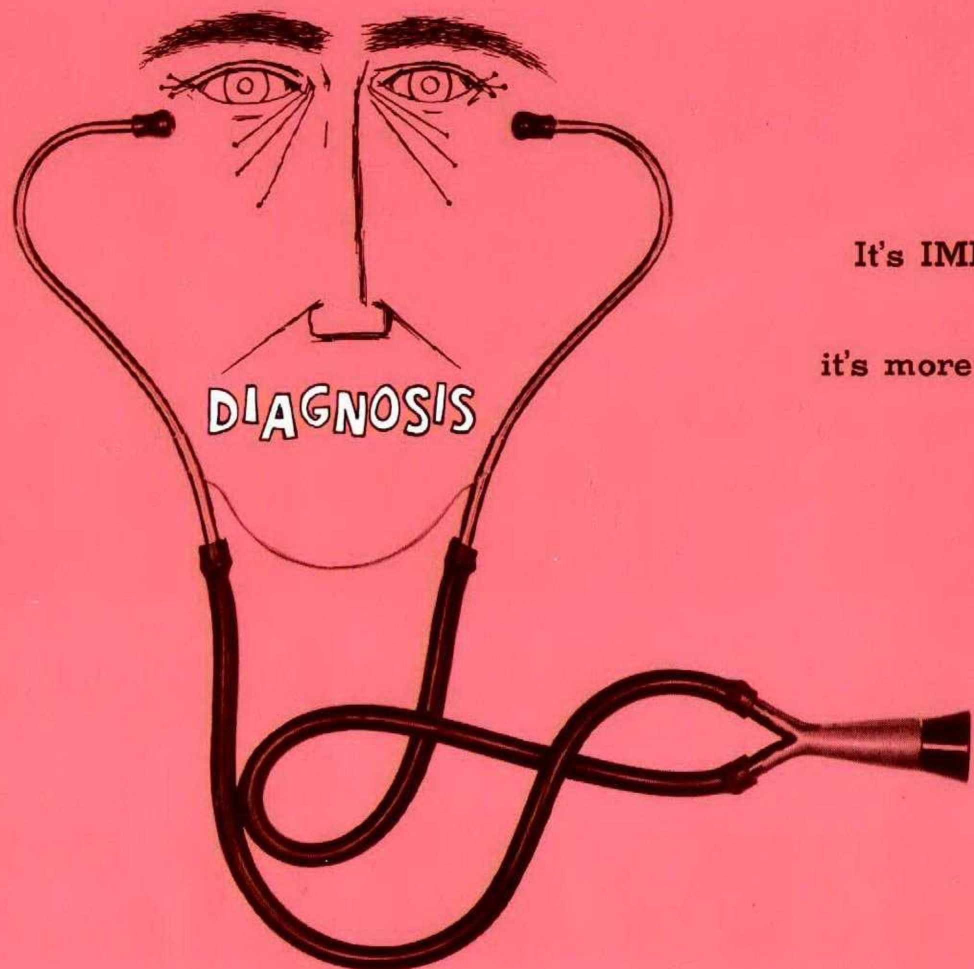
RCAF

FLIGHT COMMENT

AIRCREW
MAINTENANCE
GROUND

JANUARY • FEBRUARY • 1962



It's IMPORTANT to get home

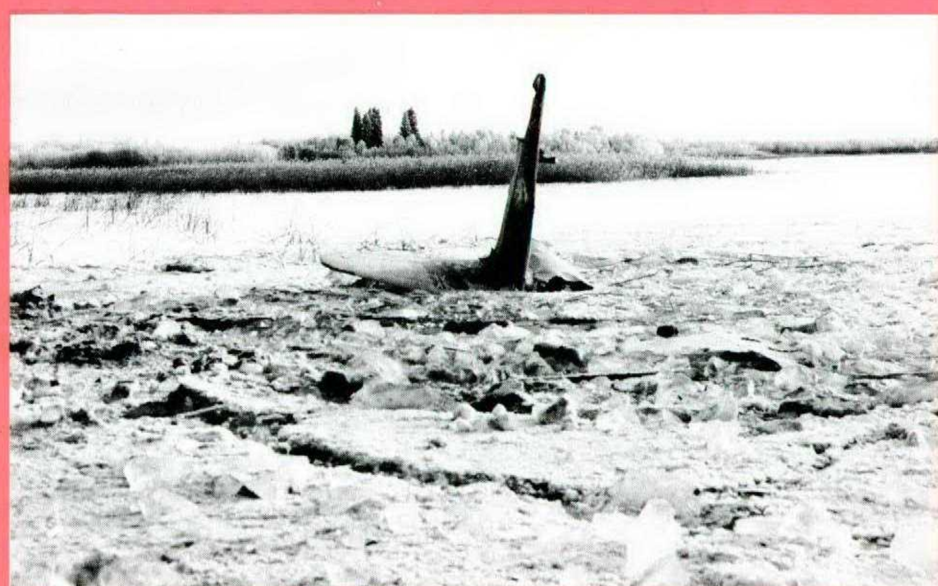
but

it's more important to GET home!

dont be a victim

of

GET-HOME-ITIS



Although the final statistics for our accident rate in 1961 are not yet available, there is good evidence to show that the trend is once more downward, as it has been over the past few years. Our vigorous flight safety program is paying dividends. But the ugly fact remains that we are still having accidents—and accidents are expensive in terms of casualties and precious equipment.

Accidents reduce our operational capability and lower the effectiveness of our response to any given situation. We simply cannot afford to have them. It may be impossible to eliminate them entirely, for the human factor is so strong in flying and in maintenance that errors are bound to occur. It is possible, however, to keep them to the minimum consistent with human frailty.

To this end, therefore, we must continue to direct every effort toward improving flight discipline and supervision. I am convinced that more detailed briefings and better flight planning will go a long way toward helping to eradicate accidents. There can be no excuse for the shameful waste that arises from unauthorized air tactics, from disregard for weather limits or flight rules, and from a number of other undisciplined actions, such as failing to switch tanks or neglecting to keep a careful lookout.

Another fruitful area for improvement is maintenance. I am not satisfied that the decline in the number of accidents traceable to faulty maintenance has kept pace with the general lowering of our accident rate. There is good reason to believe that carelessness, hurried work, and, in some cases, lack of technical knowledge give rise to some of our accidents. Our technical personnel can contribute measurably to the improvement of our flight safety program by exercising greater care and closer supervision.

The trend toward a lower accident rate in 1961 is gratifying, but we can do much in 1962 to push the rate still lower.

