were an important element in initiating the discharge.

All experienced pilots are aware of the poor radio reception resulting from the static associated with flight in snow and ice crystals. Investigation has shown that, under these conditions, an electrical charge may be generated on the aircraft faster than the ordinary static eliminators can drain it away. As a result, a tremendous negative charge may build up on the aircraft. (A potential of 450,000 volts has been measured on a four-engine B-17 flying in snow at 165 mph.)

It is also known that in heavy, snow-shower cumulus there are large areas of concentrated positive charge. Consequently, circumstances may arise where a differential of the order of many thousands of volts exists between aircraft and cloud. If the two come together closely enough, the non-conductivity of the intervening air breaks down, and a discharge of large proportions results. The same discharge may be



Burn marks on starboard propeller dome and clamp ring.

Enlarged view of burn marks on starboard propeller hub.

initiated if an aircraft passes between two oppositely charged cloud or precipitation areas.

The frequency and intensity of lightning discharges involving aircraft increases with the aircraft's speed and size, and with the intensity of turbulence and precipitation (especially of the solid variety). The frequency is at a maximum in the temperature range of plus 5° C to minus 5° C, although the intensity may be greater at somewhat colder temperatures.

Effects of Discharges

Naturally a pilot is concerned with the effects of these discharges on his aircraft and himself. Frequently the result is complete radio and magnetic compass failure, and temporary engine failure. One RCAF report tells of a "strike" in which portions of the aircraft radio were blown through the side of the aircraft. Smoke-filled compartments and blasted windows are not too rare. Pilots may be blinded by the intense flash for anywhere from a few seconds to more than ten minutes. In some past instances, a period of deafness has resulted, most likely as a product of the resounding report heard through the earphones. It left one pilot debating whether his engines had stopped or whether he had merely been deafened.

Even an exceptionally cool and collected pilot is apt to suffer psychologically for a few minutes if several of the above effects team up on him. As if electricity alone is not enough, Nature may also have turbulence, hail and ice up her sleeve. It is wise to take precautions which will at least minimize the risks of lightning discharge. Above all, pilots should never discount the possibility of lightning in winter just because there are no CBs around.

Recommended Flight Procedures

▲ Avoid heavy cumulus and cumulonimbus whenever possible, especially in the temperature zone of plus 5° C to minus 5° C where most discharges take place.

▲ When radio static and St. Elmo's fire warn of the possibility of a discharge:

- Reduce speed(rate of production of static electricity varies according to the cube of the air speed)
- Ground the antenna; reel in the trailing type
- Turn the cockpit lights on full (night)
- Focus eyes on lighted panel, or shade them in some way.

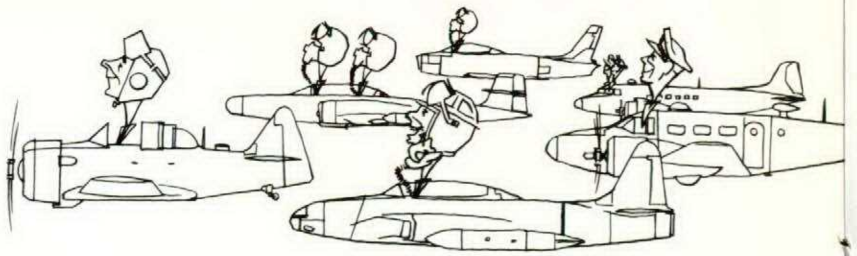
Occupant Protection

Designers of new transport and business planes have the advantage of a considerable amount of information developed by the military, CAA, and Cornell's Aviation Crash Injury Research staff, to improve the survivability of passengers. Tested improvements in seats, belts, doors, exits, floors, and cabin structure can be incorporated.

In addition the operator can also contribute by instituting regular and realistic crew training, and by installing floatable seat cushions, emergency lights, slide shutes, rescue beacons, etc. Two out of three accidents occur away from the airport where outside assistance is not readily available, so the value of built-in occupant protection is vital.

Even with trained rescue crews, accident analyses have shown that 65 to 70% of survivors are incapacitated through injuries or concussion, and have to be assisted from the airplane. With the increase of "luxury" items in the new transports, incorporation of safety features is apt to be given secondary consideration.

Aviation Safety Center
Cornell University



HEADS-UP FLYING

Per Ardua Ad Landing

F/O E.D. Anderson was flying as number four in a four-plane Sabre section on an air-to-air firing mission. When the section arrived at the assigned altitude of 30,000 feet, it found the cloud too high for firing, so number one ordered a return to base.

When F/O Anderson advanced his throttle, prior to closing in for join-up on number three, there was an explosion, and the rpm hung up at 75%. Shortly after this the Sabre entered cloud before the lead aircraft could effect a join-up.

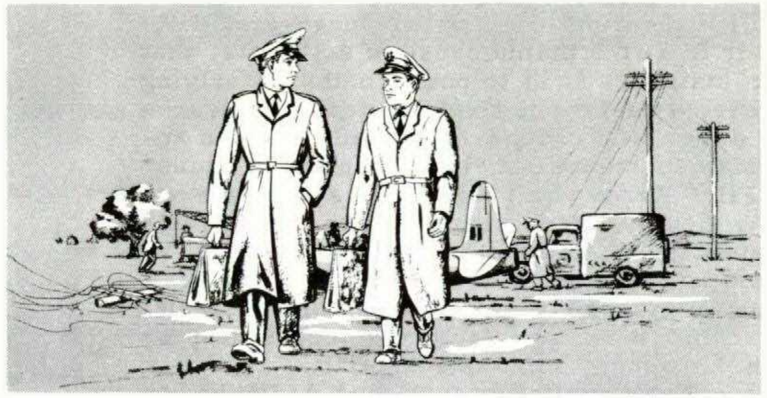
Forward throttle movement produced no effect on the rpm or TPT, which had stabilized at 550° C; however, when the throttle was retarded, the rpm started to decrease, so the throttle was left in a partially open condition.

Vectors from GCI were received, and F/O Anderson descended towards base, still in cloud. Pressurization having been lost, the canopy frosted over during the descent. The Sabre broke out of cloud at 4500 feet over base, and the canopy cleared sufficiently for the pilot to set up a forced landing pattern and land without further incident.

From the statement made after landing it was first thought that a compressor stall or hang-up occurred. The aircraft was ground-run and proved serviceable on a test flight. However, further trouble occurred on the next trip, so the fuel control unit was changed and the aircraft given another ground run. When the engine hung up on these tests, it was removed and sent to the factory for strip examination.

F/O Anderson's successful landing in the face of this unusual emergency is made all the more remarkable by the fact that his total flying time amounted to 362 hours—a mere 66 hours of which were on the F-86 Mark V Sabre.

When We Assess It Pilot Error



S/L T. Wallnutt

Pilots are a proud, sensitive breed, forever incensed by the phrase "Pilot Error" and the obnoxious statistics which disclose that pilots alone are responsible for over 50% of the flying accidents involving loss of life and the destruction of aircraft and property.

