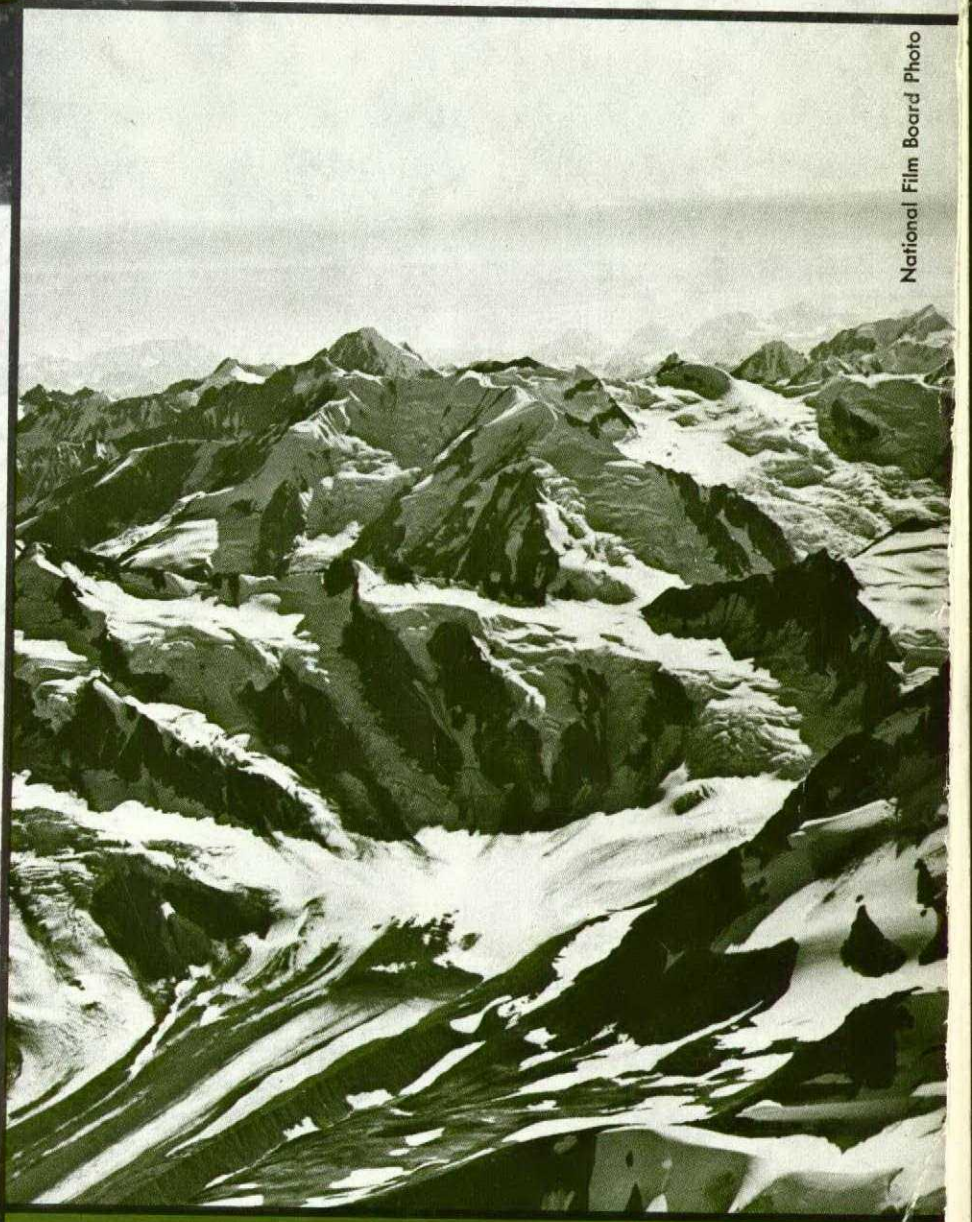
FLIGHT COMMENT

ROYAL CANADIAN AIR FORCE

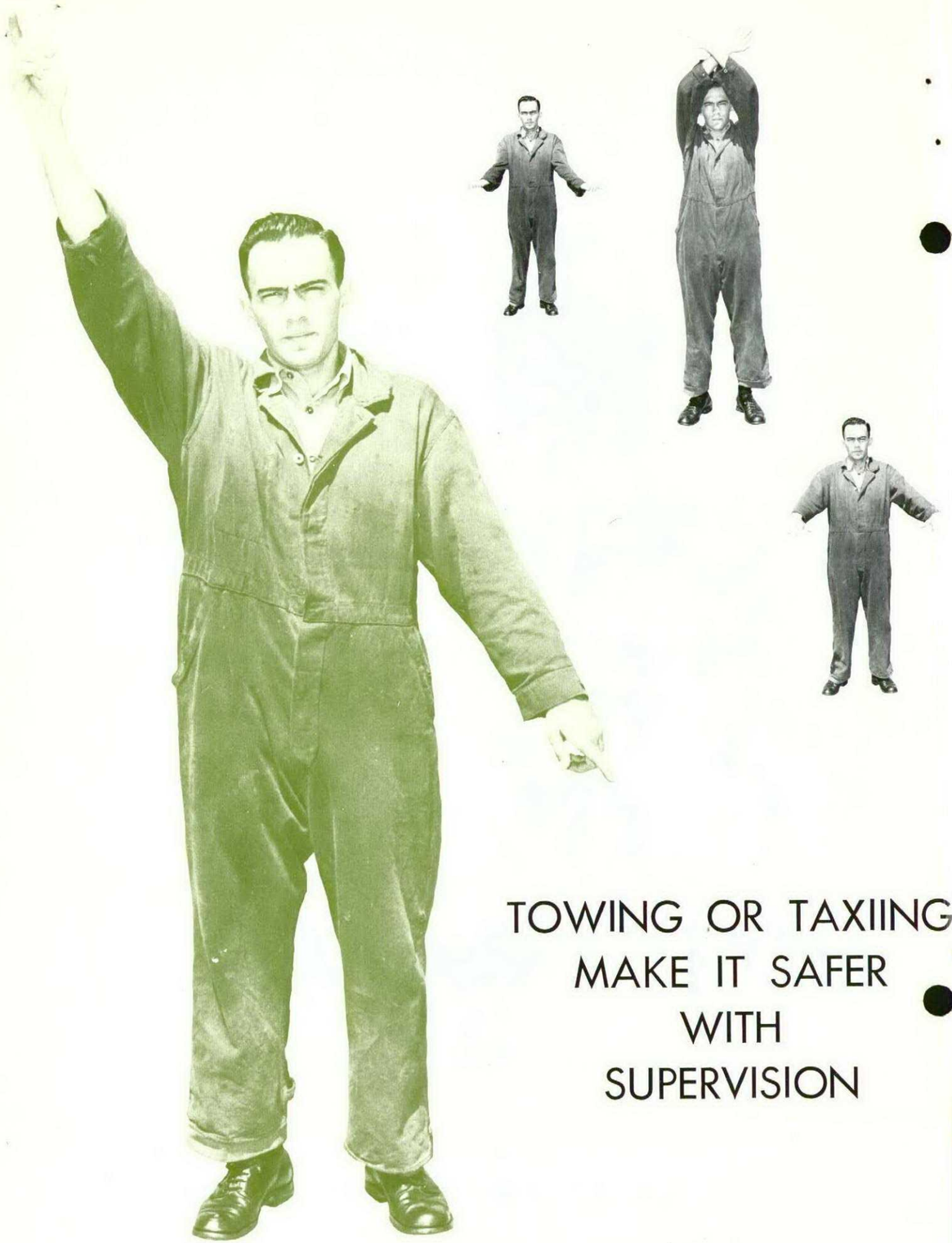
EDITOR



National Film Board Photo

AN EMERGENCY IN ITSELF IS NOT A CATASTROPHE TO BE UNPREPARED FOR ONE IS

SEPTEMBER • OCTOBER • 1960



TOWING OR TAXIING
MAKE IT SAFER
WITH
SUPERVISION

EDITORIAL

SEPTEMBER is the end of the holiday season. It is also the month for getting settled in the new home and getting the children started in a new school. September is the month for fighting the "after-leave-letdown" or getting "squared away" at a new station. It is also the month for finishing off the quarters flying time. However you look at it, September is a tough month.

Leaves and transfers are so arranged that the maximum number are away when the weather is good and the children are not in school. But while you are away others are still at work; new orders are issued, new mods hit the field, NOTAMs have changed. When you return you are no longer 100 per cent current. Our records show that the September accident rate was higher than the August accident rate in both 1958 and 1959.

What can be done to prevent a similar increase in 1960? First, get squared away. Then get up to date. Get in some practice before you tackle the real thing. Give yourself a chance, and the accident rate will look after itself.

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

THE SIMULATOR
(FRIEND OR FOE)

by F/L V. I. Clouthier
Directorate of Training Aids

A Simulator? Everybody knows what a simulator is. It is a hodge-podge of bric-a brac tacked together to resemble the operations room of an aircraft, the whole ingeniously engineered to provoke claustrophobia, vertigo and confusion - in that order. And, in a cantankerous sort of way, a simulator is almost human. It senses when you and your exercise are doing well and it breaks down, forthwith. Conversely, when you aren't up to snuff, it is. And so it goes.

This leads to a certain amount of scepticism and argument as to whether simulators are necessary. Well, are they? Simulators simulate flight conditions accurately. Simulators do not need a runway, radar or JP4 to do this, just some electricity, an instructor and a pilot who is learning the easy way to become competent in this flying game.

"Why doggonit!" you might exclaim (to yourself, in private). "I'm pretty darned competent and the only trainer I've flown is the Link." Well, you probably aren't as competent as you think. And that old Link bird ain't no simulator. It's a tradition. Traditions die hard and the Link is still with us, though its asthmatic wheezes and convulsive twitchings were suspected to have been deliberately planned to give additional meaning to Per Ardua ad Astra.

Let's face it. The simulator is a horse of a different wheelbase. From the inside it looks and acts like the aircraft you fly, some critics notwithstanding. As an Operational Flight Trainer it is designed to satisfy two general requirements, conversion training and continuation training. As an Operational Flight and Tactics Trainer it satisfies three general requirements, conversion, continuation, and tactical or mission training.

Simulators are useful and they're hard to fool. In the spirit of Gertrude Stein, a goof is a goof is a goof. The simulator will show up goofs with precision, safety, and impartiality. It's for your benefit, and the taxpayers', that you practise till you goof no more.

If the simulator embarrasses you and a little humility is not your piece of pie, chances are you could have further embarrassments - the kind that hurt. If you merely lack confidence and suspect that the simulator was procured to separate the wheat from the chaff, then you really could use a simulator. It will quickly assist you to qualify as a full kernel. (It may be corn, but it's close to the cob.)

