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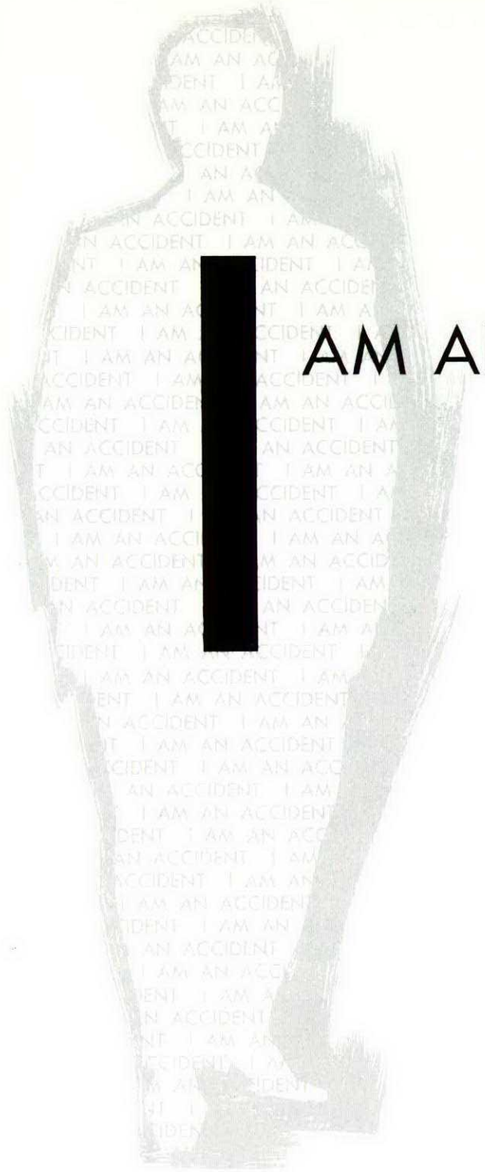
FEATURES

ROYAL CANADIAN AIR FORCE
DIRECTORATE OF FLIGHT SAFETY



I AM AN ACCIDENT

by F/O R. E. MERRICK

I am an accident.
I didn't "just happen" I was caused.
I come from a large family.
None of them just happened either.
They were all caused.

We are found everywhere: everywhere that there are human beings. We will always be found there, taking our toll, contributing misery and heartache, and causing destruction and taking lives.

How do we get started? It's easy, really. A moment's inattentiveness, a moment's carelessness on somebody's part, is all we need for a start.

Oh, I know, a small error by one person may not seem sufficient to cause me all by itself, but you'd be surprised how often the original error is compounded by somebody else either not noticing it, or making another one. As I say, it's easy to be an accident; sooner or later someone will come along to create you.

Admittedly, we accidents don't have things all our own way. There's always somebody harping about prevention. Every paper you pick up has an editorial by some well-meaning citizen on how to forestall us. These editorial yammerings serve one purpose: they help the editor fill his paper!

We of the accident family do have one very powerful weapon on our side, and that weapon is everyone's belief that accidents happen to, or are caused by, other people.

This—and I must emphasize it, because it is all-important—is the main reason for our increase. Nobody, absolutely nobody, ever thinks that he's going to have, or cause, an accident.

There are, of course other things involved—fatigue, boredom, lack of training, failure to

follow recommended procedures, hurry to get home, inadequate supervision, and lack of knowledge. These and many others combine to cause one of us. But the main reason is that belief that accidents happen to, or are caused by, someone else.

This mythical "someone else" is usually depicted as an appalling inept and imcompetent bungler, steering a wobbly course from one accident to the next.

This is where we accidents gain a slight edge in our struggle for survival. The incompetents do give life to a few of us, but misfits are so obvious that their work is double-and triple-checked, and the spark of life which they have given us is snuffed out.

No, the inept are not really for us.

It might surprise you, but we really get our biggest assist from the competent, the conscientious, and the hard-working. We sneak up on this model worker on a day when, perhaps, he's not at his best. Perhaps his wife is in hospital, possibly his boss has just given him an uncalled-for hard time. Or he may have to leave the job to go to a meeting, or get his pay.

There is an unlimited number of possibilities, and we accidents are opportunists; we take advantage of each one. No error is too small for us to consider.

Perhaps if I was to reveal to you my whole hideous history, it might prove illuminating. I am an aircraft accident, but I could just as easily have been a traffic accident, an industrial accident or a household accident. We accidents don't care.

I was conceived fully two months before my final destiny. A technician, while carrying out a BFI on a visiting aircraft, noticed that a lock-nut was missing from the port undercarriage assembly, and that a fuel line in the port wheel well was chafed.

Before he could effect any repairs, the pilot arrived. After some discussion, it was decided that the defects would be entered in the L14-T, and rectified when the aircraft arrived at its home station. I now had a foothold, albeit a precarious one.

My foothold was strengthened when the aircraft arrived at its home station, because the pilot, although he briefed servicing on the chafed fuel line, did not mention the missing lock-nut. I was still shaky, but I was gaining.

I received another assist when the entry was transcribed from the travelling copy of the L14 to the base copy. The transcription was made by an NCO of another trade, who did not realize the importance of the innocuous minor entry about a missing lock-nut.

After this, I grew rapidly, but it still wasn't all clear sailing. Every week, for seven weeks, the aircraft was PI'd. On some of these occasions I came perilously close to discovery, but I always managed to sneak through undetected.

One inspection in particular brought me to the verge of extinction. I won't bother you with technical details, but the missing lock-nut, coupled with the normal vibration, had caused a few things to work loose. The loose parts were immediately detected, and I thought that my career was over. But, wonder of wonders, the technician merely tightened the loose parts, without attempting to determine why they were loose.

He did, however, make an L14 entry, and his work was subsequently inspected and passed by an experienced NCO—two experienced NCOs, in fact—and they both failed to notice the missing lock-nut. I was becoming more hazardous daily.

Subsequent to this near miss, more PI's were carried out, but I continued my malevolent existence. Even though the minor entry acknowledging my presence was listed on the minor defect record for almost two months prior to my climax, I was allowed to go undisturbed.

The stage was now set. All I had to do was to pick a time to happen. The opportunity was not long in coming.

The aircraft was nearing the end of a cross-country trip. I could see the faces of the pilots as they spied their destination. They were content and satisfied as they thought of another successfully completed trip.

Downwind now. "Gear down," said the pilot. "Roger, gear down", echoed the co-pilot, as he reached for the actuator. "Grank", said I, as the port undercarriage actuating mechanism fell apart.

The faces of the pilots now registered not contentment, but dismay. Dismayed or not, they still attempted all the recommended emergency procedures to get the port gear to lock down, but I had done my job too well. The port gear remained swinging gently to and fro in the breeze.

The pilots then decided to raise the undercarriage, but I had another nasty surprise for them. The eye-bolt that was supposed to be held by the missing lock-nut was now firmly entangled in the chain sprocket, so that when the pilot said, "Gear up", and the co-pilot answered, "Roger, gear up", I was again able to answer, "Grank".

You should have seen the consternation then! There they were, with the starboard gear jammed down, and the port gear swinging back and forth like a pendulum ticking off the last minutes of an expiring life.

At this point, I thought that I was going to be a really spectacular success. As I watched the aircraft flying around, I was able to envision, at the very least, a vicious ground loop, with resultant bits of aeroplane and people spraying around.

Alas, I had not reckoned on the perseverance and luck of pilots. After they had flown the aircraft about for a couple of hours, the eyebolt which was jamming the chain-drive sprocket fell free, and they were at least able to raise the starboard undercarriage.

Once the crew was able to get the starboard wheel locked up, they carried out the landing. As the aircraft hit, the port gear folded neatly into its well, and the aircraft slid along the foamed portion of the runway, and finally slewed to a stop in the infield. Although the aeroplane suffered some damage, nobody was injured.

As accidents go, I wasn't a great success. Admittedly, I scared the daylights out of a couple of pilots, but I certainly didn't draw the big black headlines that some of my brothers rated.

Looking back upon my career, though, I feel that I was lucky to get as far as I did. I could have been stopped a number of times, but I always eluded capture.

The omissions that sustained my life were not major. Any one of them, taken by itself, is not an accident cause, but their cumulative effect certainly is.

You can profit from me. You might well profit, because I've cost you something, and you should get something back for the cost.

In a way, I am a perfect example. Look at me closely. You will find that I am made up of faulty procedures, poor techniques, insufficient supervision, and inadequate training. Does that sound familiar? It should, for I am only one of thousands.

You are perhaps wondering why I am so free with advice, which, if followed, could only lead to my extermination. It is because we accidents are formidable foes, and only the most vigilant organization will finally defeat us. None of the things which caused me was original. Everybody was aware of similar accidents, but I still happened.