Many feel that the assessment Pilot Error is applied indiscriminately to too many accidents by people who fail to investigate the facts thoroughly and to appreciate the pilots' problems. Others are quick to point out that Pilot Error is so broad a term it often disguises the real causes of accidents—design imperfections, training deficiencies and physiological weaknesses; and worse, that by thus obscuring the real causes, it makes the introduction of corrective measures impossible. This is the stigma attached to Pilot Error by the uninformed.

The aim of this article is to dispel some of the misunderstandings about Pilot Error assessments of flying accidents in the RCAF.

Let us first examine our system for assessing the causes of accidents. To ensure uniformity, the final assessment on all flying accidents is done by one agency—the Directorate of Flight Safety. Here a staff of accident inspectors meticulously examines every scrap of evidence produced by the field investigation. Then all the causes of the accident are isolated and identified in order that immediate corrective action can be taken to prevent recurrence.

Proving the causes is never left to one inspector; the experience and judgment of a number of them will be consulted before any decision is made. Moreover, these accident inspectors are experienced active pilots themselves, sympathetic to the pilots' everyday problems. In addition, pilots always head the field investigations where the evidence is gathered. Thus the pilot's position is always protected.

When the causes of an accident have finally been isolated, they are phrased according to the eight "Cause Factor Codes" set out in Appendix "C" of AFAO 21.56/01. (See "10 Rules for Flight Safety", also by S/L Wallnutt, in the Jul-Aug issue of Flight Comment.—ED) By this means, it is possible to group the many causes of flying accidents and incidents into a convenient number of categories so that the causes can be recorded in an orderly system from which useful statistics can be compiled to identify areas of weakness and trends in flying accidents. The number of Cause Factor Codes used in a system is purely arbitrary, but for statistical convenience, the fewer the better. Our choice of eight has proved satisfactory. Into these eight Cause Factor Codes we categorize, and record for future reference, the causes of all aircraft flying accidents and incidents.

Irrespective of the number of causes in an accident, the cause of greatest magnitude is selected by the accident inspectors and called the "Primary Cause". The remaining causes are called "Contributing Factors", and they too are permanently recorded in the statistics section and may be extracted from time to time for evidence in determining trends. However, the Primary Cause is the one that requires the greatest attention in flight safety. Hence, only the Primary Cause appears in our published statistics on accident rates. These statistics provide the information necessary to give clear direction to our whole flight safety program.

Now, in the light of this brief review of our system, let us examine the assessment that causes the most concern—Pilot Error. First, it is one of the eight cause factor codes, and through necessity it represents a fairly broad area in accident causes. It is a broad area in one sense because the pilot is a complex component in the flying operation, capable of committing many different kinds of errors. On the other hand, it defines the failings of only one agent in a very intricate business; and specifically it defines only one of the many human agents that fail.

The theory had been advanced that Pilot Error is not a prime cause of accidents, that our statistics fail to point to the underlying causes, and hence, that remedial measures are often left undone. Certainly we can appreciate that there is a "cause behind the cause" of Pilot Error, but this holds true in our other Cause Factor Codes. Take for example "Materiel". A Materiel assessment may represent poor design, a failure in any one of a thousand aircraft components, faulty material caused by poor manufacturing techniques, or even the wrong choice of material.

Hence, the statistics section at AFHQ has to record the broad, as well as the basic, causes and circumstances of every Materiel assessment if it is to achieve its aim: identification of the particular areas of weakness which produce accidents. Similarly it has to record, where possible, the basic causes of all the codes, including Pilot Error. Sometimes the investigation is unable to identify the actual basic cause of Pilot Error. In such a case, since the circumstances that led to the Pilot Error are usually known, these are recorded as contributing factors to identify the specific area of weakness. In many cases, corrective measures are taken immediately on these factors, even though they may be only suspect.

One example of a basic cause of Pilot Error is vertigo. Many people feel that this label is incorrect because vertigo is a physiological deficiency. However, for our purposes, vertigo is a basic human weakness which, while it occurs in all pilots to some degree, can normally be overcome by training and avoidance of fatigue. In any case, wherever vertigo appears as a cause in a Pilot Error accident, that fact is noted on the accident report.

When, under this system, our records began to show a rise in the number of cases of vertigo, corrective measures were introduced by raising the physical standards, providing extra training, and improving the design of cockpits to avoid unnecessary head rotation. Thus, contrary to belief, the basic causes or circumstances that lead to Pilot Error are not disguised or obscured in our assessment system, nor are remedial measures neglected.

Some people are quick to remark that if the corrective measures for Pilot Error involve changes in training and design, then we should

1.

2.

assess the causes as Briefing or Materiel (design), since they more accurately imply the basic faults. This leads us to consider the criterion used by DFS in deciding whether an accident should be assessed Pilot Error rather than, say, Briefing or Materiel.

Briefly, the criterion may be expressed in this way: "Only if the pilot fails to react to a given situation reasonably, considering his training, workload, the design limitations of equipment, ground facilities, etc., will the cause factor of any accident be assessed Pilot Error"; or, "Only if he fails to do what is expected of every other pilot in the service under similar conditions, will the cause be assessed Pilot Error".

Certainly the assessment Pilot Error has never been applied in any case where the initial circumstances which caused the accident were unreasonably beyond the everyday demands put upon the average service pilot.

In essence, the manner in which we assess an accident is relatively unimportant so long as our aim is attained—namely, to reduce what we choose to call "Pilot Error accidents". We

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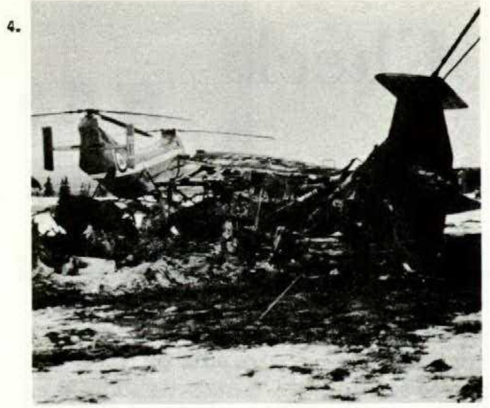


5.

1. The pilot touched down short of the runway.

2. The pilot got lost.

3. The pilot raised the undercarriage too soon.

4. A helicopter pilot was not fully conversant with transition to rearward flight.

5. Incorrect re-light procedure.

6. The pilot took off with an unserviceable radio compass and got lost.

6.

3.

acknowledge that many of the basic causes of Pilot Error may be found in imperfect aircraft design, inadequate supporting facilities, and imperfect selection and training of pilots. However, it is doubtful if the aircraft and its many associated facilities will ever be so perfect that the pilot will never go wrong; and we will probably never be able to give every pilot enough preparation for every circumstance.

Obviously we cannot legislate against all human failings. We will always have to rely on the pilot to react with reasonable skill and effectiveness in the many different environments and circumstances in which he will find himself. To succeed, he must be thoroughly professional in his everyday flying. When he fails we must call it Pilot Error; but when circumstances are beyond his control, we will assess it according to one of the other Cause Factor Codes. At all times we must keep plugging for better aircraft design, and for improvement in all the other departments if we are to make the pilot's job easier and safer.