The airlines are a profit minded lot. It's true that the customer pays, but he doesn't at all mind paying the competition if the fares are lower or the safety record a great deal higher. For airlines, then, keeping safety high and costs low is a matter of survival. This is no small problem in view of the complexity and operating costs of a modern multi-million dollar airliner. Training costs are enormous. It is illuminating, therefore, to note that many of the world's major airlines are procuring, or have procured, simulators. Among these are KLM, PAA, Swissair, Air France, Air India, TWA, BOAC, TCA, CPA, United Air Lines, Eastern Lines, BEA, Iberian and SAS. The simulators have been, or are being procured because they provide more training in less time with less cost and without risk.

Though airlines compute economic factors in various ways, in broad terms benefits are accrued by the following methods:

(a) reduction in training costs (up to 70%);
(b) increase in effective training time (up to 50%);
(c) release of aircraft for revenue producing purposes;
(d) emergency procedures training that can be obtained in no other way;
(e) flexible and certain training schedules; and
(f) standardization of training.

Simulators can be serviceable. It has been proved that with good maintenance simulators can be operated eighteen hours a day. Indeed, simulators, like aircraft, are more reliable when operated for longer periods. Troubles are more manageable when they come up one at a time. An idle trainer probably means idle and indifferent instructional and maintenance staffs. The end result will probably be a "hangar queen".

Good simulator maintenance is very much dependent upon a good instructional staff. The average crew under instruction will charge off a lot of partial or impending unserviceabilities to inadequacies of simulation. The instructor, with his superior knowledge of the machine, should be able to pick out problem areas and adequately describe them to the maintenance staff. The odd minor unserviceability can be tolerated. However, a host of minor unserviceabilities make, in the aggregate, a major problem and a poor trainer.

Failure to modify the simulators to current versions of the aircraft has been a frustrating and a continuing problem, probably the major simulator problem to afflict us. Changes in cockpit configuration, accessory systems, etc., not carried over to the simulator impose a considerable burden on the instructor. In some instances he may have to eliminate some procedures training for fear of creating negative transfer or interference effects. In some minor unserviceabilities minor modifications in themselves are generally of small consequence. Total up a number of unincorporated minor modifications and the result is frequently a problem of major proportions. In the main, though, the chief result of differences between the simulator and the aircraft is the lowering of both the instructor's and the trainee's confidence in the simulator as a training aid.

Adequacy of design, materiel and maintenance are factors of considerable importance in any simulator program. However, the greatest contribution to the program is made by dedicated, qualified instructor personnel.

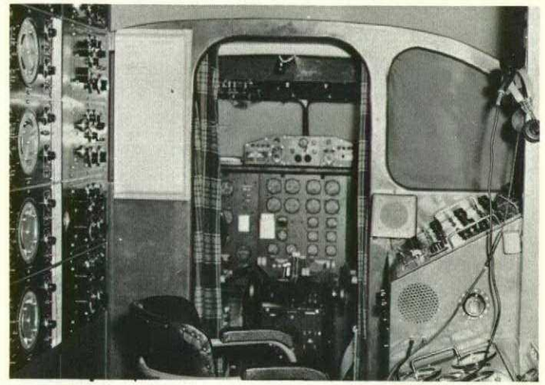
There was a time when the squadron idiot occasionally paid for his sins of omission by getting "joed" to instruct on the simulator. It is probably unnecessary to say that no self-respecting tiger would heed this type of instructor. Well, times, we hope, have changed. And so, too, have the qualifications of the simulator instructor. We now ask that he be:

(a) above average in his trade and fluent enough to impart instruction;
(b) tour expired or tour experienced on the aircraft simulated;
(c) current, and remain so on the aircraft simulated; and
(d) instrument rated and remain so.

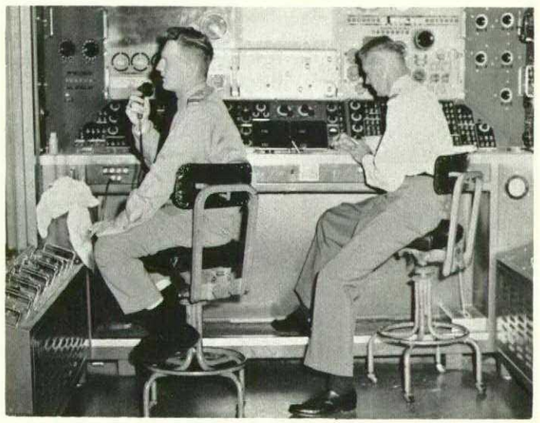
We ask, further, that the instructor positions be annotated flying positions. In short, we want interest, experience, confidence and dynamism. We want our simulators operable and operating.

Well, simulators are here to stay. Virtually every major airline and air power have attested to the fact. In this era of extreme costs in aircraft, cluttered traffic patterns and airways, simulators make sense - dollars and sense.

The crew compartment of the CF100 simulator.

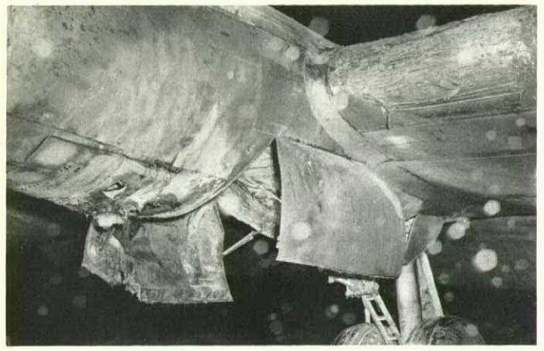


The reciprocating, twin engined, general purpose simulator composed of the crew compartment and the instructor's console.

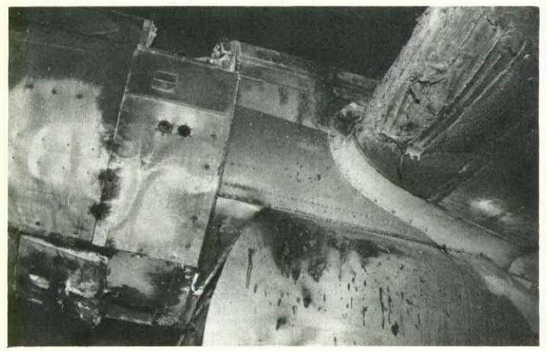


Instructor's console for the CF100 simulator.

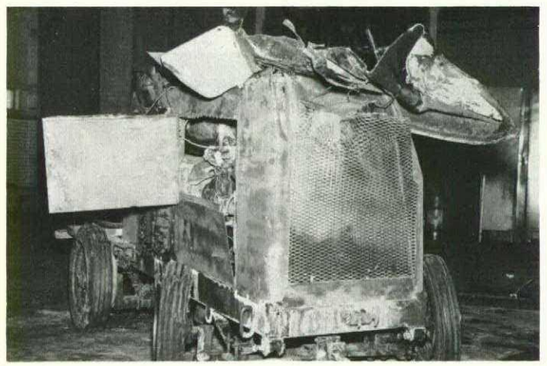
IT WAS A MISERABLE NIGHT



Damage caused when No. 3 engine burst into flames.



Fire damage to No. 3 engine of North Star.



Energizer that was damaged in North Star fire.

It was a miserable night, dark, wind from the Northwest at 17 mph and gusting. But, regardless of weather, the North Star's engines had to be tested so two qualified technicians were detailed for the job. The aircraft was positioned, chocked, and all necessary checks were made. When the four engines were running, the airmen on fire extinguisher duty returned to the hangar.

No.2 throttle was advanced to check the engine at high rpm. After the check No.2 was set to idle at 1800 rpm, the same as the other engines. No.4 throttle was advanced and when the rpm reached 2600 to 2700 the aircraft lurched forward and No.3 engine burst into flame. When the smoke had cleared away, the aircraft and an energizer were severely damaged.

It was a miserable night.

The ensuing investigation determined that the calks on the starboard chock had dug into the tarmac and then broken off, that the aircraft had moved forward 26 feet, that No.3 propeller had ruptured the gas tank of the energizer which was parked ahead and to the right of the nosewheel, and that fuel from the energizer spread over No.3 engine and caused the fire. Why the chocks did not hold is a mystery. It was suggested, however, that a strong gust of wind from the left on the tail surface of the aircraft plus the thrust of No.4 engine at 2700 rpm was sufficient to overcome the resistance of the chocks.

The fire, except for a small hydraulic-line fire in the undercarriage, had been extinguished by the technicians before the fire fighters arrived on the scene.

Because this run-up was "normal" the unit is not open to criticism, in fact, it should be complimented for the positive reaction of its technicians in an emergency. But are we to accept this as an "Act of God" accident? Let's take a second look before we do.

Is our ground equipment, our handling of ground equipment, our procurement system good enough for the type—in dollar terms—of aircraft we fly? Three Sabres were damaged when a chock on a locally manufactured ground run-up platform failed. An Argus was damaged when its propeller struck a fire extinguisher that had been dropped in the grass at the side of the tarmac, and in this case a North Star was damaged because an energizer was left in front of it. In these accidents long established ground handling habits were a factor. In the case of the North Star, the tarmac was dark because no replacement floodlight bulbs were available. A Sabre taxied into an energizer on a dark tarmac because lighting had not been approved. A Sabre was written off when it hit the runway lip. Authority to grade the approach area was not received until after the runway was in operation. In these accidents "blocked channels" were a factor. A Dakota was damaged when the counterweight of a hangar door fell on its wing. A Sabre was damaged because the wrong bolt was used in a tow bar. In these accidents the condition of ground equipment was a factor.

The list is long, but these examples will serve to focus attention on the circumstances that allow ground accidents to occur. They suggest that some of our "Act of God" accidents are, in fact, only a case of "The Lord helping those who help themselves"—to have an accident. They suggest that some of the procedures and work habits we accept as normal may not be good enough. They suggest that we need to take a very long look at our support equipment and the work habits of our support personnel. In short, we must become our own critics.

The unit where the North Star accident occurred has issued a unit maintenance instruction dealing with the use of chocks and parking brakes and the handling of energizers. This instruction should prevent similar accidents. But what of the "new" ground handling accidents that have not happened yet? These are the accidents that will require foresight and imagination to prevent. These are the accidents that upset planning because they are "new" and, as such, cannot be taken into account when plans are made.

There are two sides to this problem: one, assume that flying safety is promoted only for the protection of aircrew; or two, assume that flying safety is promoted to increase the overall effectiveness of the air force. Obviously the last assumption is the correct one. As the man said, it is "getting there the firstest with the mostest" that counts. To get there "firstest" we must save time, avoid needless delays in our support organization. To get there with the "mostest" we must save materiel, avoid needless accidents.

EYES AND EARS ARE NOT ENOUGH

FSF: Mechanics Bulletin

A very perceptive woman who loved our Mexican neighbors once wrote with great tenderness of their use of the word "primo", cousin. Being a cousin in Mexico, she explained, is not necessarily a matter of blood relationship. Rather it is an at-one-ment, a mutual warmth of understanding. "Primo" is a word of the heart.

It is interesting to substitute some very common English words for "primo" and to discover in the process a deeper, fuller meaning in the terms. Take, for example, "hearing" and "seeing."