The worst thing for me and my family is a constant review of your own organization, and the active elimination of safety hazards. You must be always alert for possible causes, because we strike hard, fast, and for keeps.

What I'd really like to hear you say is, "Nonsense, things like that never happen in my empire!"

Adopt that attitude and sit back and wait. I'll be seeing you!

F/O R.E. MERRICK

F/O R. E. Merrick was born and educated in Vancouver, B.C. He joined the RCAF in February, 1956, and after training as an Al Navigator at Centralia, Winnipeg, and Cold Lake, became a member of 432 AW(F) squadron at Bagotville, Quebec, in April, 1958.

After two and one-half years of squadron service, he was transferred to the Maintenance Test Flight of Station Bagotville in September, 1960. He is at present in the United States taking the Bomarc Operations Officers' course, after which he will be transferred to 447 SAM squadron at La Macaza.

During his stay at Bagotville, F/O Merrick was associate editor of the station newspaper and contributed many Flight Safety articles to it.

LAC R.P. GARRETT

LAC Garrett was carrying out a BFI on a CH-112 helicopter, prior to its low-temperature test flight. During the inspection, he noticed what appeared to be blistered paint on the transmission center-section casing.

A closer look indicated other evidence of overheat resulting from an internal malfunction. All CH-112s were listed "unserviceable", pending the results of a strip report which subsequently revealed that inadequate lubrication had caused much damage.

The report also declared that a complete transmission seizure would have happened within the next minute of operation. LAC Garrett's professionally thorough approach to his job almost certainly prevented a serious accident; he is most deserving of congratulations for his Good Show.

F/L G.M. McPHERSON

F/L McPherson was captain of a Neptune which carried out a normal takeoff and climb; but just before reaching 17,000 feet his radio operator reported black smoke puffs from #1 reciprocating engine. An analyzer check revealed that #15 cylinder was dead. The engine was feathered, and the aircraft was flown back to base area to burn off fuel.

During burn-off at 1,000 feet (jets at 96%, #2 recip. at 2,300 rpm, mix rich, mp 34") the power on #2 recip fell off to 24" mp with torque at 50 psi. F/L McPherson declared an emergency, re-started #1 recip, feathered #2 recip, and carried out a successful landing with an all-up weight of 69 thousand pounds.

The recip engine failures' were assessed Materiel. F/L McPherson carried out emergency procedures calmly and correctly, and landed the aircraft under extremely adverse conditions. His professional performance merits a Good Show.

F/C W.R. CARLSON

F/O R.K. HEARD

F/O Heard, an instructor at 2AFS Portage, and his student, F/C Carlson, had just done a practice landing and overshoot in a T33 aircraft. When the undercarriage was selected up a loud noise was followed by a power loss. F/O Heard took control of the aircraft; suspecting a fuel pump failure, he selected the engine fuel-pump isolating switch on. This produced no results.

After smelling a strong burning odor, and watching the fire warning lights come on, F/O Heard shut the engine down and ordered F/C Carlson to eject. After F/C Carlson left the aircraft F/O Heard ejected. The altitude at time of ejection was 300' to 400' above ground, and the airspeed was approximately 130 knots. Both F/O Heard and F/C Carlson landed safely, although F/O Heard's parachute deployed at tree level.

A strip and evaluation by the RCAF materiel laboratory revealed poor metal in the outer casings, fatigue, and loss of strength because of heat and age. A modification to the casings just delays rupture. AMC and Rolls-Royce are designing a new, fibre-glass cover as an interim measure. A new casing is under consideration.

F/O Heard deserves a Good Show for his quick assessment of a critical situation and his rapid, decisive action to avert a certain fatal accident. F/C Carlson's instant response to instructions was a contributing factor to the complete success of the ejection.

F/O Heard's ejection seat is in the center foreground and his parachute is to the right of the picture. F/C Carlson's chute is hanging in the trees behind the crashed T33.

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SLEEP

The poets have called sleep "great Nature's second course" and the "chief nourisher in life's feast." But over the past 20 years laboratory experiments have been unlocking the secrets of sleep, and there is much more to it than what the poets picture.

For instance, the importance of sleep has been elevated. Living organism have as much need for sleep as for food, air and water. We sleep more to rest our brains than we do to rest our muscles. But no one really knows exactly why the brain requires sleep, or for that matter what sleep is.

The cerebral cortex—gray matter—of the brain seems to benefit especially from sleep. It is there that the higher faculties of imagination, reasoning power, judgement, and conceptualization are found.

Recently personnel of Walter Reed Army Institute of Research in Washington, D. C., conducted extensive studies on sleep. More than 100 soldiers volunteered to help. Much information was gained concerning jobs requiring constant alertness—guard duty, signal men monitoring communications devices, aviators, radar screen scanners, and so on.

They found that the cerebral cortex emits electric brain waves at the rate of about 10 a second while we are awake. As we fall asleep, these waves gradually slow down to the rate of two or three per second. Billions of tiny nerve circuits close down and our plane of consciousness sinks.

Under prolonged sleep loss our entire nervous system begins to behave like a motor that needs a tuneup. The system misfires, runs normally for awhile, then falters again. What actually happens is that among our normal short, snappy brain waves will be found momentary stretches of sleep pattern. This makes us drop off into "micro-sleep." For brief snatches we'll be sound asleep, even though our eyes are open and we think we're wide awake. Our heartbeats slow down, our consciousness blanks out, and some of us even have dreams.

Tests showed that "micro-sleep" lasts about one-tenth of a second, and occurs at the rate of two or three an hour. As hours of sleep-loss mount, the lapses take place more often and last longer, perhaps 2 or 3 seconds. As the tired brain gets even more fatigued, it craves sleep so hungrily that it will sacrifice anything to get it. It is then that we can't resist "micro-sleep" for a few seconds, even while flying through a thunderstorm.

Another serious effect of sleep loss is its effect on memory and perception. Many of those who took part in the experiments found it impossible to retain information long enough to relate it to the task they were supposed to perform.

Those of us who work at jobs in which we are required to hold many factors in our minds at once might still ponder the risks of loss of sleep. A tired man may be able to get through routine tasks, but can he as an aviator integrate wind direction, airspeed, altitude, and glide path to make a safe landing?

In the research on sleep it also became evident that lack of sleep caused other disturbances. These disturbances are similar to those produced by alcohol, narcotics and oxygen starvation. Perceptions grow fuzzy, our sense of timing is off, our reflexes are a little late, and values slip out of focus.

Most of us pay another price when we stay up later that we should—irritability. Lack of sleep is frequently the real trouble when we lose our temper unnecessarily. It can make normally-cheerful people feel moody and depressed. Intensified by still more lack of sleep, a normally patient aviator may lose his temper at a time when he should be calm and collected.

The amount of sleep an individual needs is a question that has plagued scientists for years. They really don't know exactly. Although some people get along on less, most of us will be healthier and live longer if we get a full eight hours.

The amount of sleep needed will depend to a large extent on what we do for a living. Mental workers require appreciably more sleep than those who do manual labor. This is because it takes longer to replenish the nervous energy expended by brain work. It should be noted that aviators and highly trained mechanics are classified as mental workers. Even your dreams have not been spared the prying eyes of the scientist. They have discovered that dreams allow the cerebral cortex to take a rest. Studies have shown that if we do not dream, we become exhausted and irritable. This is true even when we have had our usual amount of sleep. Under normal conditions, we dream several times a night. The so-called nondreamers among us simply forget their dreams. We spend one to two hours a night dreaming. Dreams occur during light sleep and not during deep sleep. The time element of dreams is similar to the actual event. It is most interesting that two-thirds of them are in black and white and the rest in full color.

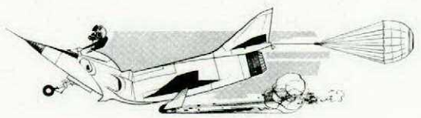
While the scientists were worrying with the problem of those who do not get enough sleep, they did not forget those who sleep more than is considered necessary. One startling discovery was that too much sleep can be just as deadly as too little sleep!

Here is what happens. During sleep CO_2 (carbon dioxide) builds up in the blood, replacing oxygen. If we should sleep too long, the CO_2 would begin to act as an anesthetic, causing us to sleep even longer, thus making the concentration of CO_2 greater still. However, you needn't worry. We've got a built-in mechanism that keeps us from dangerously oversleeping. This is fortunate because it is estimated that 16 straight hours of sleep could actually kill some people. (Reference attributed to Dr. Herbert Suher, Duke University, TRUE Magazine, Nov. 1961.)