(Hugh Campbell)
AIR MARSHAL
CHIEF OF THE AIR STAFF

FLIGHT COMMENT

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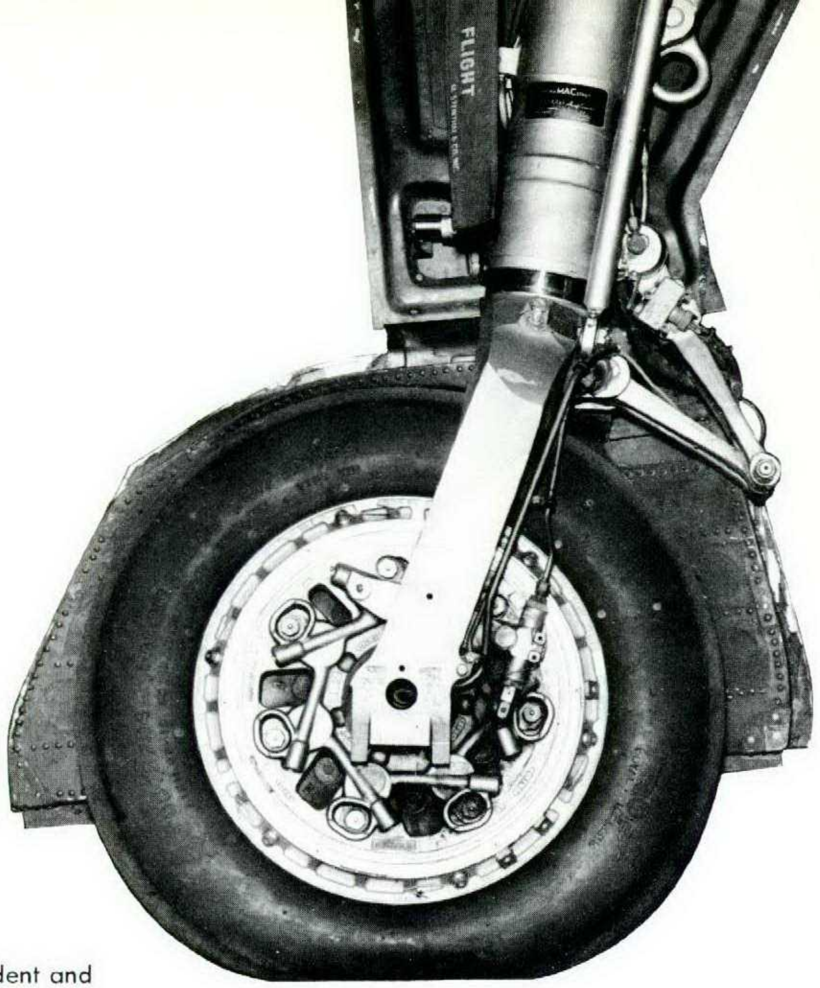
ROYAL CANADIAN AIR FORCE

DIRECTORATE OF FLIGHT SAFETY

The TRUTH About TIRES



Adapted from an article in Aerospace Accident and Maintenance Review by C. F. Bush, Manager, Aircraft Tire Development, Goodyear Tire & Rubber Co.

"Aircraft tires are round and black and no improvements have been made in 20 years."

That statement is as often made and as widely believed as it is erroneous. To dispel that false notion, and to tell the truth, aircraft tire development has kept pace with airframe requirements despite all the uncommon barriers and obstacles with which the tire industry has been confronted.

The effect, it is hoped, will be promotion of a deeper understanding of the nature of aircraft tires and the maintenance problems connected therewith. This subject should be of particular interest to the RCAF with the introduction of the CF104 and CF101 into service.

Aircraft tires have had to keep pace with the tremendous strides in aircraft performance. With the advent of higher and higher performance aircraft come increased tire problems.

A comparison of an aircraft tire and a ground-vehicle tire will give a better understanding of the degree to which aircraft tires are utilized. The 25 x 6.75 aircraft tire used on a modern military jet and the 6.50-13 passenger tire have the same approximate diameter, 25 inches, and the same section width, approximately 6.50 inches. From there on, all similarity ceases. The aircraft tire has an 18 ply rating compared with only 4 for the passenger tire, and a load rating of 13,000 pounds compared with only 835 pounds, or a ratio of more than 15 to 1.

Deflection is one of the greatest handicaps; it is necessary to deflect aircraft tires nearly twice as much as passenger tires, or 32% as against 17%. Contrast, too, the speed relationship of 275 mph versus 100 mph. Of course it should be considered that aircraft tires are used in intermittent service, while passenger tires must run continuously. The comparison of tire load-capacity per pound of tire weight is a good index of the relative tire efficiency. In this example the aircraft tire carries 400 to 40, or ten times the load per pound of tire weight as the passenger tire.

We frequently neglect to consider those factors which, at times, are the most obvious. While you are doubtlessly familiar with the increase in the severity of tire requirements over the years since the advent of jet aircraft, a quick review may be worthwhile. Figure 1 shows the increase in ground speeds of popular Air Force aircraft from 1945 to the present. The early jets at the end of World War II had maximum ground speeds of 120 mph. By 1950 these speeds had increased to 160 mph, by 1955 to 200 mph, and today there are requirements of 300 mph.

FIG. 1

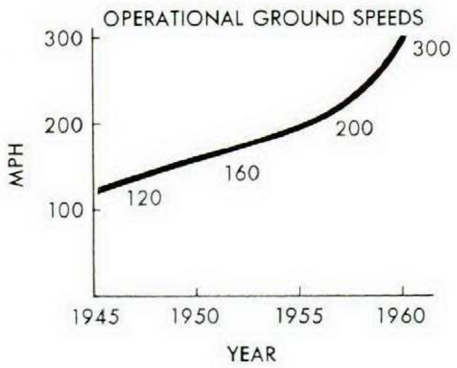


FIG. 2

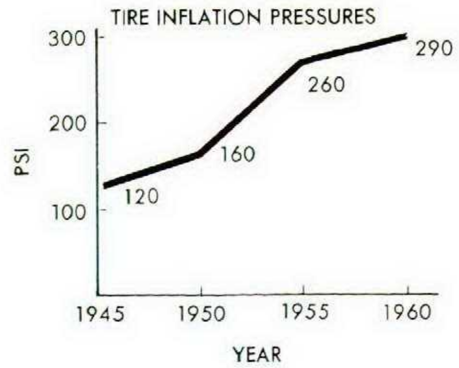


Figure 3 shows the centrifugal forces on one ounce of tread (which is a very small area) at various speeds, from 100 to 400 mph on a tire 30 inches in diameter. The forces increase as the square of the speed, from 500 Gs, or 33 lbs per ounce at 100 mph, and 8000 Gs, or 528 lbs at 400 mph. Knowing these forces act on perhaps a square inch of an elastic material, you may appreciate the adhesion problems with which the tire industry is confronted.

Pieces of treads coming off the tires during development tests have had sufficient inertia to pass through concrete-blockwalls and metal roofs. These centrifugal forces must also be transmitted through the carcass, requiring stronger beads and tie-ins to withstand the higher stresses.

Note too the amount of energy stored up in an inflated tire. The 56 x 16 tires used on a modern bomber have 603,000 foot-pounds of potential energy stored in each tire. This is sufficient, if properly channeled, to put a piece of tread the size of a golf ball into orbit.

The crushing, or deformation, of elastic treads at high unit ground pressures is extremely detrimental. The scuffing and working of the tread rubber during each revolution is another source of heat generation. The severity of the deformation is directly affected by the unit ground pressure, which in turn is a function of the tire load.

During a typical takeoff run, tire loads on the older-model aircraft decreased with increased speeds because of wing lift. Tire loads on the newer aircraft are more constant throughout all ground operation and can even increase with speed because of negative lift.

In addition, the roll distances during taxi before takeoff, during takeoff and landing, and during taxi after landing, are now considerably longer, and at higher speeds, with shorter time intervals between taxi and takeoff. Camber and yaw conditions provide further aggravation.

Design problems during the past few years have also been increased by the requirement for ice-grip tires for high-performance military aircraft. The shredded metallic wire used as the ice-grip feature adds to the tread weight, thereby increasing the centrifugal forces even more.

The factors cited here, in addition to many others not mentioned, are all additive and accumulative. As a package, they create the problems with which the tire industry is confronted.

There are four basic ways in which the tire industry is contributing to improve the situation.

(1) It is carrying out research to improve aircraft tire efficiency in every possible way.

(2) It is working on the development of new designs, utilizing available materials in the most advantageous manner.

(3) It is testing under realistic conditions, and simulating operational requirements.

(4) It is maintaining in production a product of the highest possible quality.