One final point must be covered in our explanation of Pilot Error assessments. We should emphasize that the purpose of assessing Pilot Error is to identify an area of weakness that causes accidents, and not to spotlight the failure of a particular pilot. Pilot Error assessments are not "personal" assessments to be recorded on a pilot's personal file. This unfortunate practice was discontinued a number of years ago, never to be revived.

Now you know what we mean when "we assess it Pilot Error". It is our hope that the foregoing explanation will have succeeded in dispelling from the reader's mind most of the stigma associated with the term. But remember also that assessments on human failure are bound to cause a reaction in those whom the hat fits. For their part, pilots should resist the impulse to take personal affront from the phrase Pilot Error because it represents a problem area that they, more than anyone else, can help to eliminate. At the same time, Pilot Error statistics should be regarded by everyone as danger signs indicating that corrective measures lie not only with the pilot, but also with the designers, manufacturers and supervisors—all of whom are in a position to improve the pilot's lot.

"Recip" Power Check

Here is the information portion of a draft submission concerning the ground testing of reciprocating engines. EO10A-1-1N—to be issued in the near future—will outline the complete instructions for establishing reference rpm by maintenance crews.

While in no way official as yet, this information may serve to dispel any inaccurate theories circulating around aircrew rooms. Notwithstanding the procedure stressed, remember that while the full power run will not reveal general engine condition, neither will the "power check" reveal governor operation or linkage and carburettor adjustment at full power.

The present method of testing engines fitted with constant speed propellers (by running up to takeoff power) does not provide evidence of general engine condition but merely indicates that the propeller governor is functioning properly—i.e. maintaining a predetermined maximum rpm—and that the engine is operating smoothly. With the propeller control in full fine pitch, maximum rpm is reached at a manifold pressure below takeoff boost, and any further throttle opening beyond this point will only produce an increase in manifold pressure without a corresponding increase in rpm. A reduction of power such as that caused by a dead cylinder would result in a different propeller pitch, as provided by the governor, with no difference in rpm. Thus the power loss would be undetected. Running up to takeoff power for testing purposes also has a detrimental effect on engine life and should be avoided whenever possible.

From the above it is apparent that, for purposes of power-checking an engine, a datum manifold pressure must be selected which is below the point at which the propeller governor begins to function. Extensive tests were conducted to determine the most suitable datum, and results established that (with the exception of Harvard aircraft) Observed Field Barometric Pressure provided the required condition. The Harvard aircraft tested entered the constant speed range at 31" Hg, so for purposes of power-checking Observed Field Barometric Pressure, minus 2 in. Hg is required. Observed Field Barometric Pressure is defined as "observed manifold pressure on the boost gauge with the engine at rest."

By operating an engine to the above datum, the rpm of a completely serviceable engine will be a constant under all changing conditions of altitude and barometric pressure. Correction for outside air temperature variations may be made on the basis that a 1-degree Centigrade rise or fall from the standard temperature of 15°C will cause one rpm rise or fall respectively. Correction for wind velocity may be made on the basis that a one-mile-per-hour head-wind will cause a 2 rpm increase. Run-up with the tail into wind must not be performed under any circumstances. Run-up in a cross-wind may cause slight surging, and should be avoided. This corrected constant rpm, which a serviceable engine will produce at datum manifold pressure, is known as the "reference rpm". Failure to achieve this under test will indicate engine malfunction. The test is valid because changes in altitude and barometric pressure are virtually self-compensating: changes in the density of the air inducted by the engine can increase or decrease the power output by acting equally on the drag properties of the propeller to produce a constant rpm.

In aircraft fitted with fixed pitch propellers and normally separated engines, datum manifold pressure cannot be Observed Field Barometric Pressure since this manifold pressure cannot be reached with the engine operating. For this type of aircraft, datum manifold pressure will be obtained at full throttle where, again, variations in altitude and barometric pressure will be self-compensating, temperature and wind velocity corrections can be made, and a reference rpm established.

The ideal reference rpm would be one standard figure for each type of aircraft, but tests have proved this impracticable. Engine position, differences in components—i.e. tachometers, tachometer generators—slight variations in propeller pitch settings, and differences in carburettors, for example, affect rpm to such an extent that an individual reference rpm must be established for each engine installed.

A reference rpm is to be established for each engine on installation in an aircraft (establishment of reference rpm for engines now installed is to be done at the next periodic inspection). Reference rpm is to be re-established on installed engines after major inspection; after fitment of a new propeller; after changing the propeller fine pitch stop setting, a manifold pressure gauge or a speed indicator; and after repairing or replacing any component that may effect the rpm. Re-establishment of reference rpm will also be necessary if it is noted on a number of engine run-ups that the observed rpm is consistently higher than the previously established reference rpm.

AMC: Flight Safety Bulletin.

NEAR MISS

"NO" SELECTION

SFSO: "The pilot was asked by the OC OTU if he would care to write a 500-word essay for Flight Comment. He has obliged."

"My navigator and I were flying a Canuck III on an authorized solo training trip. After start-up, he began calling out the tarmac check. When he came to the fuel selection, I acknowledged that all switches were on. Again, on the vital actions check prior to takeoff, I replied that all fuel switches were on and that the wing-feed and cross-feed selections were normal.

"We took off and climbed to 40,000 feet, as briefed. Later we descended to 20,000 for other briefed air work and a single beacon letdown. Approximately thirty-five minutes after takeoff, we were heading for the beacon when the starboard engine flamed out. A quick check revealed the wing tank fuel pumps in the 'off' position. At that moment the port engine flamed out.

"We completed the cockpit check and turned off all unnecessary electrics. When the rpm dropped to 14%, I tried re-lighting the starboard engine, but was unsuccessful. An attempt on the port engine yielded the same results. After a further check to ensure that all necessary services were selected 'on', I tried twice more to re-light both engines. But no joy.

"Fortunately base was in sight and within gliding distance, so I informed my navigator that I would attempt a forced landing on the runway. When we were directly over it, I started a 360, but misjudged the length of the downwind leg. I touched down short of the runway, bounced, and finally landed on the hard surface with all wheels still locked down.

"This whole experience could have been avoided had I only taken the time to look at the fuel selection, instead of assuming that I had made the correct one. From start-up until flameout I assumed the wing fuel selection had been made—but never once did I look to be sure."

LOW POWER BEACON

A T-33 was enroute from Trenton to Winnipeg at 1000 feet on top. When the aircraft had passed Kenora, the Winnipeg range was tuned in and the radio compass switched to automatic. The clearance obtained was for a November beacon letdown, so the beacon was tuned in and identified, and when the radio compass was turned to automatic, it indicated the appropriate direction.

Approximately five minutes before ETA, the radio compass started a gradual swing to the right, and when it passed through 090° the letdown was started. On roll-out from a penetration turn, the radio compass read roughly 330° instead of 045°. A quick check of the Winnipeg range on the automatic and then on the loop position confirmed the 045 heading, so the aircraft was turned to home on the station. During this time, cloud-breaking had been accomplished at 6000 feet over unfamiliar terrain, and a pin-point placed the aircraft 35 miles northeast of the airport. With the assistance of a VHF homing, the trip was successfully completed.