But suppose you don't really want to sleep, or can't sleep, before making a flight. Is there something you can take that will keep you awake? Well, there is always coffee. The important drug in coffee is caffeine. The amount of caffeine in two cups of coffee affects appreciably the rates of blood flow and respiration. In small amounts it may be considered a nervous system stimulant and will keep most people awake for a few hours. But in excessive amounts, caffeine may produce nervousness, inability to concentrate, headaches, and dizziness.

What then is the answer to the sleep problem? It is simply that the proper amount of sleep for you is necessary every 24 hours if you are to remain alive in this flight business. Even a slight reduction in the amount of sleep (25 to 50 per cent) can induce significant mental impairment without any subjective feelings or physical clues. One should make every attempt to sleep or at least to nap just before going out for preflight, because the longer you've been awake before starting a task, the greater the danger of "micro-sleep."

U.S. Army Aviation Digest



OPERATIONAL HAZARD

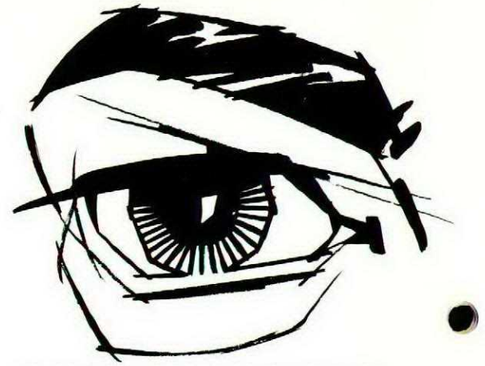
UPS AND DOWNS

A recent C45 accident led to the discovery of the following potentially-dangerous situation. The accident happened when the retaining nut on the undercarriage retraction chain worked loose, leaving the port undercarriage swinging freely. The chain and eyebolt jammed the port undercarriage drive sprocket, preventing the retraction of the extended starboard u/c. In this position, the undercarriage lights stayed off, and the warning horn blew when the throttles were retarded.

The bolt was eventually dislodged from the sprocket, and the starboard undercarriage was raised electrically. Although the port u/c was still extended, the red u/c light came on.

When the starboard u/c was lowered electrically again, a GREEN undercarriage light came on, and the warning horn was silent when the throttles were closed. At this time, the port u/c was still unlocked, and could not be seen from the cockpit. The reason for this condition being possible is that the warning micro switches are located on the starboard u/c only, the left u/c leg carries the travel limiting switches.

It is, therefore, important for groundcrews to check the undercarriage retraction chain for slackness during BFIs, and for pilots to check VISUALLY that both undercarriages are down after an extension.



TAKE A GOOD LOOK

by F. T. Upton
Senior Meteorological Officer
RCAF Stn Winnipeg

Have you ever checked flight weather for yourself in a forecast office when no Met officer was on duty? Did you get the information you needed for flight planning? Chances are you did, because the many hours of training you've had in Met taught you how to go about it properly.

But there's always the fellow (not you, of course) who's in a hurry or just can't be bothered. If he looks at the aviation forecasts at all—and sometimes he doesn't—he won't take the trouble to check his ETA's at destination and alternate against the forecast times of weather changes, to make sure that he's reading the expected conditions for the right time period. Or else he just takes a quick look instead of carefully reading right through the parts he needs, and risks missing some important detail.

What's the result? All too often, a pilot approaching destination in weather such that he shouldn't be there at all. While he's trying to concentrate on what to do next, he's cursing the Met Service and all its works, when a few minutes spent in reading the forecasts properly before filing the flight plan would have told him what weather to expect.

Don't say "it can't happen here"—it has happened in all possible variations, and recently too. The incidents we know about are the ones which had serious consequences; there have no doubt been others which resulted in nothing worse than some uncomfortable moments for the pilot.

Here's an example (purely imaginary) of what we mean. Joe Blow hustles into the Met Section at a western station—he's taking a T-bird down to Ottawa this evening, and plans to take off in twenty minutes. He didn't tell the forecaster during the afternoon that he'd be going, so there's no Met Officer on duty. No sweat, though—a quick glance at the latest Ottawa hourly shows that they have unlimited ceiling, high overcast sky, visibility six miles in haze—Group Captains' weather. Joe remembers something from this Met lectures; he picks up the forecast file and looks up the FA UL. There's the Ottawa terminal forecast—

OW UL C1OO⦶/⊕↖15. O3OOZ C9O⊕4H ←15.
O4OOZ C1OX1S-F ←2O VRBL TO OCNLY C5X1/2SF

"A piece of cake"—ceiling no lower than nine thousand, and at least four miles "vis", same thing at Montreal (that takes care of an alternate)—no need to read any further. Time's passing and he's got to get that aircraft into the air.

This time Joe's guardian angle is looking the other way. Over Muskoka he requests and gets Ottawa's recent hourly observation. "What's gone wrong here?—it's snowing, ceiling and 'vis' are down near IFR limits, temperature and dewpoint just below freezing. Wonder what braking action will be like on a slushy runway—how about a GCA landing in wet snow and probable icing? Damn those Met people anyway—their forecasts are wrong ninety percent of the time!"

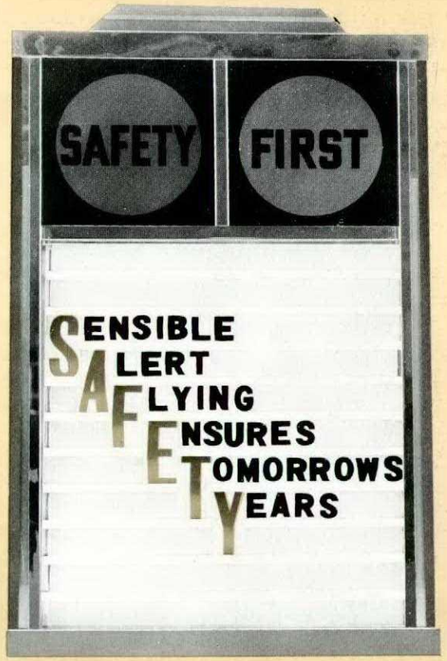
No need to prolong our fable. Probably Joe will not realize what he did wrong, and he'll just keep on doing it from time to time as long as his luck lasts. But you know better.

You'll do your flight planning the way you've been taught—look at the latest weather map, read the hourlies along your route, get the right aviation forecast and read all the parts you need without skipping anything, then think about what you've read. TAKE A GOOD LOOK! —before you leave the ground. What you see may prevent trouble later.

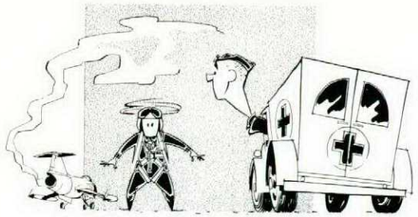
TAKE IT EASY

The higher speeds of modern aircraft make flying in thunderstorms or hail even more dangerous than ever. Example: at M 1.6 (TAS 925 kts.), rain hits the aircraft at 17,000 psi, according to U.S. experience. Rivet heads are torn off by rain. In addition to the usual harness, pilots require a lateral restrainer to prevent unwanted control movements. Voodoo and CF104 drivers, please note!

In our travels about the country we frequently see Boards Illuminated—21 u/58, in use—and disuse. Here is an example of one that caught our eye. How does yours compare?



Slogan by: F/L FJ Stevens
UFSO 111KU Winnipeg



NEAR MISS

LANDING HAZARD

An instructor and student were on a four-hour cross-country Expeditor flight; a four-hour day trip had been flown immediately before, and both officers had been on duty for three and one-half hours before the initial takeoff.

Destination weather was reported as C5X 3/4 S- so a GCA approach was made; during approach GCA advised that about an inch of wet snow covered the runway; moreover, the tower said braking action was poor.

The GCA approach was made downwind to get a precision approach (tailwind component was 5 mph, and the runway was over 7,000 feet long). Approach and landing were successful, but during the landing roll the student noticed that the Expeditor was skidding to the left of the runway. The instructor took control, used power to straighten the aircraft, and stopped.

The instructor began to taxi in. He found that a large amount of power was necessary, particularly on the starboard engine. Need for the extra power was attributed at first to the drag caused by the snow on the runway (it was snowing heavily at this time), which appeared to be deeper than one inch. Besides, there had been much drag on landing.

After taxiing with considerable difficulty about half the distance to the hangar, the instructor noticed that the parking-brake handle was half-way out; he released it and taxied the rest of the way using normal power.

The student had put the parking-brake partially on somewhere between takeoff and landing; most likely time was during the pre-landing check. The challenge list had been used for the check; the challenge "Brakes" had been answered "Checked". The student didn't remember pulling the handle, but he probably reacted to the challenge "Brakes" by applying them. On two other challenge checks, the answer to "Parking brakes" is "Set"

Although no instructions limiting hours of duty or maximum flying hours had been violated, these officers had been on duty for thirteen and one-half hours, and had flown for eight of them. The instructor should have checked the student's action as well as his reply. Neither instructor nor student felt fatigued, but they felt that fatigue was at least partially responsible for the near miss.