At once we find that perception is much more than what we learn from the senses. "Hearing" has relatively little to do with the ear. It is chiefly a matter of consciously listening, of grasping the intelligence conveyed by connotation, overtones, undertones, as well as by words. "Hearing" is a thing of the mind. A perfect audiogram does not guarantee that one will "Hear". Failure to listen, whether caused by preoccupation, indifference or distraction can "deafen" us as effectually and as dangerously as damage to the ear.

"Seeing" is, of course, the function of the eye, but the image on the retina is of small value unless one comprehends the meaning of the thing beheld. "Seeing" is also a thing of the mind.

A foreman, busy with talk, watched a driver back his truck without a guideman and clobber the fuselage of a transport. Later when asked what had happened he was able to recount all the mistakes of the driver. He also remembered that he had given no warning shout or signal. His 20-20 vision had not helped. He had not "seen" the action he had watched. Being absent-minded, he had suffered a temporary loss of "sight".

What has this to do with maintenance? Every mechanic knows that maintenance goes far beyond checking, aligning, adjusting, beyond cleaning, repairing and replacing. It is more than a matter of hand and tool. It, too, is a thing of the mind. Maintenance can be adequate only when we "hear" and "see" fully all that is presented to us. It can be safe only when performed with understanding and responsibility.

F/L E. T. HOAR

In preparation for a test flight in a Sabre, F/L Hoar did a complete control check. Everything appeared to be normal. Immediately after takeoff control response was abnormal; the control column had 6 to 7 inches of movement without any apparent elevator movement. F/L Hoar climbed to 5000 feet to test the controls.

Control was extremely poor, as though there was air in the system. All pressures were normal, however, so after burning off some fuel he checked control at low speed with the wheels and flaps down. Below 140 knots it was almost impossible to control the aircraft so it was returned to base and landed using trim and power.

On inspection, it was found that the power control centering bungee assembly, pt. No. 170-587100-7, had been improperly set at the factory. This, in turn, allowed the stabilizer to creep through its full range of travel in either direction when the controls were moved.

For his good judgment and skill in handling, and saving, his aircraft F/L Hoar has earned himself a Good Show.

EXPECT THE WORST

An experienced jet pilot was flying a Sabre on a local IFR flight to test the heat and vent system. The possibility of icing in cloud was covered at met briefing although no other aircraft had reported icing.

During the flight two penetrations and GCA approaches were made. On the first, very light rime icing was noted on wing fences and windscreen, but this presented no problems and burned off very quickly on overshoot. On the second descent, due to a non-standard rate of descent used at the request of radar, the aircraft reached minimums twenty miles out from the field. Again, light rime ice appeared, but did not seem to build beyond that noted on the first GCA. About three per cent extra rpm were carried, but the pilot thought that this was due to carrying flap throughout the run, while the previous run had been done clean until final. To compensate for any icing, IAS was kept at 145-150 knots on final. Fortunately the aircraft was kept on the glide path all the way on final rather than cutting power and speed early, for when the throttle was chopped and speed brakes opened over the button the aircraft stopped flying. The pilot estimates that the stall came at about 130 knots IAS. The roundout had been slightly high and the aircraft settled very heavily and was overstressed. Upon examination of the aircraft on the line it was discovered that there was close to an inch of ice just under the leading edges and the thick ice spread back almost a foot. There was some ice up to three feet back on the wing. From the cockpit there was little to indicate anything beyond light rime icing.

The pilot feels that he made the following mistakes in judgement. Firstly, from the position of the formation of this ice, any prolonged icing symptoms should make the pilot expect the worst. Secondly, despite the icing symptoms and a slight white-out condition, a flare-out type landing was attempted. More by good luck than by good management the aircraft was over the runway when this was done. Under these conditions power and speed should have been carried to touchdown. Thirdly, the pilot elected to carry on flying under the following conditions; a long slow approach in a known icing layer, indications of ice, and increased rpm. The sensible thing to do in these circumstances would be to overshoot and do a penetration and approach requiring minimum time in the icing, and to keep power and speed on until touchdown.

BURNED AT THE STICK

I had just returned from an air test in a chopper and was scheduled for another trip in approximately 30 minutes time. Being a good union man I decided to have a coffee while I was waiting. I unzippered the pocket on the sleeve of my bird suit and extracted a nickel when—whoosh—a package of penny safety matches ignited in the pocket. It was just like old times on the mess entertainment committee for I immediately went into an imitation of Danny Kaye in the Court Jester. After leaping about like a wounded gazelle for a short period of time I managed to shake the burning package out of my pocket. The entertainment was enjoyed by all in the canteen except myself because there were four other packages in that pocket and I had no inclination to make like Joan of Arc. When everything settled down I removed the remaining packages and donated them to the canteen. I examined the remaining matches and found them to be old.

Had I been airborne at the time, I imagine a new chopper aerobatic manoeuvre would have resulted. Had this happened in a T-bird or a similar type, what would have occurred besides a good burn, I leave to your imagination.

This hazard should be brought to everyone's attention, for I'm sure there are many who still carry safety matches in their pockets when flying, even though matches and containers have been an item of issue at the Safety Equipment Section for some time.

Burns can also be received from propane lighters. Under decompression conditions in jet aircraft, a blow torch flame would result. The fluid which may leak from a cheap or overfilled lighter can also cause a nasty flesh burn, even though the fluid is not ignited.

ELECTRICAL SHOCK

Knowing the how and why of electric shock may help us to be "the safest" in our associations with electricity.

A common belief is that it takes a tremendous volume of the stuff to be destructive and the lethal process is so hot it also burns the soles off the victim's shoes. This concept may apply in some cases, but does not constitute the whole truth.

Actually, comparatively mild jolts can destroy life. Our message center, the brain, and the transmission system, our nerves, function as an intricate electro-chemical network to motivate the push-pull rods, commonly known as muscles.

When we introduce stray electrical impulses through this very delicate transmission system, it is not just static—it is a disruptive force that stops the show. When the circulatory and respiratory systems fail to get proper working orders through the nervous system, they do not work and that's all unless these functions can be primed back to activity by artificial means.

Research along these lines is difficult due to lack of enthusiastic participation of people for test purposes. But through devious means authorities have developed approximate figures on how much juice does what. Of course there are many variables such as AC, DC, people and circumstances.

Here's what one well-known researcher reported:

CURRENT IN AMPS	EFFECT
.0002 - .0003	Tap
.00075	Pinch
.001	Grip
.005 - .015	Unpleasant stimulation
.015 - .019	Paralysis of muscles through which current flows
.025	Possible permanent damage to tissues and blood vessels
.07 and higher	May be lethal

As you know, voltage is the drive that determines current magnitude—the amount of current for a given applied voltage depends on resistance. The resistance of the human body varies with the path of the current, health of the person, duration of current flow, amount of the skin moisture and the area of contact. While perspiring freely, body resistance is so low that 25 volts can cause death. Thirty-two volt farm systems have done it. However, under other conditions, 120 volts can be only a tingle, although because of a high rate of exposure many tombstones have sprouted because of 110.

Shock from 1000 volts may be less dangerous than those from lower voltages. The reason for this inconsistency is that the higher currents associated with these voltages may cause all muscles, including the heart (which is just another muscle) to contract suddenly and violently. In such cases the "pump" can resume operation if the victim is released in 3 to 4 minutes. Statistics show that 62% recovered after being knocked out by potentials over 1000 volts; for lower voltages only 39 percent.

It's not only the values of voltage and current but also the path of the current in the body. A route involving the heart or brain is most deadly.

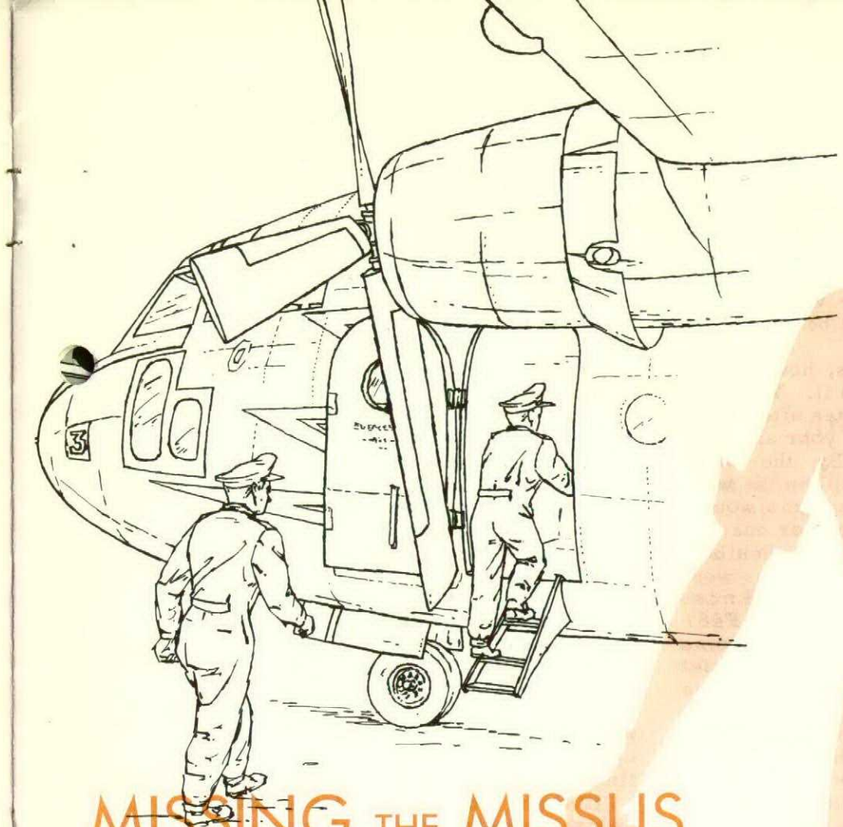
Therefore, shocks through the left hand and arm are more dangerous than through the right hand. If you pocket one hand while near "hot" circuits, make it the left.

Those who work with electrical equipment —and practically every one does--should understand the principles of rescue techniques.

First--break the connection between the victim and the source and don't be a conductor yourself. Turn off the juice or manipulate wires or victim with a nonconductor— wood, rubber apparel, etc. As soon as you can safely touch the victim apply artificial respiration. First aid books are full of this stuff; review same for details.

Speed is essential—with 600 cases studied, 70% recovered when artificial respiration was applied within 3 minutes. Another minute delay reduced the figure to 58%. Five minutes is too long—the chances are slim.

This doesn't allow time to run for help. You do it. Best don't let the victim be you.



MISSING THE MISSUS

by Janie Swanson

Every man has problems, annoyances and worries. In most cases all three can be spelled w-o-m-a-n. Women are notoriously unreasonable—and a little thick-headed. Worst of all is to be married to one.

To illustrate, take an early morning peek into the private lives of S/L Massey Harris and F/L Ford Ferguson. And start in the home of S/L Harris.

"What's with all this wifely efficiency?" asked S/L Harris, as Hilda snatched his cup and saucer before he finished swallowing his coffee.