When the T-33's crew tried to determine where the mistake must have occurred, the following facts were noted:

- The radio compass swung slowly but steadily from the zero position to the 120-degree position before the letdown was started.
- Station passage was four minutes early on an 18-minute leg—a considerable amount, but not thought to be unusual at the time, since the previous check points had been coming up early.

Either of the above could indicate a false station passage, but the pilot was unable to accept this because he had never experienced a similar situation and did not suspect anything amiss. Had the weather been marginal or the fuel state low, the outcome could have been quite different.

We have here further proof of the non-reliability of low powered beacons at high altitude. Possibly all jet pilots should be aware of this situation—but we would hazard a guess that all are not.

The pilot-author of this report has stated that, as an immediate corrective measure, he will not tune in the low power beacon until station passage is imminent—and then only if a more powerful facility is being used. For the future, he suggests that the power output of beacons used for jet instrument approaches be increased to an acceptable minimum.

STOWAWAY

Here's one that could come under either "Lost and Found" or "Foreign Objects in Aircraft".

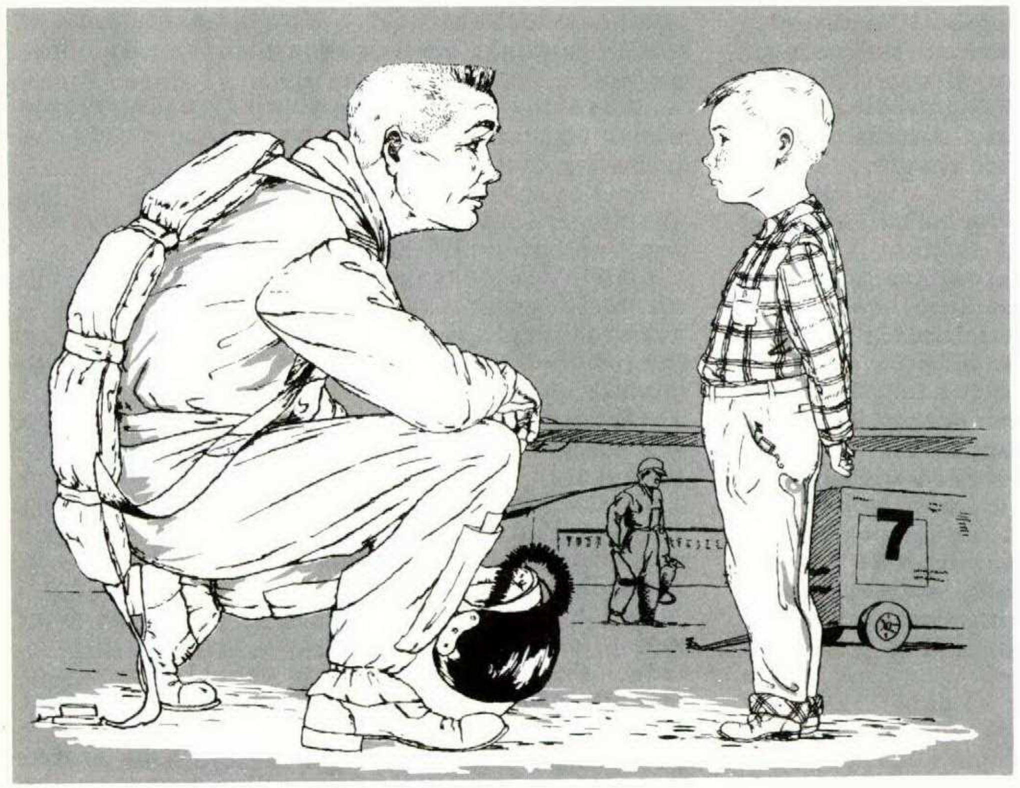
Our heroes were detailed to take a Canuck to Winnipeg for use in a static display on Air Force Day, and to fly it back to Cold Lake after the show was over. At the display, there were no retaining ropes, so the public milled about the aircraft all day, admiring the bird.

That afternoon, in order to get away from the crowd for start-up, the Canuck was towed to another part of the field. Pilot and navigator were having a smoke by the hangar while waiting for a starting crew. They noticed some young children playing around the aircraft, but didn't shoo them away because there were people all around.

The crew left for a few minutes, and when they returned, an NCO was securing the battery before raising and fastening the centre flap. The navigator suggested they check inside the aft fuselage to see if everything was OK, so the NCO unfastened and lowered the battery.

What did they find? A little six-year-old boy sitting half way back in the fuselage imitating a rear gunner and fondling the black boxes!

Think of the consequences if this crew had not checked the hollows of the aft section! Think of what would have happened to the young lad if he had been in the fuselage on the return trip at 35,000 feet! Think of the public relations resulting from such an accident!



"Sonny boy, this is one 'foreign object' story that's going to Flight Comment."

THROTTLE TROUBLE

"I was flying the number four position in a section of four Sabres on a local exercise. Shortly after takeoff, while closing up on number three in preparation for cloud penetration, I retarded the throttle momentarily. On advancing it again I noted a lack of engine response. The rpm and temperature indicators confirmed a flamed-out condition, so I immediately switched on the emergency ignition and adjusted the throttle in the hope of obtaining a quick re-light. I then commenced a 90-degree starboard turn towards the airport.

"At this time I was about six miles from the airport, immediately beneath a layer of cloud at about 2500 feet; I had about 320 knots airspeed which I could not reduce because it would have meant climbing into cloud.

"While gliding towards base I attempted an air-start by closing the throttle and (allowing for excessive airspeed) setting it in a suitable position for re-light. Although I adjusted the throttle to several positions and kept the emergency ignition switch on continuously from the first sign of flameout until I landed, there was no indication of a re-light in the air at any time. The engine's master and battery switches were at all times in the 'on' position.

"After a normal wheels-down landing, the Sabre was nearing the end of the runway when I noticed an increase in engine rpm, and realized that a re-light had occurred during the landing run. When the engine reached normal idling speed I taxied in and parked. Eyewitnesses subsequently reported having seen a long flame suddenly discharge from the tailpipe shortly after touchdown, probably indicating the moment of re-light.

"Failure to re-light in the air was likely the result of insufficient purging of fuel from the combustion chambers, since the engine finally lit up when the aircraft was placed in the nose-high attitude of touchdown. Although I was familiar with the recommended air-start procedure, I was insufficiently aware of the importance of thoroughly purging an engine before attempting a re-light. My impression was that holding the throttle off for a minute or more was desirable at high altitudes, but not essential during a low-altitude emergency. Consequently I tried to rush it a bit, holding the throttle off for no longer than ten or fifteen seconds. In addition, my airspeed was higher than it should have been for an air-start.