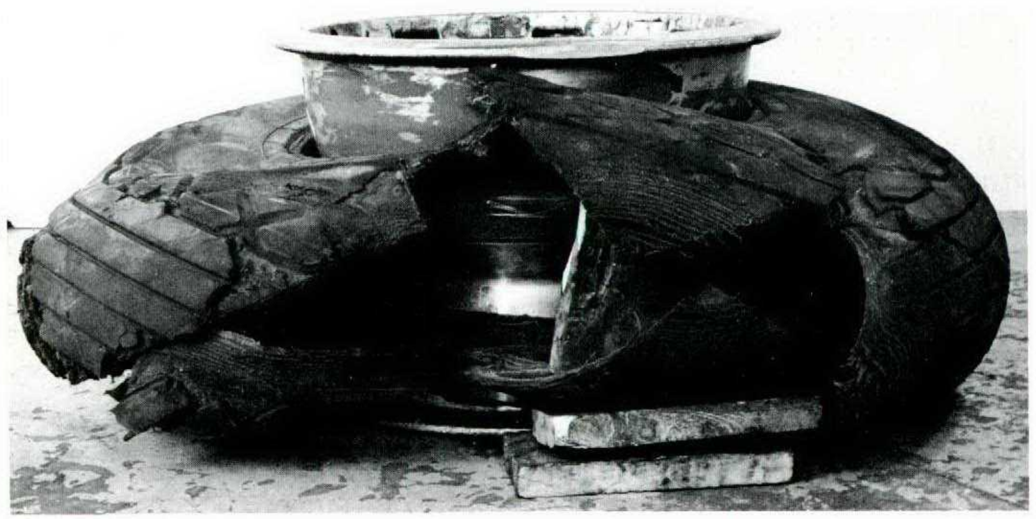


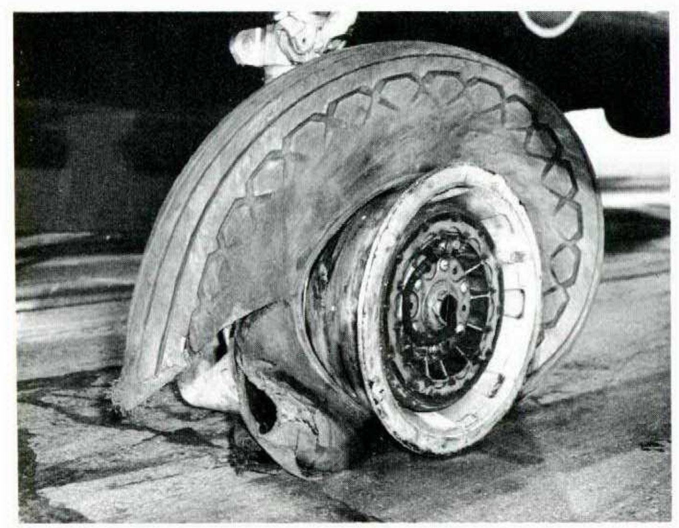
FIG. 3

CENTRIFUGAL FORCES		
MPH	G's	1 OZ.
100	500	33 LBS.
200	2000	130 LBS.
300	4500	300 LBS.
400	8000	528 LBS.

In conclusion, as an experienced pilot is well aware, until industry can produce a blowout-proof aircraft tire—tires will be inadvertently blown by runway conditions, brake-system malfunctions, and pilot errors.

Good pilot technique can contribute greatly to the prevention of unnecessary tire wear and wastage. An article by Mr. Roy E. Pryor in the Sep - Oct 61 issue of Flight Comment said that "during accelerated tests on an F-86H our pilots flew one aircraft...over 500 hours in 16 weeks. During that time we attained an average of 62 landings on a set of tires." This record is far above the average life of a set of tires for such an aircraft.

Proper technique can contribute considerably to increasing tire life, and thus, decreasing the cost of additional new equipment and maintenance time. With the introduction of supersonic aircraft into the RCAF, the problem of tire life is more acute; the need for good pilot technique is, therefore, that much more necessary.



Winter Flying Checklist

- Are you adequately clothed and equipped for the area you are flying in, or to?
- Is the aircraft free of frost or snow?
- Are the flight instruments thoroughly warmed up before takeoff into subzero temperatures?
- Do you know the complete anti-icing and de-icing system on the aircraft?
- Do you know how to detect and combat carburettor icing and jet engine icing?
- Do you know what to do when encountering severe icing, freezing rain, and extreme turbulence?
- Do you know the value of inflight reports of unusual and unfavourable weather conditions, particularly heavy icing turbulence?
- Do you know how to use your radio compass in conditions of heavy static?
- What is the correct technique for landing, or after landing, on snow or ice? With crosswind components?
- Are you familiar with oil dilution systems, and do you co-operate with maintenance personnel in using them?
- Are you physically fit?
- Do you understand cold weather survival technique?

Approach

LAC J. R. SMITH

LAC Smith, whose superiors have found him to show "exceptional interest and capability as a technician", with "a truly professional approach to his duties", recently detected a minute crack in a critical area of an elevator torque tube fitting on a North Star. If the crack had not been detected, it could very well have led to serious consequences. Its discovery was attributed to LAC Smith's conscientious attitude, and merits a Good Show from Flight Comment.

F/C G. R. SELBY

F/C Selby was on a solo navigation exercise in a Harvard from Penhold to Namao and return. When letting down to circuit altitude at Namao, with power setting at 1750 RPM, 15" MP, and mixture full rich, he heard a loud bang, and the engine began running very roughly. MP had fallen to 10"; F/C Selby put pitch to full fine, opened the throttle fully, and achieved about 15" MP.

The tower, informed of his difficulty, cleared him for a straight-in approach and landing; when over the runway he closed the throttle and landed the aircraft safely. The engine was dead at the completion of the landing roll.

F/C Selby had been requested to clear the runway after landing so he deliberately allowed the aircraft to roll off onto the grass, then shut down and requested a tow.

Investigation revealed that the #8 cylinder connecting rod was broken and the cylinder head split open from front to rear spark plug holes. The engine and lubrication system were heavily damaged by metal.

In view of F/C Selby's relatively limited flying experience, he displayed commendable coolness and good airmanship in landing his aircraft without further damage; this is the kind of proficiency which rates a Good Show from Flight Comment.

F/O T. G. SMITH

F/O Smith, duty controller at Marville, recovered a foreign object that had been reported on the runway, and identified it as a gun plug belonging to one of four Norwegian F86Ks that were deployed to that base. When returning to the tower he found a four-inch piece of jagged metal on the bottom of runway 12. Resisting the natural assumption that it had dropped from a truck, he solicited the assistance of the technical staff and eventually identified the piece of metal as part of the tire bead retaining rim from a Sabre main wheel.

The WFSO, F/O Grasswick, was informed and a check of all Sabres on the ground was made without tracing a defective wheel. The location of six "away" Sabres was determined and attempts were made to contact section leads. Four of the six were already airborne on their way back to Marville, but contact was eventually made with the section lead of the two remaining Sabres at Langar, and instructions were passed to examine all wheels prior to returning to base.

One hour later the section lead phoned the WFSO and informed him that the offending piece of metal was from his wingman's aircraft. Up to this point the tire had not failed, but technical opinion is that there would have been a considerable risk of failure during the next takeoff or landing.

F/O Smith's conscientious and professional approach to his job avoided what could have been a serious accident. His meticulous and thorough approach merits a Good Show from Flight Comment.

PITOT HEAD DRAIN HOLES

Pitot heads, although making up only a small part of the complex pitot/static instrument systems, can determine the accuracy of the whole system. The pitot pressure-operated instruments indicate only with the accuracy with which the pitot pressure is sensed by the pitot heads.

Erratic indications can result from various sources, such as moisture in the lines, foreign objects or obstructions in the lines or the pitot heads, or by partially or completely obstructed drain holes in the pitot heads.

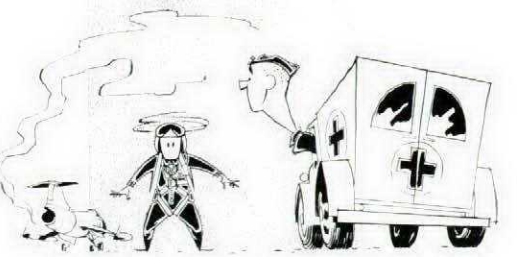
The drain holes located in the pitot heads are calibrated to allow the elimination of moisture without causing differences in instrument indication. If these holes become clogged, either partially or completely, trouble develops. First, all of the moisture may not be drained off; and second, the calibrated amount of pitot air normally drained off by these built-in leaks is changed, resulting in erratic or erroneous indications on the pitot-operated instruments.