"Big day today," she replied briskly. "Got your brief-case?"

"Yep. May be a little late," he added, leaning over the steaming sink to kiss her goodbye.

She turned abruptly. "What do you mean, you may be late? The Wing Commander and his wife are coming for dinner tonight. Did you forget?"

"Well," Massey explained, "Ford and I are flying over to Mountain View."

"I'm sorry I snapped at you then. That's only a couple of hours each way isn't it?"

"Yes," he agreed, "but you never can..."

Hilda flicked on the vacuum cleaner and said, confidently, "I'll see you about 5:00, honey."

Across the street, F/L Ford Ferguson put his breakfast dishes into the sink, then slipped quietly into the bedroom.

"Are you awake?" he whispered.

Alice Ferguson opened one eye and said something that came out "ummphh."

"Do you feel any better?" he asked.

"Oh...yeh...I'm fine." She rolled over and pulled up the blankets.

S/L Harris sat in his car at the curb, racing the engine impatiently. He honked his horn for the third time. F/L Ferguson called "just a minute" and turned to get his raincoat. A light drizzle had just begun to dampen the sidewalks.

If Massey Harris and Ford Ferguson were junior executives off for a day of conferences and cost analyses, the morning pressures might spoil their day. Massey, worrying about impressing the boss, might bark at his secretary for trifling errors and skip lunch to be sure that he got home by 5:00. He might get a headache or forget his brief-case. Ford might call home at 10 o'clock, find his wife's

illness worse, and take the afternoon off to drive her to a doctor.

But Massey and Ford are going to spend their day at the controls of a complex flying machine. In murky weather they can't simply shake out their raincoats and turn on more lights in the office. Despite well-meaning exhortations to the contrary, they can't always leave their problems on the ground. But they had better recognize a bad day when it slaps them in the face, or they won't be around for the good ones.

Recognizing one of those days, however, is not the time to begin coping with it. You don't preflight your airplane 20 minutes after take-off when you suddenly discover your airspeed indicator registers "zero". By the same reasoning, please don't try to explain the whys and wherefores of inevitable delays to a woman in the midst of party preparations, or one who is nursing three pre-schoolers through a bout of chicken-pox.

Preplanning is the key to successful missions. Isn't that the reason for the Form F48? There really ought to be a Form F48hf (home front). One wild, reckless evening just let Matt Dillon fight his battles alone and brief the female co-pilot in your life.

Despite the fact she is unreasonable and unfathomable, you must have been attracted to her to marry her in the first place. You know that she knows you would like to be home in time for dinner every night—well, several days a week anyway. But have you ever really explained why this is sometimes impossible? Do you give the old girl credit for a modicum of good sense and the ability to understand a reasonable explanation?

When asked why so few men take the time for explanations, Wing Commander Anonymous offered a rather startling explanation—and admission:

"Perhaps it is because we often use the pressures of duty as an easy excuse, when we know inside that the business was not really that important".

Perhaps you do. So what? It works two ways. Surely you've suspected that your exhausted wife didn't really have such a rough day when your blue shirts were not ironed, but the bookmark in her novel had progressed to the three-quarters mark.

So the woman in your life is no mechanical genius. You don't have to teach her how to repair an internal combustion engine to explain that there are several dozen kinds of spark plugs and you have to have the one that fits. It shouldn't be difficult to find a picture of a plane damaged by hail, when you explain why you can't spend three or four hours dodging thunderstorms when you have five hours fuel aboard—and no place clear to land when that's gone.

Pilots tend to glamorize and romanticize their narrow escapes. Listen to one at the next party you attend. (There is probably some psychological explanation, but that is another department.) The impression many women get from listening to "war stories" is that these guys love trouble. They may have a dim understanding of the trouble, or none at all, so it just plain scares them.

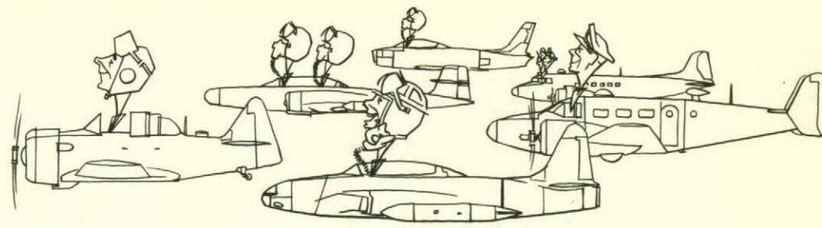
Certainly a man doesn't set out to frighten his wife intentionally—let us hope. If he has done so by omission, it is easily corrected. Fear and uncertainty are so closely related as to be virtually synonymous. One of the most common uncertainties a wife faces is, "where is he?" He hasn't phoned, so she assumes he will be home at 5:30, as usual. At 6:00 she is annoyed. At 6:30 little unnamed doubts nibble at her nerves. By 7:30 she is plainly and frankly worried, but not wanting to be tagged a worrywart, she sits on her hands and tries not to stare at the telephone. The Lord of the Manor breezes in at 8:30—he "got talking to some of the boys and lost track of the time". For three hours this girl has been frantic—"he was in an accident, he's sick, he got robbed and is bleeding in an alley somewhere". Three hours she has wasted worrying about this big lunkhead, and he was sitting at the club downing cool ones. Don't laugh! What horrible visions did you conjure up last time she was a couple hours late getting home from her ceramics class?

It's not too late to start a campaign for understanding (if it were, there would be no one reading this). Next time F/L Ford Ferguson finds himself stuck out with a broken airplane, 45 cents and no razor, his problem would not be complicated by worrying about "what Alice will think".

Perhaps, despite S/L Harris' campaign of education and enlightenment, Hilda cannot (or will not) ever quite understand. That, admittedly, puts a heavier load on S/L Harris. When he is tempted to push on through ("we can make it by midnight if we skip dinner") he will have to discount the importance of Hilda's wrath. If he doesn't make it for dinner with the Wing Commander, the Wing Commander at least, will understand. If his great-aunt Fanny is the expected guest, she almost surely won't understand. But Aunt Fanny's legacy can't be spent by a dead man anyway. Birthdays and anniversaries can be celebrated just as festively a day or a week later. S/L Harris may have to put an appropriation in his budget for long distance phone calls to appease Hilda. But most women, even the least reasonable of the lot, will come around if you will lay it on the line. They certainly can't be censured for lack of understanding when no one has taken the little time necessary to educate them.

S/L Harris is no good to Hilda dead. One dinner party is not worth sacrificing the rest of his life.

USAF: Flight Safety Kit



HEADS-UP FLYING

HYDRAULIC FAILURE

The North Star, captained by F/L J.R. Morrison, was on the final leg of a mission at northern bases when the hydraulic pressure fell to near zero. The flight engineer, Sgt Lalonde, closed the hydraulic by-pass valve and the cockpit was immediately filled with hydraulic fumes which came in through the foot warmers. The hydraulic pressure fell to zero. It was assumed that a major hydraulic leak had occurred. Operation of the hand pump revealed that the failure had also drained the fluid from the emergency reservoir.

At this time the aircraft was about 150 miles from its destination, which was reporting -38° (F), clear, and a five knot wind 40 degrees off the runway. The runway consisted of 5000 feet of hard packed snow. F/L Morrison elected to land so he set up an emergency pattern and, after a gravity lowering of the landing gear, he made his approach from five miles out and controlled his airspeed and altitude by using power and a nose-high attitude. After touchdown rudder was used to keep the aircraft straight until the nosewheel touched. Four or five meterings of the air brake stopped the aircraft on the runway with only 300 feet to spare.

The loss of hydraulic fluid was due to a fracture of the hydraulic power brake valve.

In completing a successful landing F/L Morrison demonstrated the value of knowing thoroughly how to handle his aircraft when a "normal" system fails. A real bit of Heads-Up flying.

PLANNING, SKILL AND CO-OPERATION

At a pre-flight briefing at 4(F) Wing one member of the section asked what should be done if compressor stall was encountered. The lead discussed this question in detail not knowing that his No.4 would need this information on the next flight.

The section, four Sabres, took off for three intercepts and while breaking off the third intercept at 42,000 No.4 heard an explosion. The cockpit momentarily filled with smoke, rpm dropped from 97% to 94%, JPT dropped to 500, and the engine became very rough. No.4 declared an emergency and No.1 positioned himself to fly chase.

To enable the chase plane to hold position easily, the descent was made at 230 knots. During the descent, which was through cloud between 30,000 and 5000, every effort was made to correct the compressor stall, but with no success. At 16,000 feet the engine was flamed out and a relight was tried on emergency fuel. The vibration persisted, however, and 40% with JPT at 425 was all the engine would produce. Two more flameouts and relights were tried with the same result. While No.4 was busy with his engine, No.1 handled radio transmissions, checked headings, airspeed and altitude, and watched for evidence of fire.

Approach Control and GCA co-ordinated and the aircraft were brought over the field at 3000 feet—perfect for a flameout pattern. After landing, No.4 turned his aircraft off onto the grass to clear the runway.

The "compressor stall" was the failure of the centre bearing. The aircraft was not damaged when it was turned onto the grass.

F/O Batcock, No.4, showed excellent airmanship, F/O Zinkan, No.1, by his thorough briefing and professional manner in flying chase, was responsible for a large measure of the success of this mission. F/L Patterson, controller, and FS MacMillan, radar operator, also contributed by providing assistance to the full extent of the equipment at their command.

That is the story. Planning, skill, and co-operation combined to produce a completed exercise. We congratulate these men for their Heads-Up handling of the situation.

WHAT AM I SITTING ON?

by S/L J. P. Coyne
Institute of Aviation Medicine

"What am I sitting on? For the first hour it is no more uncomfortable than sitting still on a hard chair, during the second hour it is agonizing, and during the third hour it is sheer torture."

You've guessed it. It is the seat pack survival kit in the Sabre, T-33 or CF100. Contrary to popular belief the pack was not designed by the IAM to find the limit of physical endurance of the pilot, but was developed around a number of basic requirements. Luxurious comfort, unfortunately, could not be considered the prime factor since this is not compatible with safety on ejection.

The seat pack is essentially a support for the body while it is in the aeroplane. The time when this support is most critical is, of course, during ejection and although it is required on relatively few occasions, lack of this support is disastrous. The pack, then, was designed to satisfy the needs of these few occasions and to contain adequate survival gear. Some comfort was sacrificed for these needs.

"But oh! my aching back, couldn't it have been designed to make it easier to sit on?"

The ejection seat packs the wallop of a couple of Missouri mules, 12 to 18G. The total force imposed on the body during ejection may be more than 12 to 18G, however, if the body is not supported properly. When you hit the panic button, the seat is going up as inexorably as you're going to pay taxes next year. When the seat starts to move, your inertia tends to stop you from going up, particularly if you are sitting on a nice soft compressible cushion. With the ballistic catapult the rate of onset of G is very high and after the seat has moved only a small distance the force applied to your bottom-side is considerably higher than if you had started moving at the same time as the seat. Next time you're playing ping-pong drop the ball about 2 feet onto the bat and note how high it bounces; then drop the ball from the same height but flick the bat up an inch or so just as the ball comes down and now note how high the ball bounces.