"Total airborne time from flameout to touchdown was probably less than two minutes, during most of which I was chiefly preoccupied with the forced landing. Soon after the flameout I was satisfied that I was in a good position for a safe forced landing. So from then on the re-light seemed of secondary importance, especially since I suspected mechanical malfunction to be the cause of the engine failure. I erred, however, in not following the recommended air-start procedure as closely as possible, despite the low altitude. A successful re-light on final approach is better than none at all—especially if the forced landing is misjudged.

"The original cause of the flameout is still obscure, but since the aircraft was subsequently found serviceable, I am forced to acknowledge the probability of throttle mishandling. At the time of the flameout I was reasonably sure that I had not inadvertently held the throttle outboard during the preceding aft throttle movement. The flameout was not noticed until after the throttle had been advanced again, so I could not tell whether or not the throttle had been retarded past the cut-off point."

[This pilot probably erred in his throttle handling prior to join-up, thereby causing the flameout. However, the pilot is not such a bone-head as he makes himself appear. In an emergency like this, time is precious. The pilot must make one or two rapid decisions and then stick by them.

Our man tried a re-light first. He used the emergency ignition because he was below a cloud base at 2500 feet. It didn't work. There remained two alternatives. Since he was relatively close to base, he could (1) attempt a forced landing, and continue trying to re-light; or (2) follow the proper re-light procedure below cloud, and then attempt a forced landing if no re-light occurred. In this Near Miss, the pilot elected to try the forced landing. He was successful and deserves our congratulations.

Some will say that the pilot should have set up the aircraft for the proper re-light conditions. But supposing the engine still wouldn't re-light. In that case, the pilot might have had to bail out or prang the aircraft in a paddy. On the other hand, if it did re-light there would be no sweat. What would you have done?—ED)

UNFIT FOR FLIGHT

"After climbing to 45,000 feet, we commenced a radar exercise using our Canuck as target. During roughly 20 minutes we kept up a normal conversation; then the observer mentioned feeling anoxic and asked me to keep talking.

"By this time the attacking aircraft had completed the exercise and its pilot suggested we switch roles. However, both the observer and myself had become 'hazy', so the observer advised the other aircraft of our condition, and stated that we were descending. We had no further clear recollection of events until we found ourselves in level flight at 16,000 feet. The limiting mach number had been dangerously exceeded during our descent. Although we still felt 'confused', we were able to concentrate sufficiently to return and land safely."

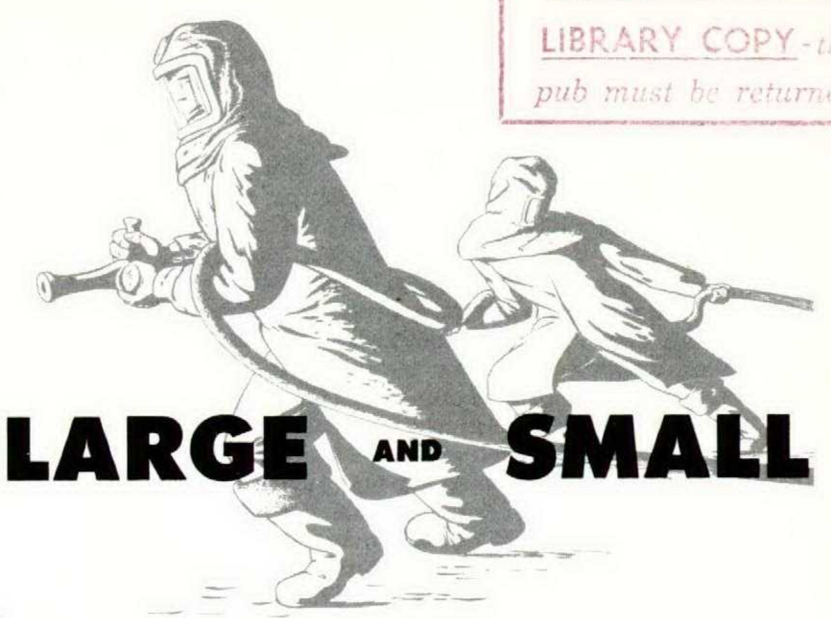
The cause of this incident is "obscure". There are, however, some significant aspects. The pilot had had nothing to eat during the previous 18 hours except a lone cup of coffee, and he had logged only five and a half hours' sleep the night before the incident. The observer was recovering from a cold, and had anticipated that he might not feel 100% during the flight. Although the incident is still under investigation, no positive oxygen fault has been revealed to date.

The crew in this case was extremely lucky. The time to abort their mission was when the observer began to feel anoxic—if indeed the mission should have been undertaken at all. According to the medical experts, a pilot who is unable or unfit to consume a normal breakfast is in NO condition to fly high performance aircraft!

STRANGE FATE

A fire-fighter on Vancouver Island was killed when a bag of ice, used to supplement the men's supply of drinking water, dropped onto him from an aircraft.

Family Herald



Fires LARGE AND SMALL

Directorate of Maintenance Engineering

Ever since that day in the dawn of history when primitive man discovered the phenomenon of fire—and burned himself badly in the process—succeeding generations of men have enjoyed and suffered the wonders and dangers inherent in the chemical properties of combustion.

In this enlightened age, the miracle of fire has been developed to a degree not dreamed of by our ancestors. And yet, largely because of the inborn indiscipline of the human race, man is still being burned as painfully and permanently as was that first fire-making savage.

The best answer to the "why" of it all has been given by a child with that characteristic deadliness of insight which so often rocks the adult world. A class of Grade VII students was writing exams, and one of the questions was, "Name three main causes of fire." The answer given by one of the youngsters was, "Men, women and children."

Oops! Who let the humans in? There's the problem, you see. Let one human in and you've got human error. Turn him loose around fire and you'll end up with one of two things: fire under control or fire out of control.

Fire under control is one of man's best friends. Did you ever stop to think of the tremendous power of gasoline as it applies to aviation? It enables a transport aircraft to get off the ground and fly tons of weight through the air at hundreds of miles an hour. Kerosene or crude oil are capable of hurling a jet along in excess of the speed of sound. Inter-continental guided missiles achieve their phenomenal speed and range through the use of still more remarkable fuels.

This power is actually controlled fire. Consider for a moment what takes place in an engine employing gasoline as a fuel. Mixed with the proper amount of air, gasoline is first drawn into the cylinder as a vapour. At the top of the compression stroke, a spark is applied to fire the mixture. The burning vapour promptly expands—and it is this expansion which provides the energy to drive the engine.

Engines using crude oil or kerosene require no spark plug. In their case it is the intense compression of air which provides the heat. When the proper temperature has been attained by this means, a squirt of vaporized fuel is shot into the cylinder, and the compressed, heated air sets it on fire.

Other well known forms of controlled fire are the heating, cooking, and various labour saving appliances we use in our homes or places of work. These are only a few of the multitude of devices by means of which "fire under control" is used for the benefit of mankind.

Fire out of control is man's worst enemy. The same fuels and devices which are such a boon when harnessed, can wreak havoc if they get out of hand. A careless or thoughtless act on the part of someone working with dangerous liquids, gases, vapours, spray paints or dust can cause widespread destruction, injury and death.