If the runway surface had been dry, the results would most likely have resulted in an accident. Odd as it seems, the white stuff helped—but they were lucky.

It is important that the first officer follows the pilot through on All checks; among other things this helps to minimize the possibility of incorrect or inadvertent application of controls, especially if the flyers are fatigued.

FRUSTRATED

I was authorized for a one hour VFR trip from Winnipeg to Portage la Prairie to pick up another pilot and transport him to Gimli. After the walkaround and strap-in there was a 40-minute delay—none of transient servicing's energizers would start because of dead batteries. Several errors on the part of the airmen detailed to start the T33 contributed to this unnecessary delay at a temperature of five degrees below zero; it was a cold and frustrated pilot who finally departed Winnipeg.

On arrival at Portage the circuit had to be extended downwind to allow for another T33, who was doing a very wide circuit. Several hundred feet from the button of the runway. at an altitude of 50' to 100', mobile control fired a red flare, and called "Your wheels are up!" I overshot and flew a closed pattern. On downwind, the u/c warning system was checked; both the warning horn and light were unserviceable.

A normal landing was then carried out.

I feel that anger, plus a small distraction in the circuit, caused me to forget to lower the undercarriage. Then, concentrating on a non-standard circuit, gear was not rechecked down until warned by mobile control. The distraction, plus a poor mental attitude, nearly added up to an expensive and embarrassing accident.

WHO'S ON FIRST?

After completing an instrument-practice ride, two pilots in a T33 were proceeding to initial point for a VFR break and landing. The safety pilot had control. The pilot in the rear seat wanted to look at something on the ground, and called, "I have control", and lifted the wing for a better look.

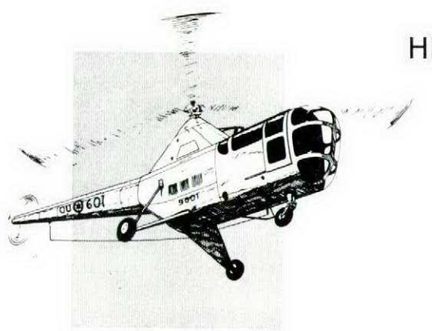
The aircraft flew straight-and-level for a while, and then slowly entered a port descending turn. The pilot in the rear cockpit assumed that the safety pilot had resumed control. The safety pilot assumed the man in the rear cockpit had control.

The aircraft didn't crash. It was pulled up just above trees—by both pilots!

FSO'S Comment

It would appear that a very serious accident was narrowly averted. This incident demonstrates again the absolute necessity of establishing just who has control of the aircraft. We have the opportunity here to profit from someone else's experience, and we are reminded again that the established procedure in CAP100, Article 108.01, evolved from a series of similar incidents and harrowing experiences.

HELICOPTER TIPS



TOO MUCH PAPER WORK!

Everyone says there is too much paper work involved with flying. Here's proof.

One Army helicopter destroyed and one damaged. Why?

In each case, the aircraft log book blew out of an open window. When it went into the main rotor, damage was the result. When it blew into the tail rotor, total destruction was the result.

MATS Flyer

HOT, HEAVY, and UNCOMFORTABLE

All of these things have been said about the crash helmet—and they are all somewhat true. While on the base leg, an engine cut out to the point that the pilot believed it had failed completely. When he raised the collective pitch during the auto-rotative flare, the engine produced a sudden, large burst of power. The helicopter yawed violently, causing the pilot to become disoriented. The helicopter was landed out of control and received substantial damage. There is strong evidence that the crew members would have received serious head injuries if they had not been wearing helmets.

Bandages are also hot, heavy, and uncomfortable—and you can't take them off as soon after the flight is over. WEAR YOUR CRASH HELMETS!

From the U.S. Coast Guard

RCAF COSMOPOLITAN 11151

DATE 17 Jun 62

PLACE RCAF Stn Uplands

CREW Captain - F/L WH DeYoung
1st Officer - F/L DO Gilligan
Radio Officer - F/O RH Theakston
Steward - Cpl AV Gray
Flight Technician - LAC AM Lees

INJURIES/FATALITIES - Nil

Circumstances

Cosmopolitan 11151 was returning to Uplands from a transport operation with a crew of five and without passengers. In preparation for a landing at Uplands the undercarriage was selected down and it was found that the nosewheel indicator remained in the "up-and-locked" position. After several selections with no change, the tower confirmed that the nosewheel was up and the doors locked. Main gear operation was normal as was hydraulic pressure and fluid level. A free drop of the gear was attempted, with and without "G", but still the nose gear remained up. . An emergency was declared and all concerned advised.

Next the nosewheel visual inspection panel was broken to determine if the up lock was releasing but it was found impossible to see the assembly. Since ample time was available all pertinent EOs were reviewed and the Canadair Technical representative, Mr. M. Holloway, gave advice regarding the removal of panels for a better view of the system. No action that was taken by the crew succeeded in moving the nose gear from the locked-up position.

When thirty minutes of fuel remained the aircraft made an emergency landing on the runway which had been covered with foam for 3000 feet. The nose remained off the runway for 1500 feet, then lowered and skidded for another 700 feet. Because of the foaming, and the excellent airmanship of the crew, the aircraft was not extensively damaged. Indeed, no major damage was evident aft of the nose shell, although the aircraft will require propellor and engine changes and a structural check. (An interesting side light to the foaming operation is that CEPE were able to use the vehicle they were developing for foaming operations. It is called Code E62 Water Flusher Foam Decontamination vehicle, and in this realistic test performed most efficiently).

Cause

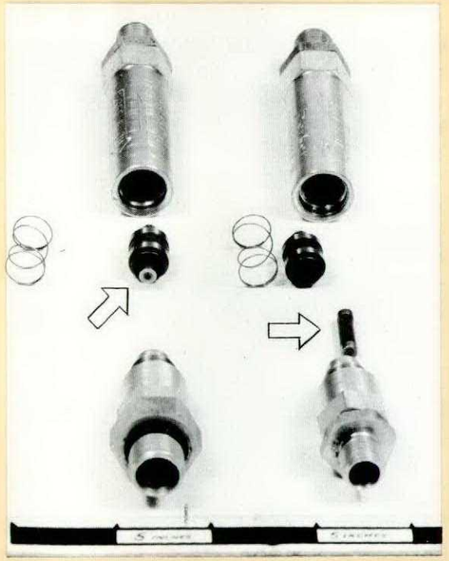
Even before the aircraft was removed from the runway investigation began and it was continued until the cause of the accident was discovered. The AIB team of S/L JEA Hermanson, Air/P, and F/O AS Armstrong, Tech AE, in co-operation with Mr. Holloway found that the failure of the nose gear to extend was due to a complete blockage of the nose gear up-line through failure of the restrictor check valve thereby resulting in a hydraulic lock in the nose gear actuator. The blockage in the check valve was caused by a filter coming adrift. Thus, five hours after the crash the cause had been found and a fix was being discussed.

Could this problem have been rectified in the air had the exact cause been known? It is most unlikely. The valve was in the nosewheel well which for all practical purposes is inaccessible in flight. Even had its location been known exactly chopping through the floor might well have resulted in damage to the main hydraulic lines and created a fire hazard during the emergency landing.

Remedy

A special inspection was issued by ATCHQ on AMCHQ authority and the filters in this type of check valves were removed. A previous modification, EO-05-15OA-6A/40, was designed to prevent the possibility of valves becoming blocked, but unfortunately it had not been completely satisfactory since this accident had occurred.

All members of the RCAF try to do as much as is humanly possible to prevent accidents. When they do occur, in spite of our efforts, it is gratifying to see the emergency handled in a professional manner by all concerned, and to find the cause and remedy so quickly.



Two similar valves—the left is serviceable, and the arrows point to the screens. The screen of the right valve became detached and caused the hydraulic lock.

AVIATION FALLOFF

by S/L J. REGAN—DFS

"Panel lost in flight".

"Hatch left aircraft after takeoff".

"Canopy lost in flight".

In 1960, in the RCAF, there were 26 such occurrences. In 1961, there were 17. So we are losing fewer items than before. This is small comfort though, because there is no excuse for losing any of them.

Whose responsibility is it to make sure that these detachable pieces are properly secured before flight? Primarily, it is the responsibility of the ground technicians. When an aircraft is signed out as fit for flight it must mean exactly that. It is not fit for flight if a panel is left unfastened.

The pilot, to ensure the safety of the flight, must carry out his own pre-flight inspection and he also is responsible for making sure that all panels and doors are secure.