Generally, any time inaccuracies are reported, make it a point to check and clean these drain holes specifically, and purge the system.

FSF

IT TAKES

a minute to write a safety rule
an hour to hold a safety meeting
a week to plan a safety program
a month to put it into operation
a year to win a safety award
one second to destroy it all with one accident



NEAR MISS

THE HOT SEAT

I was on an IFR trip to Winnipeg by T-33 departing St Hubert. While awaiting refuelling, my parachute and Mae West were placed on the starboard wing of the aircraft, against the fuselage, just opposite the rear cockpit.

The aircraft crew noted, during the external inspection, that a large quantity of fuel had been spilled around the aircraft during refuelling, but the parachute, etc., were believed serviceable.

The aircraft was started and taxied to the end of runway 24 with me in the rear cockpit. Just prior to departure, I noted the seat was slightly warmer than normal; this was attributed to the high OAT, and the fact that the sun had been shining directly on the seat pack.

For a period of time after takeoff, the seat was not hot enough to cause worry, but after approximately ten minutes of flight, and as altitude was increased, the seat began to burn more. On reaching Ottawa at 35,000 feet, after approximately 20 minutes, the burn was turning to pain. The flight plan was then altered to Ottawa as destination and a descent initiated. During the descent the pain was becoming severe and an emergency was declared. Ottawa approach then directed the aircraft straight in, and the aircraft was landed.

During the descent, I was unable to remain properly seated in the aircraft and would have had some difficulty in flying the aircraft myself.

The Uplands SMO met the aircraft and took me to the hospital and cleaned and dressed the burned area. After approximately two hours I was allowed to continue the trip in a much bandaged state.

The fuel had come from my parachute, which, upon opening, was found to be saturated. It was believed that the fuel had been splashed on the parachute during refuelling and had gone unnoticed by myself.

Climbing to altitude, with the fuel draining down the parachute as my body pressure was applied to it, gave me first and second degree burns.

I believe that this experience, if brought to the attention of air and ground crew, could prevent similar incidents from occuring and possible personal or aircraft damage.

(See Operational Hazard report on page 11 of Flight Comment for Nov - Dec 61—Ed.)

LUCKY

I was authorized for a local VFR trip solo in a T-33. I am fairly experienced and obviously a bit overconfident.

During my external check of the aircraft a groundcrewman secured the harness in the rear cockpit. Before entering the aircraft I checked the rear cockpit and ejection seat.

After a period of aerobatics, I returned to the circuit for a practice forced landing. On roundout before touchdown the control column jammed and the aircraft struck nosewheel first.

I overshot and checked the controls. The aircraft was controllable except that the column would only come back to a certain point. I made a fairly flat approach, and landed.

As many of you have probably guessed, I found the rear seat pack out of the seat and jamming the rear control column. The groundcrewman had forgotten to attach the restraining strap for the seat pack to the harness when he secured the seat. Needless to say, it was my responsibility, and I missed it on my check.

This has happened all too often before, and sometimes with sadder results. I hope this Near Miss will forewarn someone else.

(Check that rear cockpit—death may be riding there!—Ed.)

A LETTER TO OUR READERS . . .

FROM THE NEW EDITOR-IN-CHIEF

Dear Reader:

New to my task as I am, and flinging ink and copy in all directions, I feel that it would be appropriate to write a letter to you about material for your magazine, Flight Comment.

When I was in the field, I heard many good ideas expressed about flight safety. In addition, some really worthwhile flight-room criticism was tendered, which would have been beneficial to the editor had it been put on paper and forwarded, so that he could have had the advantage of a fresh viewpoint.

My plea, therefore, is for more "Letters to the Editor". Give us your ideas, suggestions, and criticisms. If you write an interesting safety article we'll do our best to publish it. Don't worry about the mechanics of the writing: we have a professional ghost-writer—our civilian editor—who can produce a polished end-product.

But we do need your ideas! Everyone who reads your magazine is invited to contribute with hints, constructive criticism, suggestions for an article, or the complete article itself. When fitting, acknowledgement will always be given to the field contributor.

D. Warren
Squadron Leader
Editor-in-Chief

Readers will note that re-styled maple leaf on our new cover. This depiction of our national emblem, supersonic style, is fitting, because in 1962 the full-scale introduction of the CF104 and CF101 into the RCAF will take place.

FAMOUS AIRCREW OFFICER RECRUITED TO FLIGHT SAFETY BRANCH

Those of us who are old enough will remember the wartime adventures of P/O Prune, an RAF aircrew officer with an extraordinary outlook on life and a complete disregard for his personal safety. One of his cousins is the noted USAF character C.Z. Chumley. On the Canadian side of the Prune family we have the Phingerins. One of these illustrious types has recently joined the RCAF. His name is F/O Flip Phingerin, and you will be hearing a lot from him. As a matter of fact, we have put one of his latest expressions of opinion in our Famous Last Words column on page 24 of this issue.

The equipment described in this article is in use, but we feel that all personnel will want to know the problems faced in the design and development of new equipment—the main reason why changes can't be made "over-night".—Ed.

DESIGN OF SABRE AND T-BIRD

EJECTION SYSTEMS

by S/L A. J. Campbell
OC, Airworthiness Section
CEPE Uplands

The history of ejection equipment in RCAF aircraft has been one of Martin-Baker seats in the CF100 and adaptations of USAF equipment in the T33 and Sabre. Although most RCAF pilots have flown the Sabre or T33, the ejection equipment is not as well known as the Martin-Baker. This article will present a brief history of T33 and Sabre ejection equipment, up to and including the system presently in use, the half and three simultaneous.

As originally received, both the T33 and Sabre had manual systems. The ejection gun was simply a method of driving the pilot and seat out of the airframe. Lap-belt opening to separate the man from the seat, and rip-cord pulling to open the parachute, were both manual operations.

In devising any automatic system it is obvious that these two functions should be automatic. It is also evident that some provision should be made to prevent the parachute from opening at high altitudes. For high altitude escape, there are the dangers of anoxia and exposure to extremes of temperature, and high parachute-opening loads which will occur at high speed at high altitude.

The T33 and Sabre escape system first gained automatic features when GQ openers were added to the lap-belt and to the parachute. These openers are identical except that the parachute opener contains a barometric capsule. Considerable testing was carried out at CEPE to determine the reliability and to recommend time settings for these devices. The tests show that best separation between the seat and the dummy occurred with a lap-belt opening time of one-half to one second after ejection.

To determine parachute device timing, two factors had to be considered. First was the obvious one, that to cater to high speed ejections, enough time had to elapse from ejection to parachute deployment to allow the dummy to slow down. The maximum allowable speed for deployment of our present parachute is approximately 270 knots. Above this speed the loads imposed on the man would be excessive and there is a danger of the parachute disintegrating.

The second factor (and the one that determined the time settings) was the danger of entanglement between the seat and the dummy's parachute. It was found that if the parachute was deployed at less than two seconds after separation from the seat that a danger of entanglement, although very slight, did exist. The final recommendation which was adopted was a half second for the lap-belt opening and three seconds from seat separation to parachute deployment. This system could be used safely over the complete flight envelope of the T33 and Sabre except for very low altitudes. In straight-and-level flight a safe ejection could be expected down to 300 ft.

Analysis of RCAF and USAF data showed that most ejections take place at low speed, and, further, that many of these are at very low altitudes, i.e., on takeoff or landing. The USAF had adopted the zero lanyard to help to meet the situation. After trials at CEPE it was also put into RCAF use. As you are well aware, this was a manual system which, if connected, bypassed the automatic parachute opener. Under ideal conditions it was found to provide safe escape down to 60 ft. straight-and-level flight up to a maximum of 400 knots.