Oceans of ink and acres of paper are expended annually to warn of the hazards of playing with fire, but a sizeable percentage of us still choose to ignore wisdom and commonsense. Thousands of lives and untold wealth—both on "civvy" street and in the armed forces—are sacrificed every year to the appetite of uncontrolled fire. We in the RCAF's aircraft maintenance branch add our own quota to that toll.

One of the ever present "bogeys" facing technical personnel—especially the technical workers in our hangars and workshops, and around aircraft—is fire. Alarms have been responded to which turned out to be explosions in hangar areas, with or without a following fire.

It often happens this way. Someone will leave an open container of gasoline lying around. It likely contains only a small amount of gasoline—sometimes not more than a pint. Someone else comes by and accidently knocks over and breaks a technician's lamp. Instantly there is an explosion or a flash fire—and it may get out of control swiftly enough to demolish a hangar.

Or perhaps an open container of gas is sitting in an upstairs workshop. Fumes, being heavier than air, may roll along the floor and descend to the basement where they build into an explosive mixture. At this stage, the flame from a gas water heater, a lighted match, or a spark from a metal object rubbing or sharply contacting another object is all that is required to turn the place into a raging furnace. Occasionally a fire will follow the trail of vapour back to its source, thereby substantially increasing the area of damage.

The big question obviously is, What can we do to prevent the fires that may develop into costly uncontrolled fires? Going back to the small blaze is simply tackling the problem at its source—and no one has ever devised a better method of tackling a problem. Following, then, is a list of nine anti-small fire precautions for aircraft hangars and workshops, designed to keep the walls standing and a roof over the heads of your happy workers. No unit that claims to sport a Safety program can afford to be without one.

- Keep ground wires attached.
- Use drip pans as required.
- Deposit waste, dirty gasoline, Varsol etc. in the drums provided.
- Remove pails of volatile liquids, dope etc. from floor areas where they may easily be tripped over or upset.
- Wipe up, immediately, spills of gasoline, Varsol, dope etc, and deposit dirty rags in a safe place, preferably outside the buildings.
- Keep volatile fuel off concrete, both inside and outside hangars, when draining aircraft tanks; otherwise it will be absorbed by unpainted areas of concrete.
- Maintain vapour-proof globes, extension wires, plugs and sockets in good order.
- Store gasoline for blow torches, etc. in red-painted, self-closing, one- or two-gallon containers.
- When lighting blow torches, set them on concrete or metal top benches, away from combustible materials.

Would any reader argue with us if we made the claim that "every week should be Fire Prevention Week?" Anticipating a "negative", we'll go one step further and suggest that no opportunity should be lost to pound home the grim truth that uncontrolled fire is a dangerous enemy—and that unremitting caution is the best weapon with which to fight it.

One last tip. What about a poster for all hangar and workshop areas? All it would have to contain is the simple, unvarnished truth: "One gallon of gasoline is equal to 85 pounds of dynamite in destructive force!"

THE LAST WORD?

Have you ever found yourself discussing the weather with a fellow Air Force type—or, for that matter, with a local resident? If the weather happens to be bad, you are informed that this is the worst winter (or summer) in history. Or if you should be talking to a chap who has just arrived from just anywhere, you are told that people there are enjoying a beautiful summer (or winter) in that particular part of Canada.

As for yourself—well, nothing can compare to the old home town. But if you have time to listen, you'll find that your buddy thinks the same way—only he'll be talking about his home town, not yours.

By way of illustration, we happened to mention to a fellow officer the other day that Vancouver was having its share of wet weather again this year. Before another word could be said, he whipped out a piece of paper and began comparing Vancouver weather to the rest of Canada in a most convincing manner. Peeking slyly over his shoulder we discovered that he had conclusive proof to back up his statements, so the argument didn't have a chance to really get started.

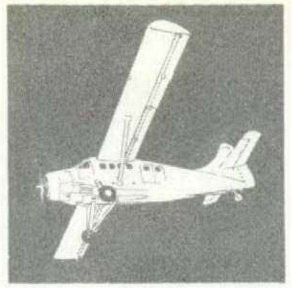
Along this same line of thought, how many man-hours are wasted in argument about the weather by people who don't really know the facts? In an attempt to put everyone in the picture, we are printing a climatic summary for Canadian weather that covers the past 50 years. While the survey is accurate, we don't recommend that you refer to it during your morning briefings. Let the "Met" man give you the "gen".

CANADIAN CLIMATIC SUMMARY

Averages For Past 50 Years

City	Temperature				Precipitation		Sunshine
	Apr-Nov		Dec-Mar		Inches	Days	Hours
	Max	Min	Max	Min	Per Year	Per Year	Per Year
Vancouver, B.C.	63°	47°	44°	34°	57″	172	1832
Victoria, B.C.	61	46	46	37	27	144	2207
Nanaimo, B.C.	63	47	45	34	38	—	1884
Kamloops, B.C.	68	45	36	22	10	88	2178
Calgary, Alta.	61	35	30	8	17	101	2245
Regina, Sask.	62	36	17	−4	15	109	2294
Winnipeg, Man.	61	39	15	−5	21	118	2124
Toronto, Ont.	64	46	33	19	32	145	2048
Belleville, Ont.	65	48	31	13	31	150	2023
London, Ont.	67	45	33	17	38	163	1909
Ottawa, Ont.	64	44	25	8	34	139	2016
Montreal, P.Q.	63	47	26	12	41	164	1803
Quebec, P.Q.	60	43	23	8	40	174	1745
Halifax, N.S.	61	44	34	19	56	156	1835

ARRIVALS and DEPARTURES



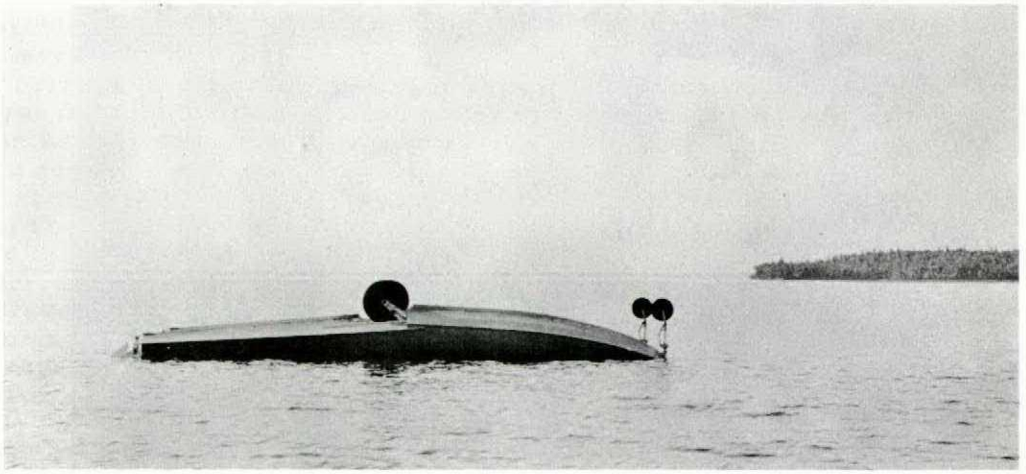
Otter Turns Turtle

Recently a pilot was being checked out on water landings in an amphibious Otter. During the takeoff, which was made from a runway, the captain became engrossed in a discussion of such techniques as flap settings and change of trim. As a result, he failed to do a proper post-takeoff check, and the wheels were left in the "down" position.