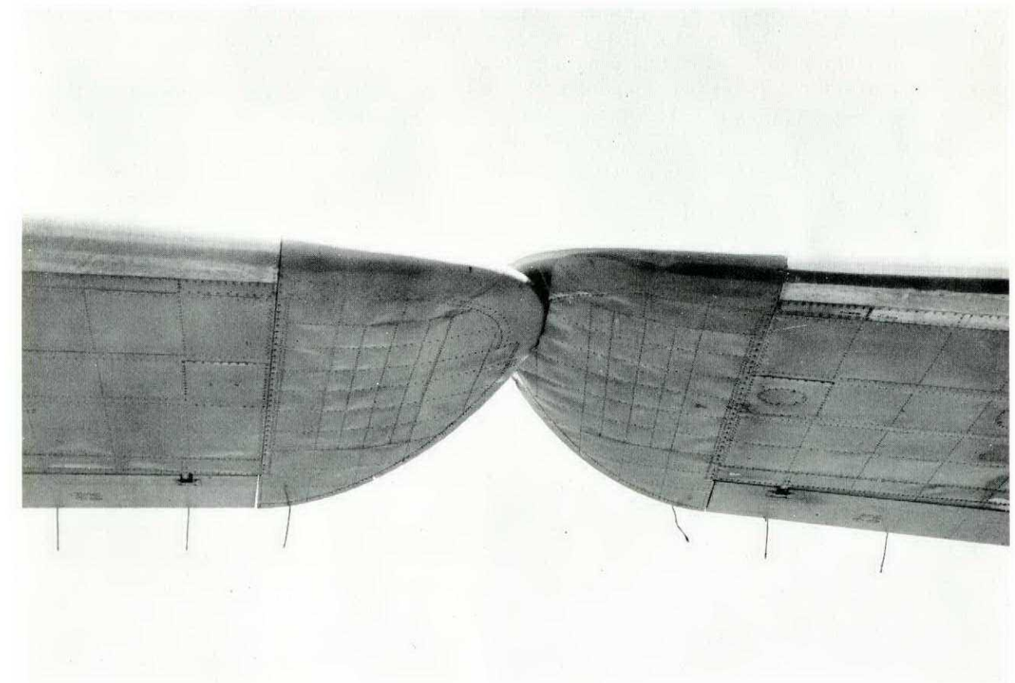
In a case involving a CF101, a panel was lost during the take-off run. There are 22 fasteners on this particular panel and when the panel was recovered it was evident that not one of the fasteners had been locked. A check showed that the panel had recently been removed for maintenance purposes and that at least nine people failed to ensure that it was properly replaced.

How can we prevent such serious oversights? The obvious answer lies of course in more thorough checks by groundcrew and aircrew, but these checks are supposed to be thorough now, yet we are still failing to see loose items.

Large aircraft normally have the benefit of a pre-flight inspection by flight engineers followed by a pilot's inspection. This should result in thorough coverage. Pre-flight checks on smaller aircraft, including advanced types like the CF101 and CF104 are normally done only by the pilot, but before that takes place ground technicians should already have done their part. Perhaps a new approach should be tried. Let's call it "Mutual Walkround". In this system, the vital pre-flight is done by the pilot and the ground technician together. The ground technician learns the true significance of the pilot's external check and thereby becomes a closer member of the flight team. Furthermore, he may be aware of work recently done on the aircraft and would be especially vigilant in the affected areas. For the pilot, the presence of a ground technician may well influence him toward maintaining a high standard of inspection, and an occasional brief question about the mysteries lurking behind certain panels would help him keep up his knowledge of the aircraft. "Mutualism" need not be practiced on every trip, although with the CF104 and the CF101 this would be well worthwhile.

So if you are suffering from aviation falloff, with its attendant probable loss of hair and reputation, try "Mutualism" for a while: satisfaction guaranteed, or your dzus fasteners cheerfully refunded.

IT HAS BEEN SAID ONE PICTURE IS WORTH TEN THOUSAND WORDS



A LOOK AT ATTITUDES

by D. R. Mair
Ottawa Terminal Control

After twelve years of flying, seven of them military, I fell, jumped, or was tossed "over the fence" by destiny, and am now controlling air traffic—and liking it! Six years of flying fighter—type aircraft didn't give me too much contact with the Department of Transport's Air Traffic Control, but RCAF Flying Control is similar, and we'll consider them as ATC here.

My purpose is to draw attention to attitudes, because a good understanding of our attitudes could improve the relations between pilot and controller.

Now, attitudes aren't necessarily based on fact, nor are they always logical. One may, for example, have a negative attitude toward a promotion system because one hadn't been promoted; the system itself might well be the best possible. Attitudes, nevertheless, are real—whether they are right or wrong—and they do influence human behaviour.

During my pre-military and military flying days, my attitude towards Air Traffic Control wasn't bitter, or even one of dislike—merely casual. The controller, I thought, didn't really have any idea of the flying game from the pilot's point of view. There was a lack of empathy—the ability to put yourself in the other fellow's place, and experience his problems as though they were your own. In short, I felt—as many pilots do today—that Air Traffic Control was a large police force.

Now, after two and half years with the Transport Department's Air Traffic Control, on a heavy unit which handles a large number of military aircraft, I can see that traffic would be utter chaos without control. It's here to stay, so let's try to modify attitudes on both sides, and thus achieve better understanding—empathy—between pilot and controller.

Now, for some specific examples. Have you ever been perturbed because you couldn't have a requested altitude, or because there was an apparent disregard of or delay in your request for a clearance? Yes, you say? Well, this is the old story of the whole picture—the controller has it, the pilot doesn't. Delays are rare, but they do occur from time to time; most of the time because the Area Control Center has some altitudes under its control. The delay is caused by the co-ordination necessary to work traffic at or through these altitudes.

Delays will be shortened or eliminated by the advent of faster communications, and electronic equipment for altitude handovers, which is undergoing constant experimentation.

Pilots have also claimed that under difficult flying conditions, there seems to be a lack of understanding help from ground control agencies, but this writer has not seen any deficiencies in critical situations during his admittedly short period with the Department of Transport. Indeed, many controllers hold pilot's licences, which guarantees empathy. Giving all the assistance they can to aircraft in critical situations is part of their dedication to duty.

A pilot who finds a lack of understanding on the part of the controller might well meet the latter afterwards; discussion should clarify the action, and better pilot-controller understanding would result. That suggestion also applies to pilots who think that they have been placed in an unsafe, or potentially unsafe, situation because of instructions or omissions by Air Traffic Control.

I have suggested more pilot-controller discussion because, on one or two occasions, I have found it useful myself. Understanding is a two-way street.

Now that I am a controller it is obvious to me that The Department of Transport's Air Traffic Control and the military are co-operating to improve flying operations from the viewpoint both of the controller and of the pilot, with the objective of bettering flight safety. Here are a few examples:

- Aircrew are not asked to change channels, nor are they given amended clearances at critical stages of takeoff or landing;
- Controllers now have radar simulators in operation, with a planned practice program to keep efficiency high in radar vectoring procedures, and control of air traffic in general;
- Tape recorders are used in conjunction with radar simulators to ensure improvement in vocal communication, clarity, speed of transmission, etc; and
- Faster letdowns, with jet aircraft using "scan converted" radar, are being tested, and other new electronic equipment is being designed by the Research and Development division

Pilots should brush up on the old rules, check in promptly on frequency with an ATC agency after an instructed channel change, be accurate in following controller's instructions, and pass progress reports on time. I see now that, on more than one occasion when I was a pilot, I could have been controlled and cleared more quickly if I had followed those procedures more efficiently.

Most controllers respect military pilots and aircrew greatly and find that, in general, they are co-operative and willing to comply with ATC instructions. We might use the physician-patient relationship to describe the pilot-controller situation.

The patient has certain implicit responsibilities in his relationship to his physician. The patient should seek help before the illness has progressed too far, he should report all symptoms, and he should adhere to the physician's instructions. In spite of a patient's failure to do his part, the busy and often-harassed physician is expected to, and should, provide the best possible care.

On the other hand, the patient is not concerned that the physician is overworked and involved with other problems. He wants considerate treatment, and a quick and reasonably inexpensive cure. So it is with the pilot. He shouldn't have to be concerned with the controller's problems, but he should realize that the ATC man, like the doctor, is often busy and sometimes harassed.