It had two major disadvantages; first, it was a manual system requiring pilot attention during flight with a possibility of disastrous consequences if misused; and second, because it provided a tie between the seat and the man there was a tendency for the time to separation, and thus the time to deployment of the parachute, to be erratic. Because of a slight chance of seat parachute entanglement it was considered that aircrew had an 85% chance of safe escape at a minimum altitude of 100 ft.

In an attempt to circumvent the difficulties with the half and zero lanyard, several units suggested gadgets to simplify the connecting and disconnecting of the lanyard. Six such gadgets were evaluated at CEPE and two were test-flown. Both of these were considered superior to the normal lanyard system. At the same time, however, the USN concept of a zero lanyard was examined. Because of the restricted speed range of the T-bird and Sabre, it was possible to simplify the USN system by eliminating the need for pilot attention while in flight.

The system, as tested, retained the one-half second lap-belt opening and the three second parachute timing. It transferred, however, the actuation of the parachute timer from seat separation to seat ejection from the aircraft. In other words, the parachute arming cable was connected to the aircraft console rather than the seat lap-belt.

With this fully automatic system, escape from the Sabre or T33 is possible over the entire speed and altitude envelope down to 150 ft. in level flight—(150 ft. is dependent primarily on accurate timing of the parachute opener). The system deletes two major connections between the man and the seat (when compared with the zero lanyard) and thus results in a more consistent operation.

SYSTEM		MINIMUM ALTITUDE	MAXIMUM SPEED
Time Lap Belt Opens From Seat Firing	Time Parachute Opens From Seat Separation	Feet	Knots
½	4	400	500+
½	3	300	500+
½	0	100	400
½ AND 3 SIMULTANEOUS		150	500+
Both Timed From Seat Firing		350	OFF THE BREAK
		200	GCA APPROACH

Shortly after the adoption of this system, Training Command raised a query about "through the canopy ejection" between 15,000 and 25,000 ft. In this altitude range the T33 cabin pressure would be normally below 15,000, and thus at the initiation of "through the canopy" (if the canopy seal did not deflate) the parachute opener barostat would respond to cabin altitude. It would appear, then, that the parachute would open three seconds after ejection, rather than after descending to 15,000. This possibility was examined in detail and it was found that on a Sabre a problem does not exist and that on the T33 a problem may exist.

To go into details, as the seat moves up the rails, the canopy breaker will break through the canopy and allow cockpit pressure to equalize with ambient pressure before the arming wire is pulled. For the system to be safe, the time for the barostat to respond to the sudden change in pressure must be less than the time for the seat to go from just-through the canopy to the position where the arming wire will be pulled.

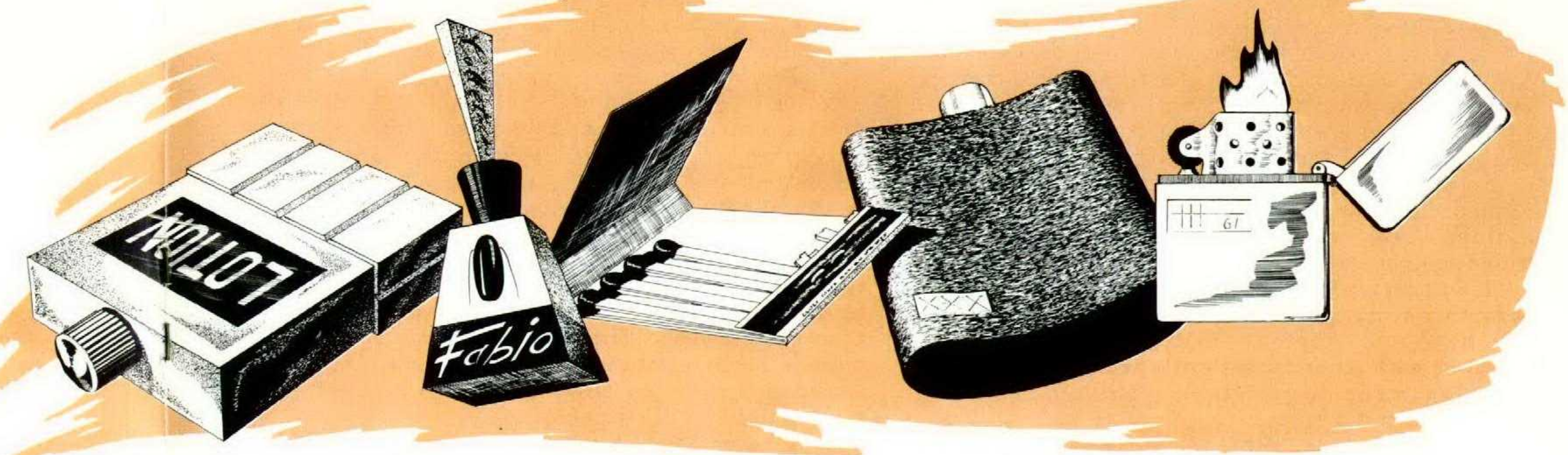
On the T33, these times are almost identical. On the Sabre, because the arming wire catch is higher up in the cockpit, the seat travel time is considerably longer prior to the arming wire being pulled, and thus the system is completely safe.

Perhaps the most important factor which should be noted is that there must have been at least three failures for ejection through the canopy with cockpit pressurized: first, an aircraft emergency requiring ejection; second, the canopy seal failing to deflate; and third, the canopy not ejecting. Further, if the parachute did open within three seconds (and this can only occur on the T33) the loads on the pilot would be no higher than those normally experienced in a high speed bailout.

Coloured films which were used to help assess the revised system have been spliced into one film. This demonstrates the capabilities of the one-half and three, the zero lanyard, and the one-half and three simultaneous systems, and also points out some other situations. Copies of this film have been provided to ADCHQ, TCHQ, and Air Division.

It is hoped that this brief resume of the T33 and Sabre ejection system changes will help the reader know that any system must be a compromise—once the important factors are known, a system can be designed around many or few gadgets, depending upon reliability and cost criteria. For the T33 and Sabre, reliability and no pilot attention in flight were selected as the main design points. The one-half and three simultaneous system provides a fully automatic system with excellent chances of escape over the flight envelope of the T33 and Sabre, with the exception of very low altitudes.

BOOBY TRAP



A duffle bag belonging to a MATS passenger who had been removed from a flight for a higher priority passenger was transferred from the outbound baggage dolly to the checked baggage bin. During the course of transfer, a foreign-made cigarette lighter in the duffle bag was activated, setting fire to the clothing contents.

Other passengers manifested for the same flight, witnessing the incident, voluntarily informed the passenger service representatives that their baggage also contained similar lighters as well as cans of lighter fluid. These inflammable items were immediately removed from the checked baggage.

This incident, which most fortunately occurred before flight, is a forceful reminder of the absolute necessity for passenger service representatives to brief all passengers at the time of baggage check-in to insure that inflammable or explosive materials are not included in their stowed or cabin baggage.

Furthermore, it points out the need for everyone to realize the folly of including anything inflammable or explosive in their baggage. If it can't be carried safely in the hand or on the person, DON'T put it in the baggage—get rid of it!

There are a few cases on record wherein aircraft have disappeared with little or no trace. Each time this happens the possibility of an inflight explosion is considered. We know it is possible but it is hard to prove. Consider the following case.

Bound for an island air base, a USAF aircraft failed to arrive on schedule although a position report was received from it one hour out. An extensive air and sea search was launched immediately but several days elapsed before any wreckage was found. Then the nosewheel from the missing plane was recovered. The tire was burned and partially melted, indicating that severe heat had been present in the area of the wheel well.

Because no emergency transmission had been received, investigators assumed that an explosion or fire of extreme intensity had developed. Further, they reasoned that the catastrophe must have occurred with such suddenness as to render the crew incapable of sending a distress message.

Admittedly this was conjecture. However, it can be considered very logical. No other wreckage was found. The mute testimony of the burned tire was, in reality, almost a complete story.