"Okay brother, so I can't have a feather pillow under me, but surely something can be done to make it a little more comfortable."

Well, something was done; the contoured seat pan gives the best weight distribution possible. This shape was selected as a result of considerable study and many trials on the ejection rig. With the one inch pad it makes a reasonably comfortable seat. Much of the discomfort occurs as a result of improperly packed survival equipment, i.e., the "Rocker Bottom Kit" or the "Cliff Hanger" (the one that slopes so far down in front that you have a hard time keeping off the cockpit floor). Before packing instructions are published, literally hundreds of packing combinations are tried to make sure the method selected is the best one. Survival kit packing follows the old adage "A place for everything and everything in its place", and if this is followed, complaints will decrease amazingly.

"Just wait till I get over to the Safety Equipment Section and give those Joes a piece of my mind about their packing methods."

Wait a minute now before you do anything rash. First of all find out if one of your pals, or maybe even one of the "Brass" has told the section to put an extra pair of socks or another can of rations in the kit. This sometimes happens and the poor little man in the Safety Equipment Section is caught between the devil and the deep blue. However, suggestions will do wonders; the Safety Equipment Section responds amazingly to a few kind words.

"Well, so be it, but if all this thought goes into the development of a seat pack why isn't there enough survival gear in the kit so that I won't starve or freeze before they pick me up?"

You won't starve; that's for sure. You can go for two weeks or more without any food, except in extreme cold, and still engage in survival activity. You won't freeze either if you remember your survival training and use your equipment properly. All agree that the seat pack kit is somewhat minimal, but it contains all the basic requirements for survival. Intelligence and ingenuity is all that is needed to make your stay in the woods as peaceful as a fishing trip.

"So I'm going to apply to take the course at Survival School again, but is there anything new in survival kits coming along?"

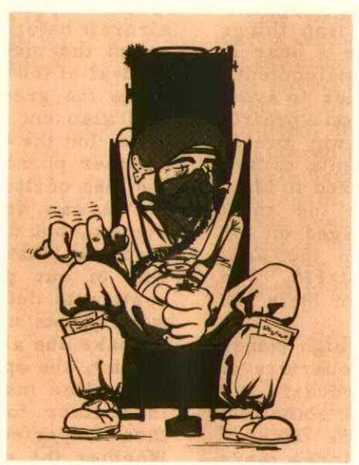
There is not likely to be much change in packs for our present aircraft, however, there is one development which will affect future packs and may even have retro-fit implications. The new rocket catapults "gently" push you out of the cockpit instead of kicking you out as the present ballistic ones do, and with the rocket seats more comfortable cushions will be the order of the day.

1410: MAN, THIS IS GREAT.

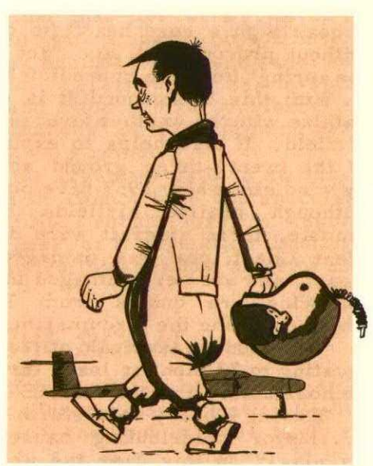
1420: SEATS A LITTLE UNCOMFORTABLE.

1430: FEELS LIKE THE SEAT PACK'S FILLED WITH ROCKS.

1440: TEMPORARY RELIEF.



1450: I SHOULD TAKE UP YOGI.



1460: AFTER A DAY OF THIS THAT SAYING IS REALLY APROPOS.

THE NEXT BIG BLOW

The Indians have been around for a long time, and if we believe their legends, they were having trouble with the weather before squall lines were invented. As the legend goes, the west wind is ruler of all the winds; he is also the "great bear of the mountains". One day Hiawatha wished to discuss the weather with this bear so they met on a mountain top. In the process of getting acquainted Hiawatha bounced a rock off the bear's head. This did not improve the bear's disposition at all. From this meeting, however, the white man inherited two folksie expressions; "behave like a bear with a sore head" (to do mean things without provocation), and "act like a bear in the spring" (to be an unpredictable malcontent).

With this background it is easier to sympathize with the weather forecaster on a prairie airfield. It also helps to explain why twelve of the twenty-three ground accidents caused by wind since May 1957 have occurred in May. Although prairie airfields have the most trouble, three aircraft were damaged on the West Coast, one was damaged on the East Coast, and six were damaged in Ontario. The following are quotes from Form Stats 328 which describe the circumstances:

"The sudden arrival of very high winds (gusting to 73 mph) at least three-quarters of an hour before the earliest MET forecast...."

"During a heavy rain-storm with some hail ....Major contributing cause was lack of warning." In this case the groundcrew were on their way to the aircraft when the gale warning arrived. The airmen had heard the wind coming!

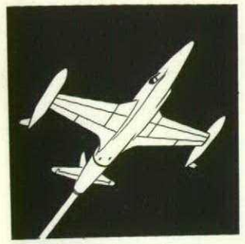
"At 1700 hours a miniature cyclone struck followed by winds up to 65 mph.... No gale warning had been issued."

"This was the result of the passage of a cold front which was unusually severe for this area.... Extraordinary wind forces had not been forecast...nor had it (the cold front's passage) been pin-pointed as to time."

Hiawatha tried a summit conference. Meteorologists use a scientific approach. Still that old bear is winning too many rounds. Can anything be done about this? A second glance at the accident reports shows that time is the important factor—time to secure the aircraft before the wind arrives. One CO has asked the meteorologist to lead the expected arrival of the wind in his forecasts. This will allow the groundcrew the time they need. It will also cut into the unit's available flying time, but the CO feels that, considering local weather phenomena, the experiment is worth the loss of flying time.

We can dream of an infallible forecast system, but dreams will not save our present aircraft. What is needed is a complete evaluation of our present equipment and warning system to define its weak points. When the weak points are known, it should be possible to make due allowance for them. The meteorologist, the operations officer, the technician on the line must be alert to the imperfections in weather forecasting and attempt to offset these imperfections with greater co-operation. Whether the solution lies with new equipment or "leading" the forecast indicated by our present equipment, time is the big factor. And the time to start thinking about the next big blow is NOW.

ARRIVALS and DEPARTURES



EPIDEMIC OR COINCIDENCE?

In December 1959 the pilot of a T-33 returned to base without a canopy. He reported that the canopy had blown off just after takeoff while he was climbing through 3000 feet at 300 knots. The emergency canopy removal door had opened in flight and thrown the cable release out thus activating the canopy release. In May 1960 the pilot of another T-33 lost the canopy for the same reason. This pilot reported that the canopy blew off while he was in a loop between 8000 and 10,000 feet, airspeed 290 knots, and 3-1/2G. Then in June 1960 it happened again. This time the aircraft was in a descending turn between 20,000 and 18,000 feet, airspeed 290 knots, and speed brakes out. In each case the primary assessment was "Maintenance".

Three similar accidents within six months (almost to the day) may not constitute an epidemic or be cause for alarm when the pilots are able to land safely. They do, however, suggest that our AFTechs might be a little careless when checking the security of this particular access panel or the serviceability of panel latches. If this is the reason, greater care must be exercised.

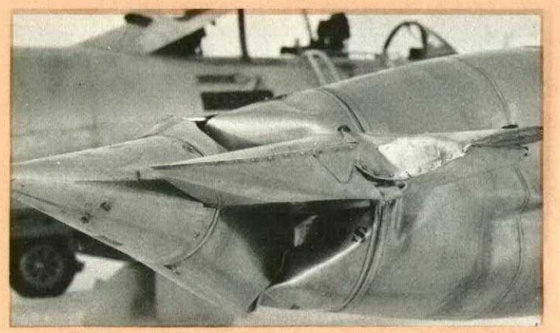
One explanation that has been offered is that a technician with a hard object in his pocket might lean against the access panel and thus spring the catch. This theory was investigated by DFS, and although the possibility is admitted, the chances of it happening are considered to be very remote.

This brings the argument back to maintenance again, and we cannot help but speculate on the result if No.1 should lose his canopy during a tail chase or a formation landing. T-33s are expensive, and trained aircrew are hard to replace.

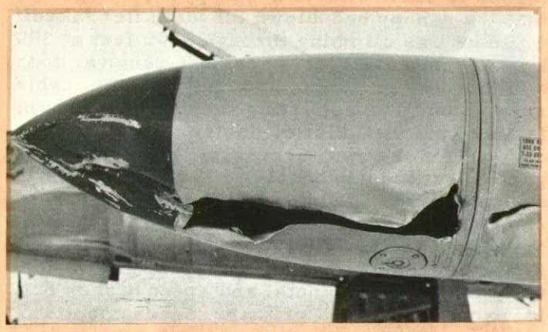
WAIT FOR THE SIGNAL

The three student pilots and an instructor were briefed for a three-plane formation flight. The instructor and one student were to fly as No.1, and due to a slippery runway, it was agreed to run-up to 80% only at the button.

During the run-up No.1 started to move forward when the TOE switch was selected on. The student immediately retarded the throttle.



No. 1 moved forward during runup.



No. 2 released his brakes when No. 1 moved forward.

No.2, although he had not received the signal to "roll", released his brakes when he saw No.1 moving. When he tried to stop his aircraft it skidded sideways and struck No.1. Two tip tanks were destroyed.

After considering all factors we are still moved to repeat our basic safety theme for formation flying: from start-up to shut-down fly the mission as briefed.

A TIME FOR EVERYTHING

The pilot of a T-33 took off for a training flight. He flew to another base, landed, taxied to the takeoff point, and commenced his pre-takeoff checks. Everything was normal except for a momentary lag in rpm at 90%. As all temperatures and pressures were normal at 100%, he took off. On reaching 5000 feet the pilot commenced to throttle back and again, as power setting was at 90%, there was a sudden reduction in rpm. The pilot landed immediately.

The reason for the malfunction was due to an unserviceable lower fuel pump.

There is a time and a place for everything. The time to put an aircraft unserviceable is when a malfunction is first noticed. The place, in this case, was at base before takeoff—a nice safe place to receive warning of impending trouble.

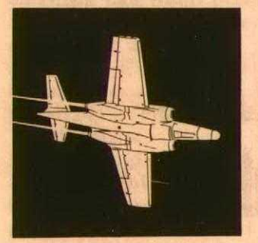
FOR YOUR CONSIDERATION

While coming in on initial, the engine of a T-33 flamed out. Altitude was 1500 feet, and distance about 2 to 2-1/2 miles at the time. The pilot elected to do a straight-in approach so he shut off the high pressure cock and did not attempt a relight.

In the pilot's words: "Undercarriage and flaps were lowered, I then dived off height, rounded out short of the runway at 160 knots and extended dive flaps, crossing the approach at 150 knots. The aircraft bounced twice then stalled onto the runway."