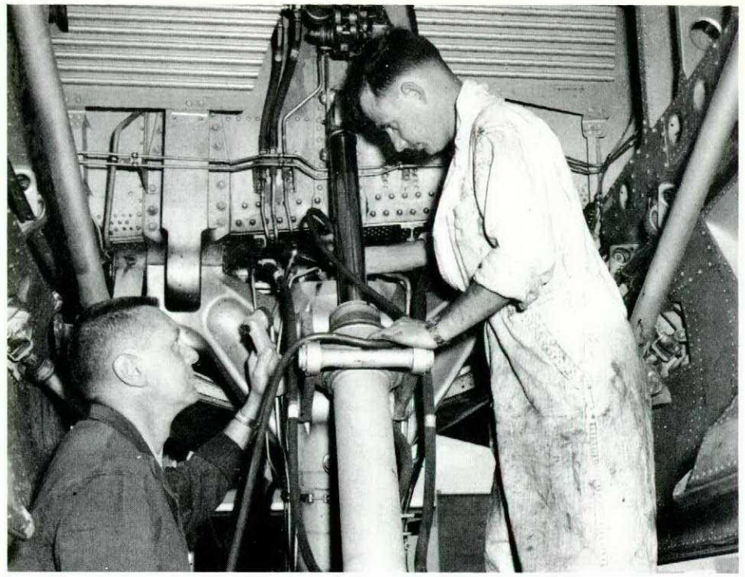
Most pilots are probably aware of the complexity of problems which face controllers. Enough personnel are not always available, and although new and highly-efficient equipment is coming, present equipment is obsolescent, and does not always function correctly. Sometimes the demand on available controllers at heavy traffic centers exceed the capabilities of almost any human being.

These, however, are all internal problems and are being worked out; we feel that they must not lessen quality of service for the pilot. I remember very well that there are times when the requirement for flying a high-performance aircraft, particularly at departure or approach, challenges a pilot's highest performance capabilities. It is the same for the controller: he can handle just so much air traffic.

I have found that controlling traffic is every bit as challenging as flying—and, at times, as satisfying. I consider myself very fortunate to have been able to do both and, as a result, have also found an understanding between the professions. So come on, pilots, meet your air traffic controllers, discuss operations, swap hairy tales and dicey moments—it should make for better understanding, and certainly won't harm the relationship.

(Reference and exerpts from "Survey of USAF Pilot Attitudes During Air Traffic Control Services", July, 1961, by Lt. Col. Reuben A. Bauer, USAF, MSC, and Col. Kenneth E. Pletcher, USAF, MC).

Mr. D. R. Mair enlisted in the RCAF in July, 1951. He served with 444(F) squadron flying F86 aircraft with 1 Air Division. Upon his return to Canada he did a tour with 432 (AW) squadron operating CF100 aircraft. Mr. Mair joined the Department of Transport in November 1959 and is now an Air Traffic Controller, Grade 4, at Uplands Airport.



Servicing of Landing Gear Shock Struts

The landing-gear shock struts of many large aircraft, including the Argus and Yukon, embody high-pressure air chambers, the incorrect servicing of which can create a potential hazard.

When high-pressure air is rapidly introduced into a closed vessel containing combustible oils, greases or vapours, the abrupt increase in pressure and consequent rise in temperature within the vessel can cause spontaneous combustion (explosion).

In the pressure gauging or inflation of shock strut high-pressure air chambers, an air charging/gauging adapter is analogous to the closed vessel and can be subjected to a rapid rise in pressure, either from the air bottle during an inflation operation, or from the high pressure air chamber when gauging the pressure therein.

Should the interior of the adapter or its gauge be oil-contaminated, or should oil or oil vapour be contained in the shock strut air chamber, a rapid pressure-rise in the adapter from ambient pressure to that of the air bottle or shock strut air chamber can provide the remaining prerequisite for spontaneous combustion within the adapter.

Such an explosion can be sufficiently serious in itself, but a greater hazard can arise should the shock-wave or flame-front initiated within the adapter, propagate through the length of its body into the shock strut air chamber, where a second and more violent explosion can occur.

Although accidents of this nature have been rare, some operators have adopted nitrogen as the inflation medium to eliminate the hazard. Canadair recommends the use of nitrogen for the Argus and Yukon shock struts, but considers its compulsory use would not be desirable because of possible inconvenience to aircraft operations at bases where suitable ground-servicing equipment would not be immediately available.

When servicing air-filled shock struts using dry air as the inflation medium, observe the following precautions:

(a) ensure that all air charging/gauging equipment is free from oil or grease contamination;

(b) ensure that the high-pressure air from charging bottles is free from oil vapour; and

(c) open air inflation and pressure-gauging valves gradually to prevent an abrupt pressure rise in the adapter.

CANADAIR SERVICE NEWS

ARRIVALS and DEPARTURES

Resumes of accidents are selected for their interest and the lessons which they contain. The time required to complete the accident investigation and the additional time necessary for publication generally totals six months.

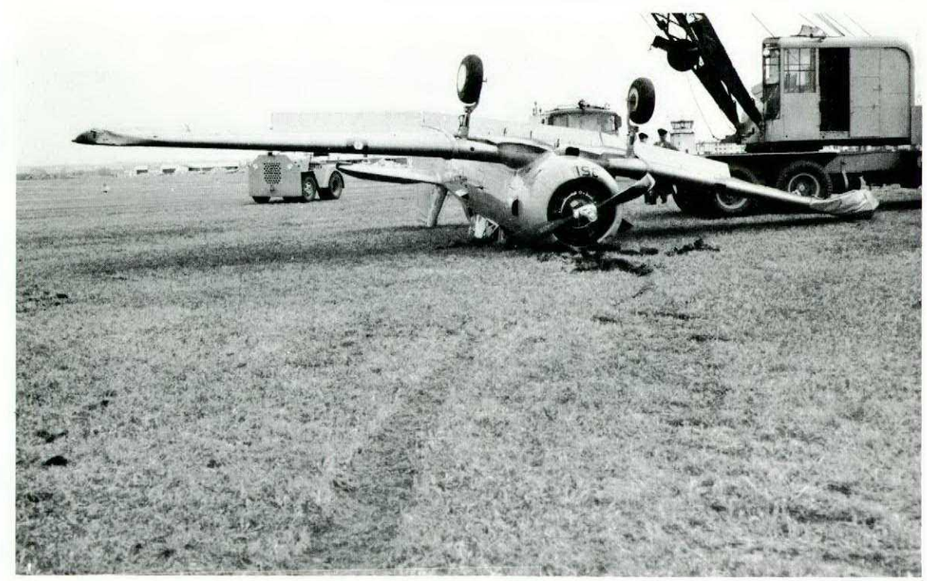
"NOT TOO CLEAR TO ME"

A student with 11 hours on type was authorized for an hour of solo circuits and landings in a Harvard. He completed half a dozen touch-and-go landings, using full flap, without difficulty. Everything was fine on the next one —a successfull full-flap touchdown and landing roll—until the pilot applied full takeoff power.

At this time the starboard wing rose too high and the aircraft started swinging rapidly to port. Full starboard aileron was applied to level the port wing, and, according to the student, the engine was left at full power.

"From this point on the behavior of the aircraft was not too clear to me until the nose hit the ground and the aircraft flipped over on its back", the pilot remarked. He added that he didn't remember using brake at any time.

"How the accident occurred", said the OC, "is somewhat obscure." In his opinion the pilot probably stalled the aircraft on overshoot; the situation may have been aggravated by variable crosswinds. "Skid marks on the ground attested to the violence of the gyrations and



indicated a harsh use of brakes—which the pilot seems to think he did not apply", the OC continued.

Propellor slices in the ground revealed that the prop didn't strike under power; the propellor tips showed no sign of drawing forward under power.

"It is clear that the pilot really didn't know what was happening ...", the OC said. The trainee's proficiency was checked and his general flying ability and skill at landing were assessed as above average. The accident was attributed to Aircrew—technique. Raising the minimum dual time before solo is now under consideration.

PRIDE GOETH BEFORE A FALL

On a cold winter night with overcast at 700 ft. and a visibility of two miles in snow showers, an Argus started a GCA approach to the "short" (5,238 ft.) runway. The wind was 25 to 35; the runway was covered with a thin layer of freezing slush.

The approach was uneventful and the aircraft rounded out normally. Touchdown occurred before all power was off and the aircraft "skipped". Final touchdown was about 2,300 ft. down the runway, leaving 2,800 to 2,900 ft. for landing and braking.

At this stage there was some haste, and the pilot selected reverse pitch. The weight of the aircraft was not fully on the wheels, so the reverse-pitch circuit-breakers popped, and the Argus was brought to a stop, using normal brakes, some 300 ft. off the end, and with one blown tire.

Two old sayings spring into mind: "Haste makes waste", and "Runway behind an aircraft is one of the most useless things in the flying business". Perhaps a review of "Over and Under" (Flight Comment, Jan - Feb '62) might help too.

BENT SNOUT

This Voodoo pitot static boom was damaged by the hand-rail installed on a 4G/649 hydraulic aircraft maintenance platform. The guilty party wasn't found, but all tradesmen are reminded that they are responsible for moving equipment safely, especially when brand-new, expensive aircraft are near. Don't let "Groundcrew—carelessness" appear next to your name.