How can such an accident happen? There are several possibilities.

Having flown for several hours it is quite improbable that leaking fuel cells caused an explosion. Certainly it must be assumed that the crew or passengers would have detected fumes.

Another factor that would tend to eliminate the possibility of a fuel fire centers around the burned nosewheel tire. Fuel tanks were considerably aft of that area. And, carrying the thought further, the aircraft wouldn't have burned following a ditching, at least, not for long.

This then leaves the possibility of an explosive or flammable agent being present in one of the lower cargo compartments or topside. The former location is much more logical and this brings us to one point of this article.

It is possible for a flammable liquid, freed from its container, to saturate a compartment with a concentration of combustible fumes.

Okay, so you say that even such a concentration of fumes shouldn't cause an explosion unless a spark or flame were present. Well, we can't argue that point. But, how many times have you encountered chafed wiring on an airplane? Several, we'll venture. Junction boxes, switches, relays, or radios can and do cause sparks under certain conditions. Begin to get the picture?

Again we state that the analysis of this particular accident was of a speculative nature but it was speculation based on sound principles. A ruptured can of lighter fluid or a broken bottle of after-shave lotion could have been the responsible agent. The cause factor in this particular accident couldn't be proved conclusively for obvious reasons, so let's examine one that we can pin down.

A few months ago, while loading baggage in a C-54, the flight attendant placed several paper-wrapped parcels and some B-4 bags in the forward compartment. More bags were placed aft and finally a small surplus went topside. Passengers were loaded and the aircraft commander ordered the engines started.

During the taxiing, the plane encountered several ridges of snow and ice and did considerable bucking and bouncing. It took approximately five minutes to reach a satisfactory runup area and while the engines were being checked, the flight crew detected an odor not unlike burning rubber.

Immediately an assistant flight engineer jumped back a couple of paces and opened the internal hatch cover leading to the lower baggage compartment. The reflection of flames could be seen and some smoke was visible.

The airman grabbed a portable CO_2 extinguisher and discharged it into the hold. Almost at the same time, the aircraft commander actuated the internal extinguishing system but most of the effectiveness was lost as much of the agent was forced upward through the open hatch, momentarily blinding the airman.

When it was apparent that the fire could not be controlled, the engines were shut down and crew and passengers evacuated the aircraft without incident. In due time the blaze was extinguished but not before the fuselage was thoroughly gutted.

It was no problem for the accident investigators to determine where the fire started, but the how was another matter. Fire damage coupled with a near total collapse of everything topside, made it extremely difficult to get at the suspected area.

One point that puzzled the experts was a patch of external skin, just to the right of the APU, that showed signs of extreme heat. This spot, about two feet in length and breadth, looked as though it had been cooked with a blow torch from within.

It was finally determined that an oxygen line had burned through and as the system was charged with about 250 pounds, the jet of flame from the rupture really did act much like a blow torch.

It took a lot of digging to find out how the fire had started initially. But, by piecing the puzzle together the investigators found that in the process of taxiing, the rough terrain had caused several paper-wrapped boxes to shift forward, followed by a couple of B-4 bags and the whole mess had landed on the APU exhaust shroud. The putt-putt was running.

Now as most of you know, normally the exhaust pipes of APUs are insulated with a metal shroud. Usually there is ample air space between the pipe and this outer cover to insure proper dissipation of the heat. However, in areas where a shroud cannot be routed, the pipe is then covered with strips of asbestos.

In this case, wrapping paper coming in contact with the asbestos-covered pipe, soon burst into flame. Later experiments proved this to be possible in as little as two minutes. Now the fire was started.

In all probability, had the original fire been confined to burning paper, it would have been extinguished quickly. But, this wasn't the case.

Evidently a flammable material was in one of the B-4 bags. The bag itself started to char as a result of resting on the hot exhaust. When the paper flamed up, the bag followed suit quickly and then the contents of the bag got into the act. In a matter of moments, flames caused the oxygen line to rupture.

We hope that the reason for this article is clear. Whether you're a pilot or mechanic, desk jockey or truck driver, as long as you're in this Air Force, you'll be riding in aircraft as a passenger from time to time. We're sure you don't care particularly to hasten your ultimate end and by the same token we take a rather dim view of anyone else expediting our demise. So, let's see what not to carry in an airplane and where to carry certain items.

First off the most expensive and deadliest item is lighter fluid. Fill your lighter before you leap off on a trip and leave the can at home. If you're on a transfer, give the stuff to a buddy but don't carry it anywhere.

Another word of caution on lighter fluid. Certain lighters now on the market are manufactured of clear plastic and contain an actual fluid well. This arrangement allows the wick to be suspended in fluid rather than in a saturated cotton bed. The danger in this little gem comes from altitude. As you go up, the fluid expands and in no time at all the lighter will squirt fluid in all directions.

Most women carry nail polish and liquid remover. The polish has an acetate base. It evaporates rapidly when exposed to the air, has highly explosive properties, and the only wonder is that more women haven't been burned while lighting a cigarette with partially dry polish on their nails. The remover is an equally deadly mixture. Never stow it away in the old B-4 or a suitcase. Glass can get broken, you know.

After-shave lotion is another offender in this category. It has been our experience that the stuff is most elusive with altitude. Though not containing the explosive properties of the aforementioned items it will, nevertheless, vaporize rapidly under some conditions, burn beautifully when exposed to flame-and as a rule, comes in glass bottles.

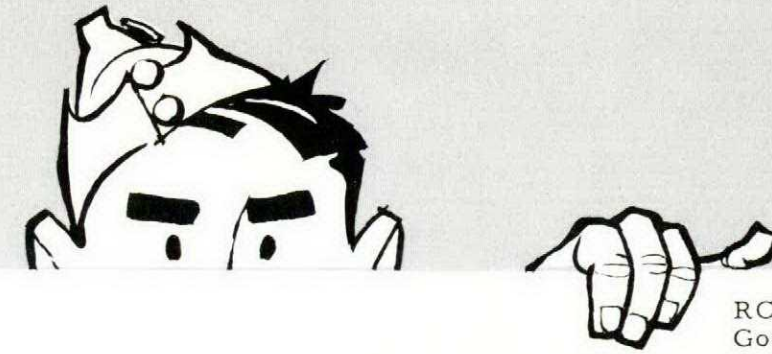
One potential offender that does not have explosive properties, but will really burn, is the common paper match. To be sure, it takes a fire to get matches going, but after that—look out. Fortunately few people carry the wooden "scratch-anywhere" matches today. Never carry those aboard a plane!

Now for the last item. If you want to carry liquor on an aircraft remember that (a) you should ascertain if it is authorized by the command concerned, (b) pack and wrap carefully, (c) be sure that such actions meets with the approval of the pilot, (d) take only bottles with unbroken seals, and (e) personally carry it aboard and place it where turbulence will not bounce the package unduly. We mean topside! An even better idea is not to carry the stuff at all!

Although you may not think it possible, it has been established that photo flash bulbs can be induced to fire when the airborne search radar is turned on. It can happen. Obviously then bulbs should not be carried in your luggage.

The list of seemingly insignificant items that could bring an airplane to an untimely end is almost without end. But, in general, a good rule to follow is: If it will explode, burn, sizzle or even smolder, get rid of it before boarding the plane.

MATS Flyer



RCAF Stn Wester
Goose Jaw N.B.

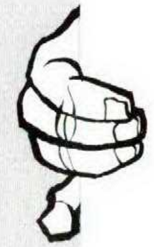
Dear Pilot:

It may be presumptuous of me to write this letter, but I know of an easy way for you to help me to help you, and I can't keep quiet any longer. When I start to fix an aircraft I'm like Jack Webb: "I need the facts." More often than not, you don't give 'em to me—in writing, that is. The proper reporting of your inflight troubles will not only cut down my work, it'll give you a safe aircraft the next time you fly.