This is a good opportunity for second guessing because the pilot made a good decision but a bad landing. But, before you start, there are two more facts to consider; no reason could be found for the flameout and the engine checked out normal on ground test, and there was plenty of runway. Some questions might be: Should height be dived off with brakes in or out? Would it have been possible to do at least a partial circuit in order to stimulate normal landing habits? Should he have tried for a relight?

Studying this case could be a fine exercise in emergency procedures. It might even save a T-33 for you some day.



BEHIND THE EIGHT BALL

The pilot of a CF100 reported the following incident:

We climbed to 30,000 feet and on levelling off I noted the auxiliary tank was not feeding. This had happened on a previous exercise and the auxiliary tank had fed later in the trip, so I figured that this would happen again. But, after being at altitude for thirty minutes the starboard low level fuselage light came on. I immediately turned towards base and informed GCI.

I began thinking of what to do to have enough fuel to get to base. I cross-fed port and went on to wing direct on the starboard side and back to normal on the cross-feed selection. The port low level light came on and I went to port wing direct. The port engine flamed out. I declared an emergency and called my partner in the section for suggestions. He suggested checking the auxiliary switch in the off position. I turned the auxiliary switch off. The starboard engine flamed out and I immediately turned the ground flight switch and all unnecessary electrics off.

I tried relights at 28,000, 24,000, and 22,000 feet without success. At 22,000 feet there was a compressor stall on the starboard engine. I finally relit the port engine at 18,000 feet and the starboard engine at 3000 feet. I landed with the starboard engine stuck at 85% and flamed out both engines on touchdown.

The primary assessment in this case was "Materiel" because of a faulty relay in the auxiliary tank feed system. No reason for the starboard engine sticking at 85% or either engine failing to relight below 28,000 feet could be found.

(Grampa Pettibone says, "It is not how little you know that gets you in trouble, it's believing that what little you know is enough to keep you out of trouble that puts you behind the eight ball." This pilot had 188 hours of jet time with 57 hours on type—enough time to learn the fuel system and more than enough time to know that an erratic fuel system is sufficient reason for declaring an aircraft unserviceable, via the L14. Next time he is behind the eight ball he may not be so fortunate.—ED)

GO GO GO

A CF100 rolled out onto the runway and was turned to line up. The pilot applied the brakes and before the aircraft came to a stop he opened the throttles. He was No.2 in a harlequin takeoff and didn't want to waste any time. The port engine appeared to wind up faster than the starboard, so the pilot applied port brake to counteract the swing. He continued to apply brake and advanced the starboard throttle more rapidly. The starboard engine never did catch up to the port engine, so the aircraft ran off the runway after rolling 1000 feet.

The swing developed because the port engine wound up faster than the starboard engine. It is not clear whether the difference in power was caused by the pilot or a temporary malfunction of the engine. It is clear that the swing would not have occurred if the pilot had opened the throttles against the brakes as outlined in AOIs.

The pilot stated later that he normally follows the proper procedures, but in this case he was in a hurry. A professional pilot, and this one should certainly be in this category, does not normally follow the proper procedure; the professional pilot always follows the proper procedure.

It seems strange that this pilot could not afford a few seconds to line up properly and safely. And because he did not take a few seconds, another one of our first line aircraft is out of service for untold weeks.

There is no excuse for this accident. The pilot got himself in a box because he disregarded laid down procedures, and in so doing he allowed a situation to develop that he could not handle.

Haste still makes waste.

SOME SAY GOOD OL' OXYGEN

While taxiing out, the pilot noticed an abnormal restriction in the oxygen system when it was on 100%. The pilot took off and continued with the exercise. He did not experience difficulty while airborne, but on landing and while taxiing back to the ramp the restriction was again apparent.

The aircraft oxygen regulator was removed from the aircraft and bench tested as per EO 55-65D-2A. The regulator was unserviceable on the suction flow test which explains the restricted breathing on 100% oxygen.

In this case the oxygen system was suspected before takeoff and yet the pilot elected to take off and climb to altitude. From the contents of the D14 it would seem that the pilot was not even censured.

This oxygen business is a problem, a deadly serious problem and if supervisors allow the aircrew to leap into the blue with an unserviceable oxygen system, it becomes more than deadly serious, it becomes just plain deadly. Let's not assume that oxygen equipment defects are all trivial and that good ol' oxygen will always be there in spite of them.

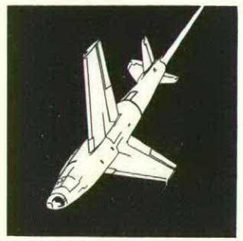
SCRAMBLED AIRCRAFT

Here is another CF100 taxiing accident which occurred when the pilot was attempting to turn his aircraft between a fuel tender and another aircraft. (A similar case was reported in the July-August issue.)

In this case equipment was grouped to facilitate guarding during an infiltration exercise. Five aircraft were scrambled and the five groundcrew men who were acting as guards also had to start the five aircraft. One aircraft was started and a corporal acted as marshaller as it taxied out. When the pilot commenced a right turn between the fuel tender and another aircraft the corporal left him and returned to start another aircraft. At this time an airman, thinking the taxiing aircraft would strike the tender, ran in front of the aircraft to signal the pilot to stop. The pilot could not continue the turn to the right because the airman was in the way and before the pilot could stop the aircraft its port rocket pod struck the tender.

The D14 states that there was "ample room" which, according to the diagram, turned out to be 72 feet. A CF100, MK V, with rocket pods has a span of 60 feet 10 inches. The distance between the edge of the tarmac and the other aircraft was 50 feet. The tender was parked ten feet off the tarmac just beyond the last aircraft in the line. Under normal conditions this may constitute "ample room", but when there is an infiltration exercise on, a scramble is called, the groundcrew has several functions—guard, starter, marshaller—the pressure on all concerned is terrific.

An exercise must be realistic. With this there is no argument. But how realistic should we get? It is quite possible that an ADC station might be short handed after an emergency and then short crews will be necessary. This raises the question of how much risk we should incur just to practice. Should we break aircraft on the ground for the sake of practice, or should we cross the "short crew" bridge when we come to it? Whatever the answer, however, groundcrew should receive detailed briefings and be assigned specific duties for every exercise. Having our pilots trained and ready to go is of little use if our groundcrew training is not kept up to the same standard. Like aircrew, groundcrew must know exactly what will be expected of them whenever an exercise is called.



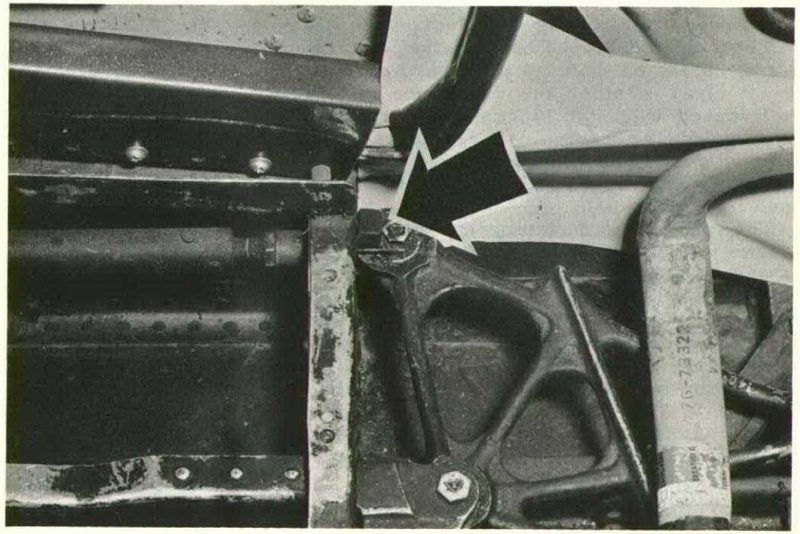
UNDER THE RUG

What would you think if you went home and found your wife "vacuuming" the broadloom, but holding the nozzle about a foot above the floor? Well, that is what we thought when we read about this accident.

During an air fighting manoeuvre, the pilot of a Sabre used "cross controls" and about -0.5 G. A short time later he discovered that the control column had only one quarter of its full movement to the right. He immediately returned to base and carried out a successful precautionary landing.

A thorough investigation failed to reveal any defects in the control system. However, when the cockpit floor was removed, a foreign object (block control throttle lever friction, part number 140-43052) was discovered directly beneath the bell-crank. The friction block appeared to be new and it is assumed that it was lost under the cockpit floors while the aircraft was at the CAIR contractors. The primary cause was assessed "Materiel".

The aircraft, however, had undergone two inspections in which the cockpit floor should have been removed since it was returned from CAIR. Maintenance had two chances to prevent this accident. So let's bend the backs and make with the vacuum cleaners, get down real close.



This foreign object was missed on two inspections.

INADEQUATE SUPERVISION

A Sabre was being turned on the parking button. The tow bar shear bolt failed and the aircraft rolled backwards into the soft ground at the edge of the tarmac. Damage to the "D" doors and drop tanks was estimated at $368.00 and ten man-hours.

The investigation produced two facts that pointed straight at supervision. One, the tow bar shear bolt that failed was a 3/16" bolt, not a 1/4" bolt as prescribed by EO 05-5E-2. It was not possible to discover when the incorrect bolt was installed or who installed it. And two, there was no one in the cockpit of the aircraft as specified in EO 00-50-19. If there had been this incident still could have been avoided.

UTILITY RESERVOIR CAP

I was detailed to fly a Sabre to test a modified PFCU. When the undercarriage was selected up the cockpit immediately filled with haze and fumes. The cockpit was cleared by selecting ram air, and a cockpit check carried out. Climb was continued to 43,000 feet. The utility hydraulic pressure was 2000 psi. When the speed brakes were selected they did not extend, and the hydraulic pressure dropped to zero.

On the return glide the speed brake selector was left in the "out" position. At 18,000 feet the hydraulic pressure surged to 3000 psi and the speed brakes extended. When a normal gear-down selection was made the gear did not extend and the pressure dropped to zero again. The undercarriage was then lowered using the emergency system and a safe landing made.

Cause of the trouble? The airman who serviced the utility hydraulic system had not replaced the cap on the hydraulic reservoir.

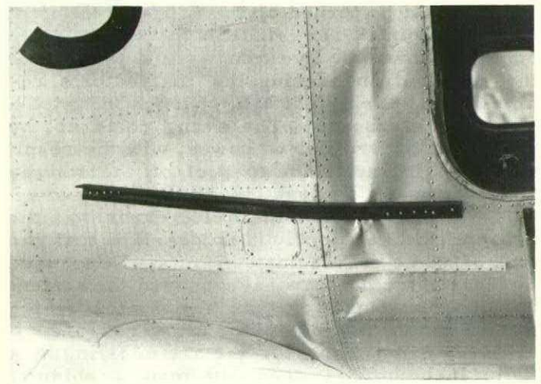
SOMETHING OLD, SOMETHING NEW

This D14 caught our eye because it includes something as old as "walking in" to make a temporary repair on a damaged aircraft and something as new as the Argus.