NOTHING ON THE CLOCK

Starting a normal takeoff run in a Voodoo, the pilot saw that he had no airspeed indication. He came out of afterburner, closed throttles to idle, and deployed the drag chute. He didn't have to use excessive brake because of a 30-knot headwind and because he suspected that the speed was below 125 knots. Mild brake and the entire runway were sufficient to stop the aircraft without damage.

Cause of the incident was failure of the groundcrew to enter the disconnection of the pitot static lines in the L14. The crew chief remembered it just as a new shift was coming on, and mentioned it to one of the replacements, but the new crew continued the rectification of the fire-control unserviceability, replaced the radome, and forgot to enter the disconnected lines when he finally signed the L14.

Disciplinary action was taken against two groundcrew, and two others were interviewed by the CO.

The pilot, on the other hand, aborted the takeoff correctly so that the aircraft didn't even have a hot brake.

Changes in shift should make ground crews doubly careful about proper L14 entries. Failure to remember even one entry could mean a lost aircraft—or a lost pilot.

FIRST VOODOO PITCH-UP

First instance of pitch-up in an RCAF aircraft happened when a Voodoo pilot tried to carry out a test on the pitch control system. (See article, "Pitch-Up", Flight Comment, May - June 1962, page 2). The pilot thought the warning horn would sound at 1.5 G, and the pusher would engage at 1.7 G, plus or minus 0.10.

He began a starboard turn and increased bank gradually to build up G. At 1.5 buffet and wing-roll started, but the horn didn't blow. Bank (and G) were increased; wing-roll became more violent at 1.7 G. The pilot realized then that there was no control response and that the rate of turn was increasing.

He pushed the control column full forward, but the nose continued to accelerate; the airframe buffet was so severe that the instrument panel blurred. "At the apparent peak of pitch-up the aircraft was in a 60-degree bank and 20-degree nose-high attitude, and IAS was approximately 180 knots", the pilot wrote.

He deployed the drag chute; the nose fell below the horizon. Two smooth fast rolls later, there was slight negative G, and the control column was eased to neutral. The Voodoo completed another half-roll, steadying out 30 to 40 degrees below the horizon at 220 knots, with wings level. The pilot had started the manoeuvre at 33,000 MSL; altitude was now 28,000 MSL. He began dive recovery at 350 knots IAS; recovery was complete at 450 knots IAS and 22,000 MSL, after a 4 G pullout. Landing was uneventful.

The pusher failed because of unserviceable microswitches. Horn failure was not immediately explained; further tests are being carried out. The G meter in the front cockpit was found to read as much as four-tenths lower than the one in the rear, on a subsequent test flight.

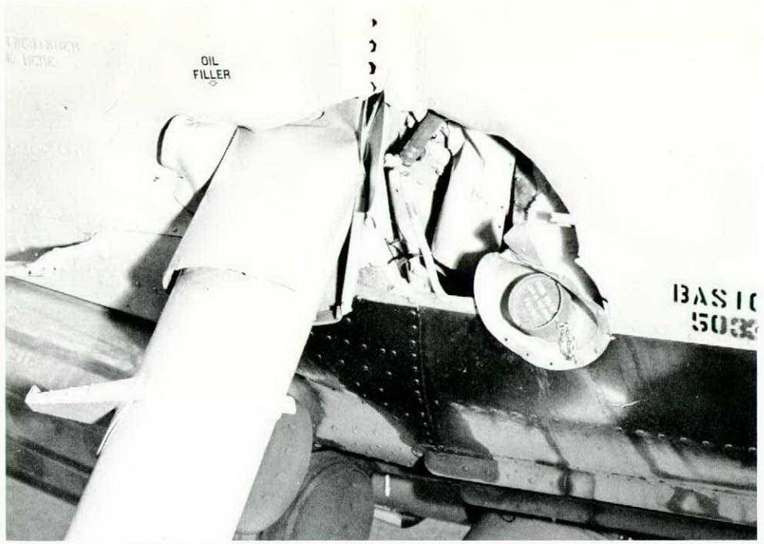
The pilot should have stopped the turn at 1.5 G and tried again, so that the buffet did not control the accuracy of flight. No disciplinary action was taken against him; he now knows that it is wrong to proceed with a PCS check when its operation is doubted, and he showed excellent knowledge of recovery procedures.

CHECK THAT AIR SPEED!

The pilot of this Otter was practising a forced landing prior to an ATC captain's check. The captain who sat in the right-hand seat, was briefed to criticize the flight. The airspeed was allowed to stay at 58-60 knots throughout the final approach; the aircraft rounded out too high, and a high rate of descent from 20-30 feet was followed by a heavy landing on the port wheel. "B" category damage resulted.

Both men erred in judgment by using a below-normal approach speed. The aircraft probably didn't stall completely, but did exhibit symptoms of the stall or near-stall condition—rapid rate of sink, and tendency for the port wing to drop.

The pilot noticed the low airspeed as early as 500 feet on final turn, and again during final approach, when the Otter was less than



200 feet off the ground. He made no attempt to correct until he felt the rapid sink begin—and then, of course, it was too late.

The captain noticed the low speed during the early stages of the circuit and until the final turn at 500 feet; after that, he didn't take note of the speed. At no time did he try to take corrective action, or advise the pilot to do so.

Aircraft approaching the stall tend to turn landings into "arrivals", which in turn tend to be expensive and embarrasing. The only airspeed to use is the correct one.

BOUGHT THE FARM

This one can be stated succinctly: the pilot had little recent experience on Otters, but quite a bit on high-performance transport types. Landing strip and weather were suitable, except for a marginal crosswind. Overshoot action was too late; the pilot attempted a maximum-performance climb, got on the back side of the power curve, and couldn't clear obstacles. He tried to abort the overshoot, but crashed into the silo and ramp.

Cause: Aircrew—poor technique; contributing factor: Briefing-inadequate supervision. Result: pilot awarded a severe reprimand and fine.

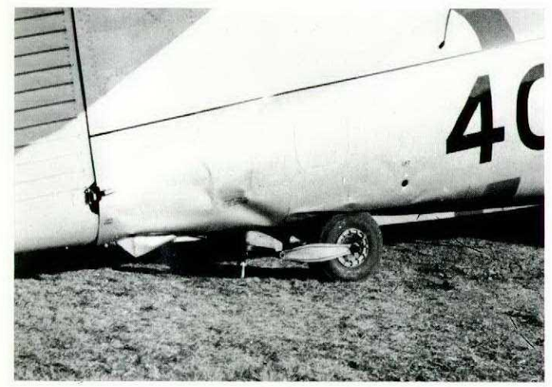
Otter pilots are reminded that optimum climb performance takes place at the lower edge of the safe flight envelope with a minimum safety margin provided. Flight in this area requires a positive, careful application of technique if the narrow safety margin is to be retained.

TOWING THE OTTER

An Otter was being towed from the hangar to the line; when the designated spot was reached the aircraft was stopped. At this moment the tailwheel collapsed in a forward direction, and the tail section dropped onto the tow bar, damaging the skin, stringers, and formers aft of the tailwheel, and the aft fairing.

It appeared to be a straight case of materiel failure, but a metallurgical survey of the failed shock strut lug disclosed that it fractured because of sudden and extreme overload. A similar failure which occurred at another unit was definitely attributed to improper towing technique (sudden stoppage), and in light of the laboratory evidence, this accident was also charged to Personnel—error in towing technique.

To avoid this kind of accident, have another look at EO 05-100A-2, part 1, para 19, and read Flight Safety Bulletin DFS 133, issued 24 Jan 62.



MEMO TO SUPERVISORY NCO'S

Accidents have been caused by confusion when one shift is replaced by the next. The onus for ensuring that work is properly scheduled and completed rests with the Corporal, Sergeant, or Flight Sergeant in charge. Here are some hints to help you establish a professional record:

—when the new shift comes on, ensure that duties are transferred smoothly, and that all work is entered correctly in the relevant maintenance form;

—personnel who have to leave the job before the shift is up for a clothing parade, TD, etc., should be assigned tasks which they can complete in the time available to them; and

—check all work yourself—some supervisors tend to spend too much time in offices and not enough on the floor or line.

Given the integrity and ability of the technician, the work at hand will be carried out as smoothly—or as sloppily—as it is planned by the man in charge. How does YOUR shop rate?

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:

An ex-"Old, Bold" pilot, I still am fortunate enough to be able to read your excellent magazine, as a civilian draftsman at 10RD Calgary.

I find that digesting the articles and the rather pointed comments helps me to keep my mind alert for everyday driving, and for my rather hectic hobby, sports-car racing.

The story of the experienced pilot feeding his parachute down the intake of his Sabre, brings to mind a little recollection from T-bird days of a normal, everyday action which almost ended disastrously.