Some pilots think that mechanics spend their time drinking coffee, changing spark plugs, and writing "Ground-Checked Okay" on the forms, but this is not always true. Quite often, in fact, your grumbling about your aircraft condition should be aimed at yourself. In some instances brevity is appropriate, but the lack of details in many write-ups is absurd.

Like most mechanics I want to do a good job and maintain a good aircraft, but without a few clues I'm lost, and I'm really frustrated going around in circles trying to figure out where to start.

Perhaps a few simple rules will help to straighten things out.



1 Write it up! Talking about it with the Flight Engineer or the Follow-Me driver is fine, but sometimes they don't tell me about it.

2 Write in all the details. If it's about an engine, tell me the altitude, power settings, instrument readings, temperatures. If it's about a radio, tell me which channel and whether it's the receiver or the transmitter, and what kind of noise it makes. Be specific. Don't be afraid to use more than one block for the report if you need more space. Tell me everything.

3 Tell me what checks you have made and what the results were. You seldom stop using a piece of equipment without some effort to make it work or to find out what's wrong, and I may not be able to duplicate your tests on the ground.

4 The last rule is to write everything down as it happens. You'd be amazed at the items people forget after they are on the ground and in a hurry to get home.

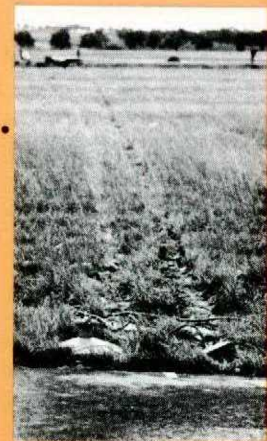
I hope I've made my point, sir. With your help maybe I can get the maintenance officer off my back, give my ulcers a rest, and even quit beating my wife.

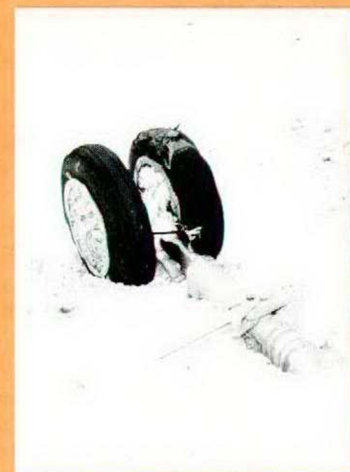
Thanks,

Joe Maintenance.

Adapted from an article
in AEROSPACE SAFETY BULLETIN, Hill AFB

OVER and UNDER........................





The average human being has been conditioned to respect the rights and liberties of his fellowmen. Even so, certain phases and facets of man's life are considered more sacred than others. For instance, the male considers his home and home workshop a holy place, not to be tread upon or in without his express approval. The female, by the same token, demands that all respect the privacy and sanctity of her purse and kitchen, in that order.

The average pilot considers the cockpit his personal and private domain. (So the airspeed is a little high—who's to know? There's lots of runway and I've got brakes, haven't I?) Our pilots know the EO approach speed for the aircraft weight and configuration, and use these speeds to compute their own approach speeds.

If the EO says 120 kts. on final, they add 5 kts. for the wife, 5 kts. for every kid, and 1 kt. each for the mortgage, the new car, and the mother-in-law and wind up with something in excess of the recommended. The results of these calculations usually show up in blown tires, worn-out brakes, busted barriers and littered landscapes.

At the other end of the scale are the pilots who ride the stall all the way down in order to make use of the first inch of runway. The results usually show up as wheel-marks short of the threshold, and some noisy arrivals sans undercarriage.

In efforts to accommodate these two types of pilots, much has been added to the dividends of the stockholders of a couple of cement companies. Our long concrete runways are becoming longer, and 1,000-ft. overruns are also being added in attempts to satisfy the "long-run" artist and the "just-inside-the-fence" merchant. In spite of all this, the careless pilot can defeat the longest runway.

Of course, the big question is which end of the runway do we lengthen? One group of pilots want the far end of the runway lengthened while the other group has equally strong arguments for stretching the approach end.

If this reasoning is followed, it would not be long before one gigantic runway would stretch from Halifax to Vancouver with high speed turn-offs for Toronto and the Banana belt. Everybody would fly VFR, and in encountering IFR weather would be able to land and fast taxi to destination.

Obviously the answer to long and short landings does not lie in continuing to lengthen runways.

Taking off in high-performance aircraft usually requires long runs—and they are generally available—but the landing roll using correct approach speeds, proper braking technique, and reverse pitch and thrust, should normally be much shorter. Pilots, however, still run off the end or hit the barrier for a number of reasons.

Landing too fast, landing too far down the runway, and improper braking technique are the most usual errors. In the RCAF we have not had any landing incidents connected with a drag or brake chute, but with the introduction of the CF104 and 101, we inherit a possible source of trouble unless all concerned are extra-vigilant and alert to the dangers of deploying chutes at airspeeds too high, and subsequently destroying them with the consequent loss of drag.

The short landing is usually easier to explain: the pilots misjudge the approach and land short. A straight case of aircrew error. It is often said that good safe landings are made in the landing pattern and approach, 'way before the actual touchdown. Proper planning and execution of landing patterns and approach (watch that airspeed!) will prevent most of these accidents.

It might be pointed out that while aircraft have changed quite a bit since your training days, they will go round again with a bit of coaxing. Why not try it sometime when that airspeed or approach just doesn't sit right? The rest of the boys couldn't possibly drink all the coffee in the time it takes for another circuit.

Adapted from an article in AEROSPACE SAFETY

MORE ABOUT CHANNELS

by F/L F. Caldwell
DATR-ATR3-2

(Note: The article "More Channels Indeed" in the Sep - Oct issue of Flight Comment has caused some concern in certain AFHQ staffs. It might be interpreted that such recommendations, made through normal channels, are given little attention. The truthfulness and validity of the information given is not questioned, —but only a small portion of a full story is recorded in the article).

It is better perhaps to deal with the Expeditor first. It has long been recognized that as air traffic increases, a greater number of communication channels are required in all aircraft to provide adequate air traffic control. This requirement naturally applies to the Expeditor.

Since A/G/A communications for military purposes had to be moved to the UHF band, it was considered that the installation of a UHF set, which would provide 1750 channels, would solve the channelization problem. Steps were taken to procure UHF equipment and a conversion program which would convert all RCAF aircraft to UHF was started.

During the prototype installation work on an Expeditor aircraft, it was found that the addition of new equipment aggravated the weight and C-of-G factor quite severely. It was at this point that a decision had to be made concerning the electronic configuration for the aircraft. A choice had to be made between installing UHF equipment, by deleting the VHF and HF equipment, or by reducing the fuel load or payload of the aircraft. Operationally, the latter was not acceptable.

The UHF fitment program is underway for Expeditor aircraft but the rate of fitment is dependent upon equipment availability and financial implications. It is expected that approximately 50 aircraft can be fitted this year. Because this program has met with delays, another program has been initiated to fit 24-channel VHF equipment in a limited number of aircraft as an interim measure.

A word about the VHF equipment recommended in the article "More Channels Indeed", will be of interest to all aircrews. This equipment has been purchased by the RCAF and is fitted in all Cosmopolitan, Yukon, Albatross, C5, Comet, and North Star, and nine Dakota, aircraft, and a further procurement program is underway. Unfortunately, this can't be planned for Expeditor aircraft for many reasons, some of which are cited above.

A brief explanation of the general picture will also be of interest to aircrew. As air traffic increased, so did the requirement for more channels. In the 1950s, it was recognized that the VHF band was already overcrowded, so steps had to be taken to increase channelization in some way. The solution that was considered best was to have the military services vacate the VHF band in favour of the UHF band for military operations. For air traffic control purposes, military aircraft would still require VHF equipment. A NATO military agreement was followed in 1952 by a Canadian (military) decision to convert to UHF.