The aircraft was flown to a water area for practice landings. There a pre-landing check was completed, but both the captain and the pilot who was being checked out failed to notice that the gear was extended. Touchdown was smooth; but shortly thereafter the Otter's nose dropped violently and the aircraft turned over on its back, sustaining "B" category damage.

The accident was assessed "pilot error" because the omission of the checks was the direct cause of the mishap. Two contributing factors were present. First, the captain was preoccupied after takeoff. He should have done the requisite checks before explaining the operation. Second, amphibious floats on an Otter are a relatively recent modification. It is quite possible that the captain forgot he had wheels to contend with.

Luckily no fatality occurred, although the pilots experienced considerable difficulty extricating themselves underwater from the inverted aircraft. The lesson learned is that you can't land the Otter on water with its wheels extended. Pilots of amphibious Otters must ensure that wheel checks are properly carried out prior to alighting on land or water.



PIREPS Shortage?

A Canuck took off as number three on a broadcast control exercise. The aircraft was cleared for a north channel departure on a heading of 360°. Shortly after takeoff, number one reported CB activity and severe turbulence on that heading and suggested that number three climb further east. Number three turned to starboard but was in the turbulence, with heavy rain and lightning up to 20,000 feet. When the aircraft landed, it was found that hail had damaged the rocket pod cones.

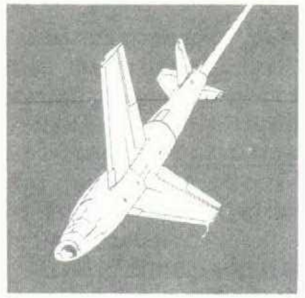
During the weather briefing prior to this flight, the Met officer did not mention CB activity in the penetration area, and radar did not disclose its presence. While the cause of the accident has been attributed to the Met section, we wonder how many PIREPS they received during the early evening. We'll be surprised if they received any!

Let's get after this problem. Help the Met man help you, or the next man to be scrambled. You're not flying for yourself. You're flying for the whole of the RCAF. Get into the PIREPS habit. Make the air safer for yourself and the rest of us.

Dark Eyes

It's the little things that cause ground accidents, just as they cause air accidents. For instance, an Arm S Tech wearing polaroid sun glasses was driving an L-14 fork-lift tractor into a hangar. Coming in from the bright sunlight, he saw an aircraft and swung wide to avoid it. In doing so he ran the fork-lift into the wing tip of a Canuck.

The airman was charged and found guilty of negligence, but that didn't prevent the accident from happening. Surely we can use more common sense in the first place to prevent these little things from causing accidents.



Flying "Blind"

After rolling 100 yards down the runway on takeoff in a Sabre, the pilot heard a noise, but he assumed it was a bird strike and continued the run.

While climbing through 5000 to 10,000 feet, the loadmeter and voltmeter needles flickered from high to low, and the generator and main radar lights flashed. The smell of something burning was apparent for a short period of time, but this disappeared and the warning lights went out. The pilot found that by throttling off and reopening the throttle, the instruments would return to normal. However, when the generator switch was reset, the voltmeter and loadmeter gave erratic readings.

The flight continued normally for another 30 minutes, after which there was a bang which the pilot assumed to be a minor explosion. He finally returned to base and landed in one piece.

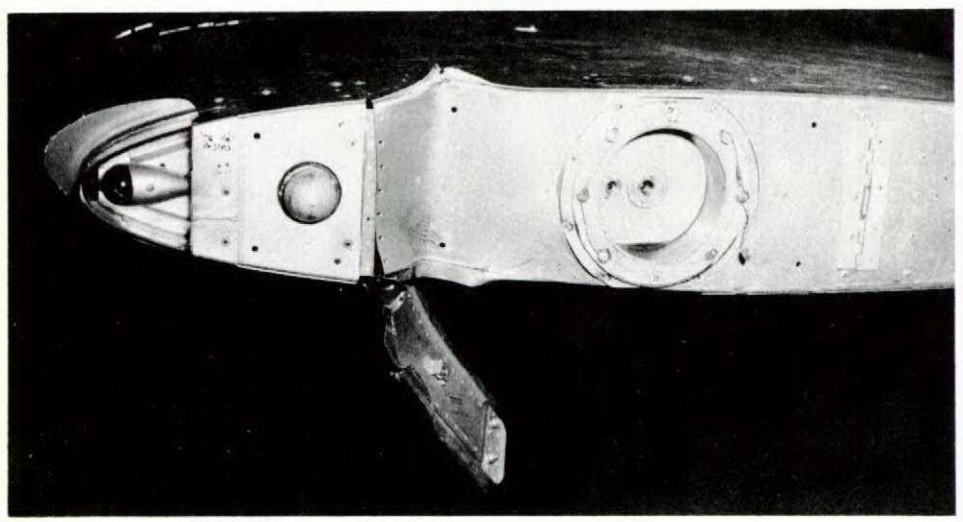
The first noise heard during the takeoff run was assumed to be a bird strike. Although no damage resulted, the pilot did not know this—yet he carried on. The malfunctioning of voltmeter and loadmeter was caused by an intermittent failure of the starter generator, arising from a maintenance error: inadvertent reversal of one of the four sets of generator computator brushes. Again the pilot did not know this.

The bang that he assumed to be a minor explosion may be explained as a slight decompression of cabin pressure caused by faulty operation of the generator.

It is apparent that this pilot showed a complete disregard for the emergency that existed, thereby providing the potential for a serious accident. He committed the first error in basic airmanship by continuing his takeoff after receiving an indication of a possible bird strike during the first 100 yards of the takeoff run. Then, while in the climb, he ignored the possibility of a complete electrical failure, and continued the flight while the emergency persisted. Finally, the pilot passed off the loud bang as a minor explosion.

A lot has been written in these pages about aircrew knowing their aircraft and getting down on the ground when anything is amiss. It would appear that our hero either does not bother to read Flight Safety material, or else feels that the information passed along is for the other fellow.

The incident we have related has been assessed as "maintenance error", but this particular pilot has demonstrated that he is living on borrowed time.



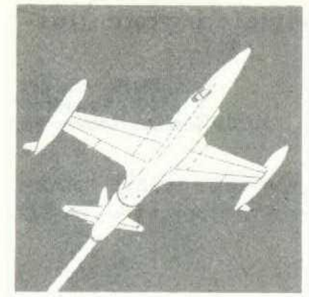
No Pilot Error!

The stage was set. It was a dark night. Floodlights had been on order six months, but had not arrived. A unimog was parked within nine feet of the taxiway, and a Sabre was going by. Yes, Mother you've got the picture! The aircraft was involved in a taxi accident!