A float equipped Otter was being used for practice beaching exercises. After one beaching the crewman noticed severe buckling of the fuselage aft of the jump door. (A mod is now in the field to strengthen this area of the fuselage.) An Argus and an unidentified jet were contacted on VHF and asked to request 103 Rescue Unit to send an aircraft over to receive a detailed damage report.

When the damage had been assessed, a ground party was dispatched to effect a temporary repair. Because the ground party had to walk in, the aircraft could not be flown out the same day, so supplies for setting up camp were para-dropped. The next day the aircraft was patched up and flown out.

The D14 treated this accident as just one more Otter that failed due to a known weakness —all very routine. The routine, however, masks one aspect of the RCAF that is often overlooked, the ability of its personnel to utilize whatever is at hand. In this age of astronauts and ICBMs it is easy to forget that "routine operations" demand a high degree of ingenuity and knowledge. It is also easy to forget that the bush-pilot technique of patch them up and fly them out is still very much a part of salvaging aircraft.



The Otter was patched up and flown out.

THE TRUTH WILL OUT

The pilot of a Chipmunk reported: Twenty minutes after takeoff a pre-aerobatic check was carried out and a couple of rolls executed. The engine cut out and a successful forced landing was completed.

The Repair Squadron test pilot reported: While attempting to start the engine (at the scene of the forced landing) it backfired and blew a piece of paper towel out of the carburettor intake. On the next attempt the engine started.

The truth came out with the discovery that the pilot had thrown a piece of paper towel out of the aircraft with the intention of doing aerobatics around it.

This accident happened when a lot of our pilots were still in high school, but the lesson is still valid: Stick to prescribed procedures and manoeuvres, leave the fancy stuff for the Golden Hawks.

FLYING INSTRUCTION

An instructor and a student pilot were flying a training exercise in a Chipmunk aircraft. The student was at the controls and had carried out a normal circuit and touchdown. After the aircraft had slowed down to a safe taxi speed, the student set the brake lever for taxiing and proceeded down the runway. Just before the aircraft reached the first turn-off, the instructor remarked that normally the aircraft should be turned off the active at the first turn-off point. The student had intended to continue down the live runway and turn off at the end, but on hearing the instructor's remarks he applied right rudder which initiated a swing to starboard. The swing could not be corrected with rudder or power, with the result that the aircraft came to rest off the runway up on its nose.

There is no doubt that pilot error was the cause of the accident. It is possible that the tone of voice or the manner of speaking used by the instructor may have caused the student to react more quickly than anticipated, which in turn caught the instructor unawares.

In teaching neophytes the art of flying, the flying instructor is faced with many problems. One of the major problems is how far can the instructor let the student go before a situation gets out of hand. The instructor must be able to assess how much of the demonstration and instruction has been grasped by the student. The instructor has to know just how far he can safely let the student go before assuming control. A slight misjudgement on the instructor's part can result in an accident. At the same time, he can't take over too soon or the value of the lesson will be lost.

It is during the initial stages that the instructor must be very alert. In this vein, one instructor was heard to have boasted, if that is the proper word, that the first time any of his students had control was on their first solo. I hasten to add that this was some time ago.

The problem of when to take over will be with us as long as we have training schools.

It's a hard one to answer, and deserves a lot of thought.

PACKAGE DEAL

The pilot had over 4700 hours total, and 147 on type, and this was a "pilot error" accident. Why? The answer is a short course in safety all wrapped up in one accident, a package deal.

Here is the pilot's statement: "...I had been employed in a primary duty ground position for the previous year and although I had maintained a general flying status, I was out of touch.... In particular, I had not flown the Argus for four months. At the time of the incident I was feeling rather tired and flushed, but attributed this to severe sunburn as a result of skiing all weekend.

"The flight was normal, and following asymmetric checks to ascertain the power settings required for simulated engine failure, the aircraft was brought in for the first landing at an AUW of approximately 119,000 lbs. This was about 9000 lbs heavier than any previous landing I had carried out, and I intended to make the final approach at approximately 110 knots to allow for this factor and for the slight cross-wind from starboard.

"In order to derive as much benefit as possible from the training, I decided to simulate failure of No.4 engine by throttling back to a condition consistent with a feathered engine.

"During the downwind brake checks, the aircraft captain explained the new method of carrying out the pilot's emergency brake check. I remembered a slight distraction when trying to understand the technical reasons for this change, and I remember making an exaggerated brake pedal movement as if to emphasize the check. At that time I was aware of some awkwardness in rudder position, but I did not realize that it was because I had let the pedals out slightly for ease of previous asymmetric flying with two engines on one side. Normally, I do not adjust the rudders after they are set prior to takeoff, but in this case I had adjusted them and did not reset them before landing.

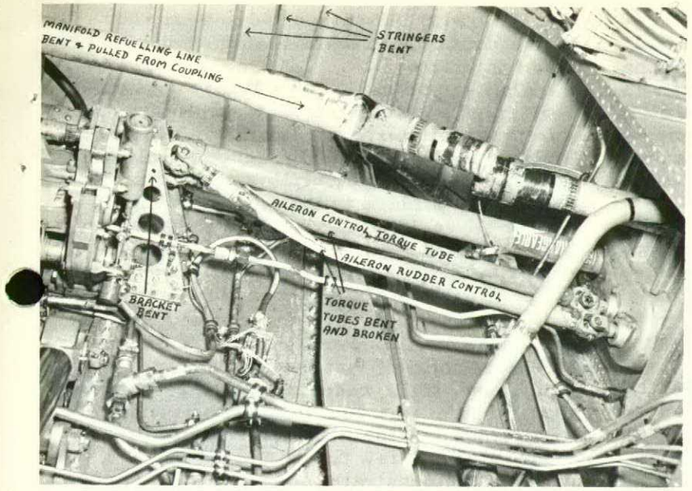
"I remember countering the drift on the approach and then crossing the threshold at approximately 110 knots. I believe that I found it necessary to apply port rudder to straighten the aircraft just before touchdown.

"The aircraft was flown onto the runway although the throttles were fully closed at the time of the flare out. I was not aware of any trouble until after the inboard engines were reversed. About that time there was a swing to port and slight abnormal deceleration. I used nosewheel steering and some right rudder to keep straight and brought the aircraft to a stop with the minimum of brake. I was informed that a tire had blown on the port side and remember reaching forward to check again that the parking brakes were fully off.

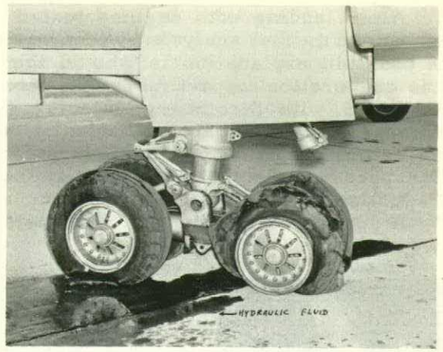
"The following day my "flushed" feeling proved to be temperature in addition to sunburn, and I was confined to bed for three days with influenza."

When the dust had settled, three tires on the port gear had blown and the fourth was ruined. Considerable damage (see photo) was caused in the wheel well by flying debris—manifold refuelling line bent and pulled from coupling, aileron control torque tube damaged, aileron rudder control tube broken, brake line severed, bracket and stringers bent, micro switch wire broken. All this because the pilot did not realize that very little pedal movement, if sustained, will cause power assisted brakes to lock.

It is easy to pick out the flight safety errors in this report; pilot was not well, pilot who was out of practice making the landing unnecessarily difficult, rudder pedals not set up in customary manner, just to name a few. Obviously this is a case of a pilot trying to do too much in too short a time. His spirit is admirable; but the results do not justify "getting current" in one or two trips rather than taking one or two weeks. After all, who won the race, the hare or the tortoise?



Side view of port undercarriage of Argus.



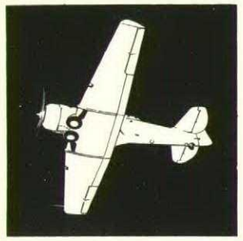
View of damage in port inboard nacelle of Argus.

ERRATIC FUEL PRESSURE

The Dakota was signed out to fly on an experimental project. After takeoff, it was set up to climb to 10,000 feet using 35 inches at 2350 rpm and rich mixture. At 7000 feet the engines alternately faltered. The manifold pressure did not drop but the fuel pressure fluctuated between 17 lbs and 6 lbs on each engine. Because the manifold pressure did not drop carburettor icing was not suspected and carburettor heat was not used. All combinations of booster pumps and mixture control were tried without success.

After landing both engines tested serviceable, and the fuel analysis by NRC was normal. A possible explanation is: should ice form on the carburettor impact tubes (the aircraft was equipped with Stromberg Injector (PD12H4) Carburettors) a rapid oscillation of the poppet valve might be set up which in turn could cause fuel pressure fluctuation without any noticeable reduction in manifold pressure.

A possible solution: try carburettor heat.



AIR DISCIPLINE

When two instructors disobey flying orders, change lead in formation without adequate briefing, then top this all off by unauthorized manoeuvres, what can be said? Here are the facts, a wealth of inexpensive experience for impulsive tigers.

Two Harvards took off for a formation training flight. They climbed to about 5000 feet and were on an airway when No.2 assumed the lead and immediately initiated a tail chase. He broke left and dived for speed to carry out a barrel roll. When the roll was completed he reduced power. The other aircraft, which was right on his tail, went into another barrel roll in an attempt to pass. When it was inverted its port elevator and tailplane were torn off as they struck the lead's port wing. The roll was completed, but the pilot could not raise the nose, so he lowered the undercarriage and flaps to reduce speed and forced landed at about 140 knots. The lead, after seeing that the pilot of the crashed aircraft was safe returned to base.

One aircraft suffered "D" category damage and the other "A" category damage. The pilot of the crashed aircraft sustained only superficial injuries.

What can be said? The ability to wring the last rivet out of an aircraft is of little or no use to the air force unless that ability is disciplined. With air discipline that ability is an asset; without air discipline it is an accident looking for a place to happen.

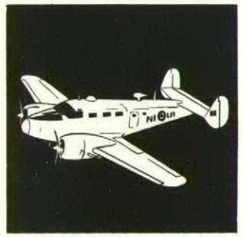
GOOD WORK

A student, with his instructor, was doing power-off and power-on stalls when the instructor noticed that the engine was running rough on stall recoveries. The instructor thought this was due to the student's lack of experience. After the student had practised these stalls a few times the instructor took over to demonstrate a landing stall. When the throttle was opened the engine cut out.

At this time the aircraft was at 8000 feet and about 15 miles from a relief field. The aircraft was cleaned up, throttle retarded, mixture adjusted, and carb ice check carried out; but the engine would not operate above 10 inches MP. The relief field tower was notified and a successful, wheels-down forced landing was made at the field.

On inspection, the exhaust valve rocker arm on #8 cylinder was found broken. The cause was assessed as "Materiel Failure".