As a student on course 5301, the first NATO jet jockeys' at Gimli, I was cleared for a low-level nav. trip at 50 feet, for about 300 miles. Of course, I was pretty excited, and had to swipe a Herman-Nelson from the AOC'S Dakota to persuade my canopy to lock.

It was a beautiful day, and before long the landmarks were coming up as planned, the map was folded neatly on the top of the desk, and I was able to pick out the route with scarcely any head-craning at all.

I had 50 feet figured at about half-as-high-again as a house, and was whistling along just over the treetops.

I waved at housewives, hunters, and fishermen fishing through the ice. It was about Christmas time. I was at peace with the world.

While crossing a lake glistening with snow, and dotted with myriads of small, bushy islands, my carefully-propped map slipped

to the floor.

"Thank God this isn't a Harvard", I thought. I could well imagine groping in the depths of the cockpit of that tube-maker's nightmare!

As it was, I just reached down to my foot and opened my hand for the map.

Suddenly I was jerked out of my daydream by the ominous feeling of things rushing past; out of the corner of my eyes I saw bushes, trees, and snow hillocks rushing past the tip tanks.

With my heart in my boots I hauled back on the stick, and my 400-odd knots hurtled me up into the blue in a near-vertical climb.

Sweating profusely, I looked back, and imagined I could see a long dark furrow in the snow. I completed the trip at 500 feet.

This had shaken me so much that my friends were disappointed that the traditional victory roll was absent on my return to the field, and after a casual mention of the incident to my instructor, his eyes opened wide, and henceforth all low-level navs. were at 500 feet. Needless to say, I was unpopular.

This was a good example of "Heads-Down" flying, to borrow your term, and the lesson learned has stayed with me, whether I'm fiddling with the radio in the car, or talking to somebody in the back seat—Keep your eyes on the road!

Anthony J. W. Swain
Ex. RAF Student Circa 1953

P.S. I might say that even though I "thought" that I wasn't moving the stick, just reaching forward at that altitude was enough to put "pressure" in the fatal direction! This is the point—it was an unconscious action.

✓

Reference the editorial by Group Captain Searle on fighting the paper war, which appeared in the March - April 1962 issue of Flight Comment: the following is my idea for fighting this war in the Safety Equipment Section here.

We circulate a spare EO binder which contains a week's batch of EO revisions, new EOs, and other technical messages and memoranda. Under clear plastic on the front cover is a memorandum urging technicians to read the contents, and sign the form on the inside back cover of the binder. The technician with initiative can consult the file and read the orders he missed while absent from the section. In this way, all personnel should be up to date on the latest technical information.

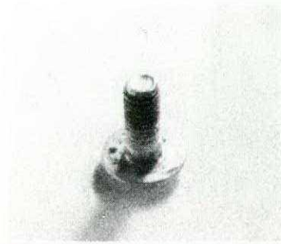
G. D. Vaughn, Sgt.
NCO i/c Safety Equipment
RCAF Stn Bagotville, Quebec

✓

Referring to the May-June 1962 issue of the "Flight Comment" magazine this headquarters wants to congratulate the editors of that magazine for the amazingly timely warning given by the striking photo of a small screw on page 11. The Board of Inquiry on an accident which occurred on 22 May 62 at 2 (F) Wing has just been completed and the attached photo shows the screw which caused the CF100 to end up in the "A" category.

While the photo is not of the best quality since it is an enlargement about 400 times the area of the 8 millimeter negative, it is thought that it still conveys the point which is the striking similarity between the screw that carried the caption "This object can wreck a jet" in the magazine and this screw which did wreck a jet.

G. C. Letcher S/L
for AOC 1 Air Division RCAF



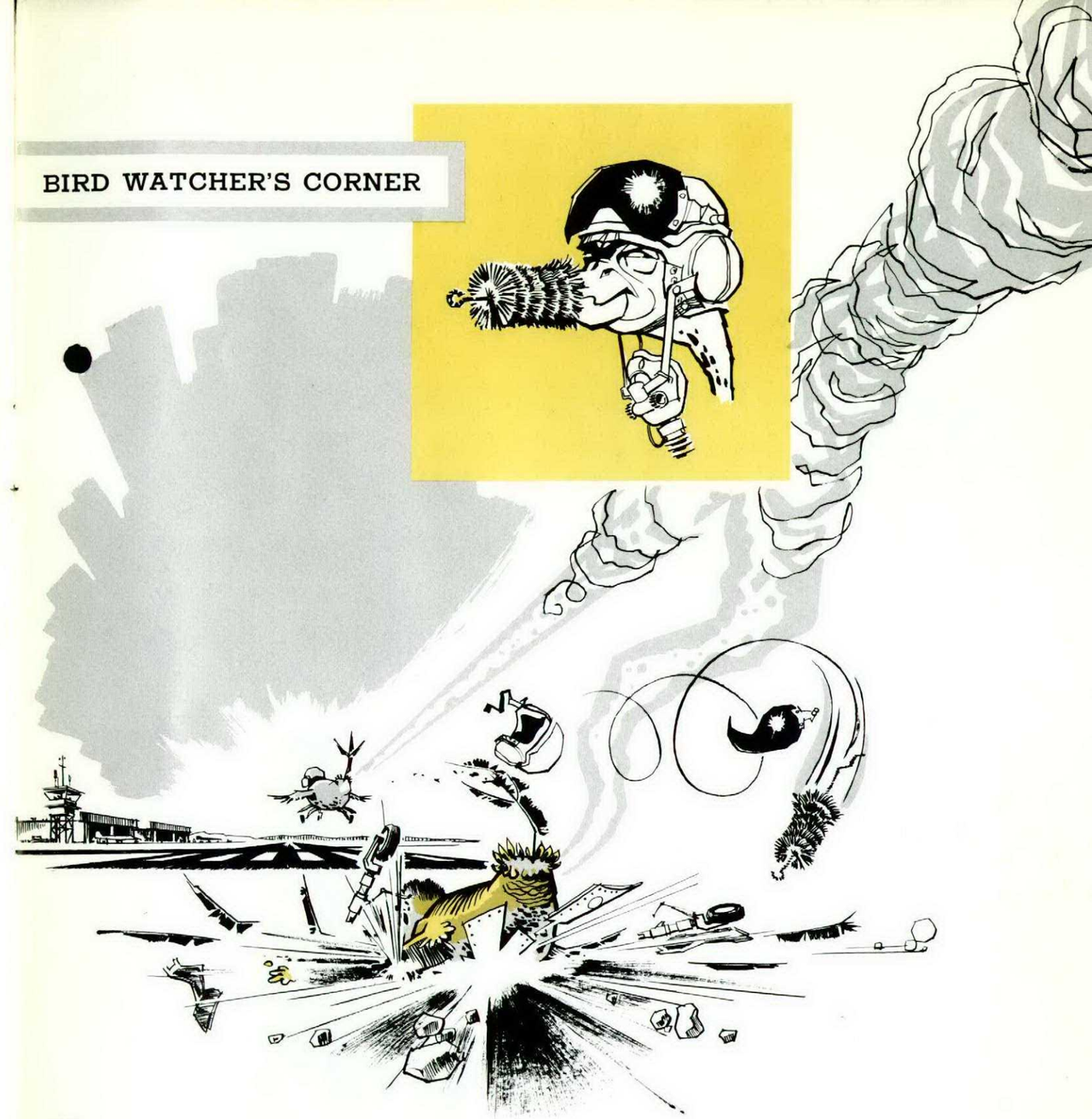
THIS OBJECT DID WRECK A JET

THIS OBJECT CAN WRECK A JET

✓

Personnel of DFS have had the opportunity to read a copy of Penhold Flight Safety News "QF" produced by F/L WI Gould. Practical in its content, containing a breakdown of causes and remedies for accidents, this booklet shows the good results in safety publications that can be obtained at unit level.

BIRD WATCHER'S CORNER



THE BROWN-BEAKED CHIMNEY SWEEP

Refuses to take proper spacing in the landing pattern and does his best to sweep the flue of the aircraft he follows. Generally ends up in an undignified attitude after fighting the turbulence of the aircraft in front. Adequate briefing and supervision will eliminate this unwelcome species.

Call: JEEZIT'SROUGH JEEZIT'SROUGH JEEZIT'SROUGHCRUNCH!

LIQUID OXYGEN

CAN BE DEADLY

Liquid oxygen has all the explosive properties of gaseous oxygen when contaminated with oil, grease, aircraft fuels, tar, asphalt and other substances with a carbon base. Further, liquid oxygen is cold, (−297F) and any contact with flesh will cause a quick freeze or burn.

- Wear the proper clothing
- Know the correct procedures
- Never forget you are working with a potentially lethal substance