In the past, a pilot was always blamed for any taxi accident because, if he was in doubt, he could always stop and shut down. In this case the pilot was not in doubt, he was using taxi lights, he was moving at a slow speed, and he just couldn't see the piece of ground handling equipment because of inadequate lighting.

It is felt that the pilot took every possible precaution to prevent an accident (other than staying in bed). The primary cause of it was the failure of a person or persons to park the unimog further than a wingspan from the tarmac. A direct contributing factor was the failure of the supply section to action a request for floodlights to light up the area. Accordingly, for the first time in the history of the RCAF, a taxi accident has been attributed to carelessness on the part of the ground staff.

We'd like to be able to trace the reason for the lack of action in procuring the floodlights in the first place. It might make some people, other than aircrew and maintenance, realize how they can contribute to the Flight Safety program. It hurts, but it is entirely possible that the person involved is occupying a desk right here at AFHQ.



Watch Those Pins

On two separate occasions, at two separate RCAF stations, at approximately the same time, a tip tank on two T-33s was accidently jettisoned. Investigation showed that the manual tip tank release lever had been actuated and that the tip tank ground safety pins had been improperly installed. The design of the safety slot into which the pin must be inserted is such that the pin can easily miss the slot, thereby nullifying the precaution. This is a known weakness, and a little extra care is required to prevent accidents of this nature. UCR action has been taken by many units, and most aircraft have been or are being modified as per the UCR digest.

Letters to and from the Editor

Correction

During a discussion about your recent article "Hydraulics" (Flight Comment, Jul-Aug), it was decided that an amendment should be made to the caption under a picture of a C-119 hydraulic system.

The article describes the function of an accumulator in a manner which would earn praise from a trade board examiner, yet the caption reads "The big tank, called an 'accumulator', is the reservoir for hydraulic fluid"—a statement that would earn no marks.

Having had previous correspondence with your magazine, it was decided I should inform you of the error on behalf of CEPE Maintenance Section. I am sure you are glad to have such remarks from the field, because it shows that Flight Comment is being read.

J. Cockerell, Sgt
CEPE Maintenance Section
RCAF Station Uplands

Is not the big tank—called an "accumulator" in your article—really the main hydraulic reservoir? The "accumulator" is located outboard of the reservoir and is not visible in your illustration.

S. A. McKenzie, Sgt
436(T) Squadron
RCAF Station Downsview

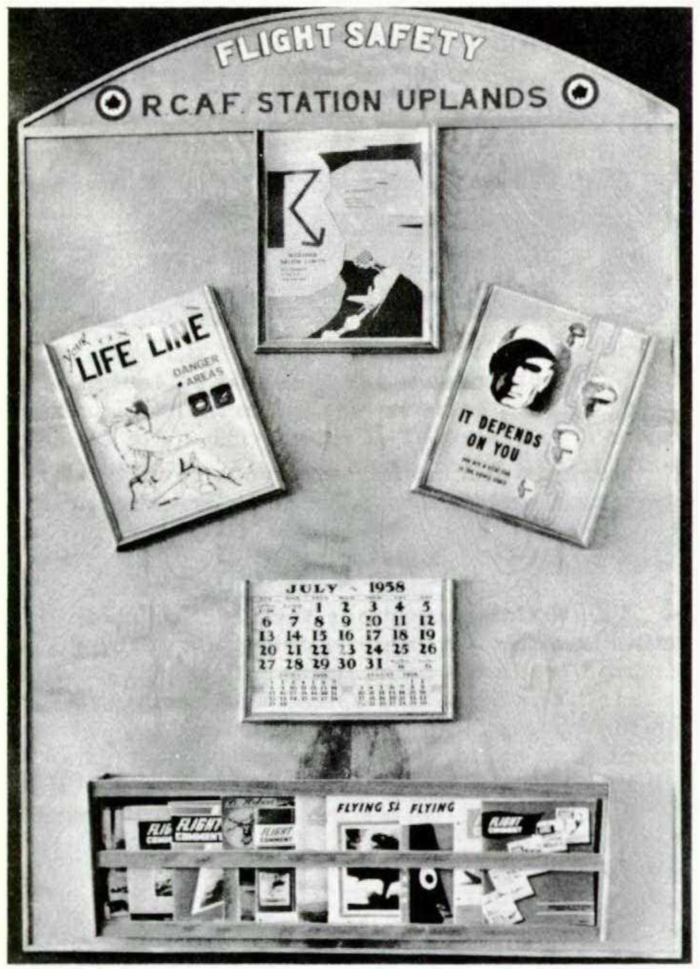
Thank you, gentlemen! We appreciate hearing from the field whenever we make a slip. — ED

Ingenious, These Uplanders!

In the March-April Flight Comment we printed a photo of a Flight Safety bulletin board constructed at Station Portage. The latest in the line has just reached us from Station Uplands.

Notice the calendar as an extra attention-getter. You look up to check what year it is and—wham! Flight Safety lands another punch. The over-all effect of the Uplands' board is clean and striking. A nice piece of work.

Come on, you other units. Let's have a look at your handiwork. Your ideas may deserve a wider audience than they are currently reaching. —ED



FLIGHT COMMENT

ISSUED BY

DIRECTORATE OF FLIGHT SAFETY

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STAFF

Editor-in-Chief—Squadron Leader George Sheahan

Editor—Mr. Jack E. Nugent

Circulation—Flight Lieutenant Peter Bremner

Artists—Mr. Jean A. Dubord
Mr. Harry K. Hames

Editorial Assistant—Mrs. Nancy L. Chenier

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BIRD WATCHERS' CORNER

YULETIDE THR(L)USH

A common species that starts quiet little do's beginning the middle of December in anticipation of Christmas and New Year's (which pass unnoticed), and is still tapering off early in January.

He is always the life of the party, and can be recognized the following morning by his ruffled feathers, bleary eyes and heavy eyelids. He skips the morning bird seed, but insists he's on the ball.

His call is both joyous and pitiful:

MERRYXMASMERRYXMASMERRYXMASMERRYXMAS
PASSTHEREDEYEPASSTHEREDEYEPASSTHEREDEYE

WHEN IN ROME....

. . . do as the Romans do. You've all heard this expression before. But the odd character will ask, "What's it got to do with Flight Safety?"

Take a closer look. The old adage seems to suggest that a "foreigner" is better off when he acts like a "native". What it boils down to is that the smart operator adapts to his surroundings.

Think about it a minute, friend. As you read this, it may be snowing outside. If it isn't, it soon will be. When the Winter finally settles in, your whole environment will be altered. Snow and ice will be replacing green grass and balmy weather. When *that* happens, it won't pay to be non-Roman. You'll *have* to alter to suit the environment. Bare feet will be out—and so will warm weather flying techniques.

So this Winter, do as the Romans do. Pretend that you're just a "foreigner", because it's true, really. You've been "foreign" to Winter conditions at your unit since late last Spring. And be a *smart* "foreigner": Play it "native"—or Roman. At least till you get the feel of the place!