All students practise emergency procedures; but this particular student was witness to a real emergency handled in a very professional manner. He should profit by his instructor's example.



BAD SHOW ALL AROUND

The pilot reported that he had experienced "sticky braking" while taxiing an Expeditor approximately 150 feet. Looking down he noticed the parking brake handle was not fully retracted so he reached down to push it in. At this point the co-pilot shouted that the aircraft was swinging to starboard. As the swing was checked there was a loud bang. The aircraft was shut down immediately.

On the swing to starboard the starboard propeller picked up a taxi light standard and threw it against the fuselage. It pierced the skin, damaged a stringer, and punctured the nose fuel-tank. One propeller blade was also damaged.

This pilot had flown from this station a number of times and must have known that, although the lights were non-standard, a pilot had to chase them a little to pick one up with an Expeditor's propeller. He should also have known that sticky brakes should be checked before taxiing away from the tarmac. He should also have had a co-pilot who would keep watch on the co-pilot's side of the aircraft. In short, neither the pilot nor the co-pilot were up to flying that day.

UP-LOCK SHEAR BOLTS

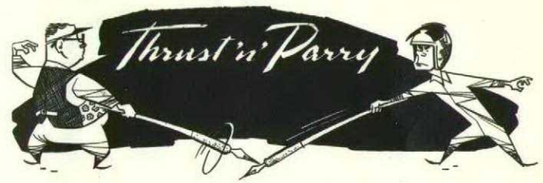
During a primary inspection on a North Star the shear bolts in both main undercarriage up-locks were found sheared. The up-locks were operated manually from the wheel wells and a brief inspection carried out. Then, because the aircrew had not reported a malfunction, the groundcrew assumed that the bolts had sheared due to turbulent flight conditions. They installed steel bolts, informed the pilot of this temporary measure, and said the aircraft was ready to go.

When the North Star was brought in for the next landing both port and starboard undercarriage lights showed unsafe. A visual check by the F/E verified the unsafe condition. Several selections were made without result, and the F/E checked the hydraulic compartment and the cables through the dump valve hatches but could not discover the cause of the trouble. Finally he removed a panel from the pedestal and discovered that the up-lock release actuating rod was broken at the lower end. The F/E could just reach the end of the rod with pliers and was able to release the up-lock. A normal landing was carried out.

The selector lever has two bell-crank take-offs inside the pedestal, one to operate the up-lock release mechanism, and the other to operate the hydraulic selector valve. The shear bolts in the up-lock are designed to shear under normal hydraulic pressure so the undercarriage can be lowered even though the up-lock release mechanism should fail. Therefore it must be assumed that the up-lock release actuating rod must have failed on the flight that preceded the primary inspection.

Why this rod failed is obscure, as is the reason for maintenance not checking the mechanism right through from the sheared bolt to the selector lever. AOIs contain a paragraph on the possibility of the up-lock shear bolts shearing in flight due to turbulence but this is not sufficient reason for maintenance to assume this was the cause in this case. The -2 EO does not contain specific instructions on what to look for if the bolts shear. And again this is not sufficient reason for the groundcrew not searching until they have eliminated every possible cause. Two errors were here; the inspection was not thorough, and steel bolts were substituted for the prescribed shear bolts.

In this case, if the F/E had not known his aircraft thoroughly or if the failure had been in an inaccessible part of the sytem, the aircraft would have been committed to a wheels-up landing. This situation arose because maintenance chose to act on an assumption when the fact was available. Perhaps this is the first time the up-lock release actuating rod has broken, we didn't check; but we do know that maintenance constitutes the first and last chapter of any flying safety story.



LETTERS TO THE EDITOR

It Wasn't My Day

I am a very lazy man indeed and only a charge of the highest potency at close range is sufficient to make me move—and then, to an extremely limited extent. But here before me in your May-June issue of Flight Comment under the heading of Near Miss is a right stirring article. It has everything! Action, comedy, pathos, danger, imminent tragedy.

Unfortunately the article is non-fiction and the ingredient of imminent tragedy was not dispelled by the denouement. Neither the pilot's "self-criticism", wherein he flays himself with a silk tassel, nor the constructive comment of "—ED", removes that little black cloud of imminent tragedy that Joe Bfszk-like is still following that particular pilot and his passengers.

I believe you will agree that any reasonably competent pilot of an Expeditor should be able to cope quite nicely with his grandmother in the right hand seat. There just isn't that much aeroplane, though I will grant that having a qualified chum alongside makes for a more pleasant trip, especially if he smokes Buckinghams. Unpleasant things can, of course,

happen and then it is downright more comfortable to have two heads working on the problem.

The picture of a captain, with a load of passengers, belting down the runway while he flails away at the mist on his windshield terrifies me. Do you know anything against taxiing and running up with the windows open? I don't. As for pre-tuning the beacon one would expect to use in just such circumstances and the correct use of carb heat—well! This is an aircraft captain yet, with green ticket and authorized to carry passengers? Not in my book, and I point a finger, trembling with outrage, at the various bodies responsible for permitting him to initial the F17 as "CAPTAIN".

And now the trembling finger swivels around to Flight Comment. The editor hopes that this pilot's experience "will prevent others from making the same mistakes". What mistakes? The REAL mistakes, the mistakes hidden between the lines of this sad little tale? These should be sorted out, otherwise the reason for publishing a Near Miss is lost.

H. Campbell, S/L
ADCHQ

(A pilot is asking for trouble when he flys IFR with an unqualified co-pilot. Agreed. However, in all this the responsibility of the co-pilot has been overlooked. While flaying the pilot, we should be aware of the co-pilot's duty. He is there to assist the pilot, not to keep the pilot company. He must also be a competent pilot, able to take over if necessary. He should be current and he should be practised, or he should not sign on as a co-pilot for a transport flight.—ED)

REDUCING THE PILOT CAUSED POTENTIAL

...Most pilot caused accidents represent a culmination of bad habits, repeated infraction of rules, and nonrecognition of physiological and psychological factors based on ability to perform.

Most "aircrew error" accidents are the result of two mistakes, the first is the mistake made that gets him into trouble and the second is the mistake made when he attempts to get out of trouble. The potential for accidents is many times greater than realized. By reducing the potential we reduce the number of accidents. We do this by training, education and supervision. Education must be thorough in the areas of pilot responsibility, aerodynamic limitations, and behaviour influences. Training needs more individual attention. Supervision needs more follow through. This is the most glaring deficiency at present.

Fleet Air Alameda Safety Council

FLIGHT COMMENT

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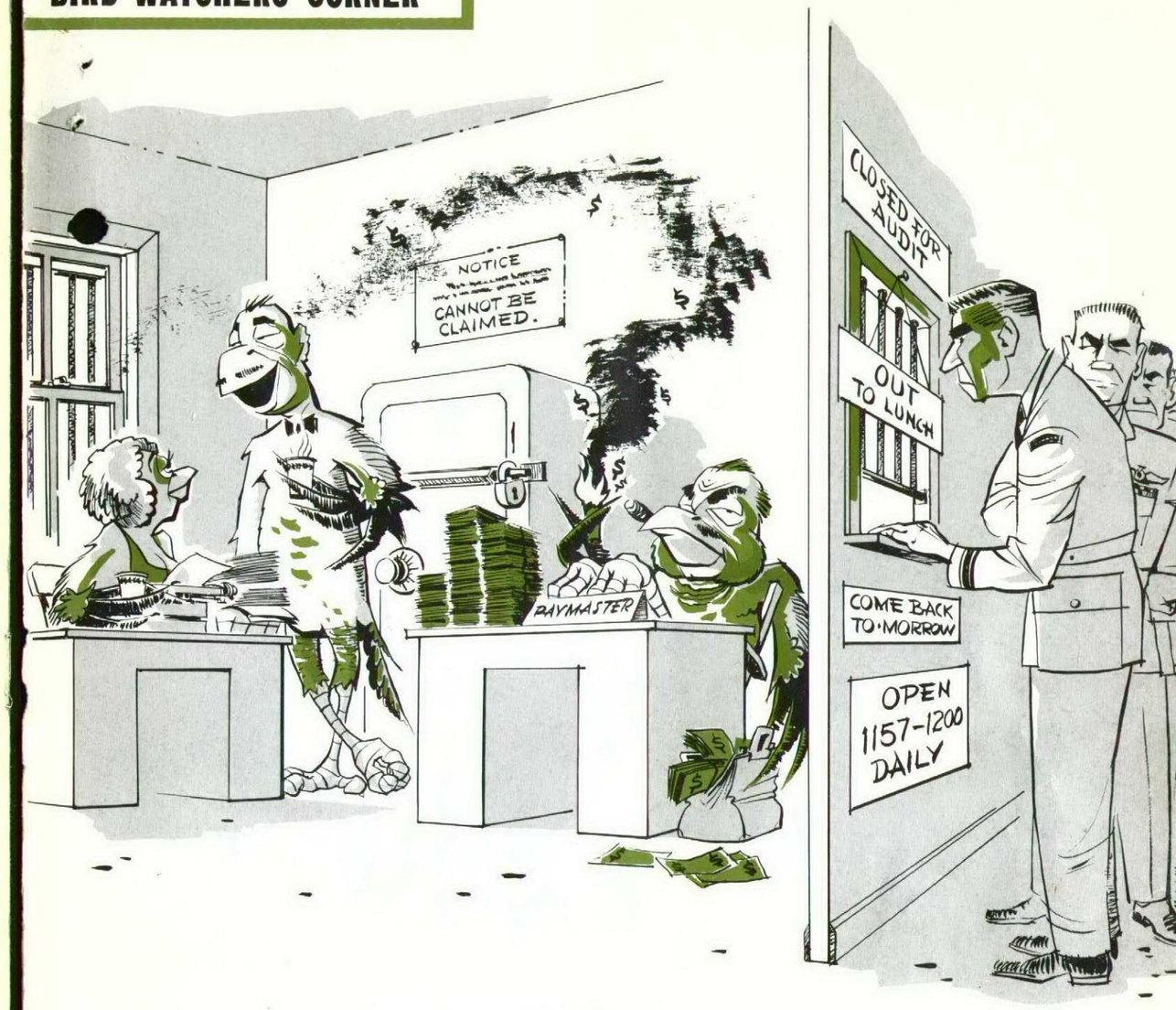
BIRD WATCHERS' CORNER



THE IMPERVIOUS FREGATA

This is a rare bird of a species that is better known as The Tight-Fisted Pay-master. They are distant cousins to the Supply Bashers. They maintain a closed shop type of roosting grounds and get most perturbed when disturbed. They are nest lovers at heart, and have a phobia towards others in the flock that have to travel. This is particularly true when the bird seed and nesting account is presented for payment. This causes annoyance, consternation, preoccupation and distractions to others in the flock. Their call is muffled behind locked doors

GONETOTHEBANKCLOSEDFORAUDITCOMEBACK TOMORROWYOUCAN'TCLAIMTHAT

Safety

THROUGH KNOWLEDGE