Although this solution helped the civil carriers, it is obvious that the military problem became more complicated. The financial burden placed on the military's "budget" may have helped industry and the general economy, but few military men would say that it simplified the task. It is difficult to convince the taxpayer's representatives, and justifiably so, that it is in the taxpayers' interest to spend twenty million dollars for a new communications system.

The UHF equipment delivery, except for a few early sets, commenced in mid-1960; the fitment program started shortly after. It is expected that the greater part of the RCAF fleet will be completed by the first quarter in 1962. The final VHF/UHF configuration will be as follows: Jet trainers and fighters required to operate in a military environment only will be equipped with the 1750-channel ARC-552 equipment. Transport, recce, and maritime aircraft which are required to operate in a civil/military environment will be equipped with both VHF and UHF.

Finally, all military communication requirements change continually, in phase with assigned roles and technical advances. Modern aircraft demand electronic equipment which is lightweight and small-sized requiring a light power-supply drain. In addition, it must be practically 100% reliable, and as free from maintenance as possible. All these problems can be solved by use of solid-state devices and modern design, which in turn creates the requirement to replace obsolete equipment.

NEW YEAR'S RESOLUTIONS

Here are some resolutions which could improve the Flight Safety picture for 1962. You may have other resolutions equally worthy; if so, add them to the list. If only these had been followed by all pilots in 1961, we would have saved valuable aircraft—and several pilots!

I resolve to

1. **ensure that I'm completely briefed and understand my duties**
2. **take advantage of all the meteorological facilities available**
3. **read all Notams**
4. **ensure that my flight is properly authorized**
5. **check all L14s carefully**
6. **do all preflight, in-flight, and post-flight checks**
7. **stick to my briefed exercise or task unless forced to deviate by an emergency**
8. **enter in the L14 all major and minor unserviceabilities, and to discuss these further with technical personnel**
9. **complete a Near Miss or Operational Hazard report whenever appropriate**
10. **observe the operating limitations of my aircraft**
11.
12.
13.
14.
15.

ARRIVALS and DEPARTURES

DOUBLE TROUBLE

It was a normal AI night mission, climbing to 31,000 feet. At 25,000, the pilot noticed that his pressurization switch was still on emergency, and cabin pressure was approximately the same as altitude. He warned the navigator to watch his ears as the pressurization took effect to reduce cabin pressure to about 20,000.

As the exercise started, the navigator, who had a cold, found it necessary to blow his nose and loosen and remove his pate suspension mask to do so; he then put the mask back on and selected 100% oxygen.

At this point he was "surprised to learn that we were decending through 15,000 feet...." The mask was so loose that the navigator could easily insert his finger behind it. Just prior to landing, he noticed that he had vomited slightly, presumably during the short period of unconsciousness, because at no time did he remember feeling ill.

The navigator did not warn the pilot that he was going to blow his nose. When the nav failed to answer the pilot's repeated enquiries as to whether he was all right, the pilot made a crash descent to 11,000 feet, then aborted the exercise and returned to base.

The incident was triggered by the pilot's failure to select the pressurization switch to normal after takeoff. When the switch was finally selected at 25,000 feet the rapid descent in cabin pressure forced the navigator to blow his nose. The removal of the navigator's pate suspension resulted in anoxia. The navigator shouldn't have been flying with a head cold. Both pilot and nav were wrong—and two wrongs don't make a right, but double trouble.

MURPHY'S LAW

The pilot took off on an Air Defence practice mission in a CF100 with the pressure gauges reading about 1050 psi, with regulators at 100%. About 20 or 30 minutes later the gauge had dropped to 800 psi and the regulators were set to normal. After a similar length of time the gauge registered 600 psi; at this point the pilot returned to base, shutting down with about 375 psi.

Investigation revealed that the high-pressure check valve 6D647 was installed backwards; a new valve was installed.

This malfunction was missed by maintenance personnel during the previous periodic inspection, and by aircrew too—the installation error permitted use of only one-half of the aircraft's normal oxygen supply, and should have been noticed.

This is an example of Murphy's Law: "If the aircraft part can be installed incorrectly, someone will install it that way".

MID-AIR COLLISION

During a practice sequence before an airshow, the pilot in the "box" encountered some turbulence; the propeller of his Harvard struck the tailwheel of the leader's aircraft. The man in the box returned to base immediately, but the leader continued, and performed the show.

On investigation, it was discovered that the pilot behind had not maintained proper separation. He will have to face a formal charge because he was considered competent to fly this type of formation and therefore capable of keeping proper separation—and it was assumed that his deviation was not inadvertent but deliberate.

The lead pilot performed with the airshow after the other members of the formation had made a visual check of the tail section, and had reported that only the tailwheel tire was damaged. His CO was "disposed to criticize his failure to land immediately and have his aircraft checked", but realized that "his decision to remain airborne after a visual inspection...and a check of flying characteristics was influenced by his desire to complete his exercise in the interest of good public relations....

"Nevertheless, it has been impressed upon him that it is better to be safe than sorry and that a potential mishap in front of the public is not good public relations. Further, a decision to carry on any mission with a damaged aircraft is justified only when the circumstances of the mission are of an urgent or emergency nature".

LAST OF THE MITCHELLS?

An oil consumption test was carried out in a B-25. During the flight each engine was feathered and unfeathered. When unfeathering the last engine, the pilot's hand inadvertently hit the primer switch. The starboard engine fuel pressure fell to 10 psi and the engine cut. An attempt was made to center the switch but it was found to be broken, and would not remain in the upright position.

The starboard booster pump was selected high, the engine responded, and the aircraft was flown to Winnipeg in this manner. Owing to low cylinder-head temperature, the engine was shut down in the circuit, and a single landing was carried out. The primer switch was examined and found to be broken internally.

Although this incident was handled in a capable fashion a more thorough knowledge of the Mitchell aircraft would have helped. Pulling the STARTER PRIMER circuit-breaker in the navigator's compartment would have stopped the continuous priming. One member of the crew was an Aero Engine Tech, Group 4A.

Although the B-25 aircraft is being phased out, this incident illustrates again the need to know the details of all aircraft systems. Does your aircraft have a STARTER PRIMER circuit-breaker?

FAILED TO FEATHER

A Dakota on a scheduled night navigation exercise climbed to 6000 ft., while maintaining this altitude, the starboard fuel pressure was observed to be 6 psi. While the crew was "investigating this condition", and climbing to

7500, a check revealed that all other temperatures and pressures were normal.

On throttling back to 600 bhp at 7500, the starboard oil pressure fell, accompanied by fluctuation in the starboard rpm. The starboard engine was shut down and feathered and the aircraft returned on single engine.

According to Dakota operating procedures the pilot should have feathered and returned to base when low fuel pressure was first noticed. The unnecessary delay from 10 to 15 minutes while searching for the cause allowed the oil level to drop; this, in turn, caused the eventual engine damage and seizure.

It is possible that the oil dilution switch failed during flight, and the resulting low fuel pressure was promptly detected. It is more probable, however, that the switch failed during oil dilution prior to flight. If so, there were two times when this failure should have been detected: when the fuel pressure did not return to normal at termination of dilution; and when carrying out pre- and post-takeoff checks.

This, however, does not absolve the pilot, who failed to feather according to SOPs. His C-47 captaincy has been withdrawn.

OVERSHOOTING

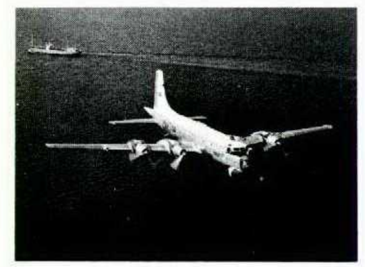
An army pilot on a exercise involving landings on a field strip under construction followed two other aircraft towards the strip. One of the pilots reported that the strip was serviceable, so the third Cessna came in at 80 MPH on the base leg, with 30 degrees flap.

As the pilot approached the runway with the engine at 1500 RPM he began his roundout and cut the power back—but the aircraft began to balloon at the button end of the runway. It touched down about one-third to one-half the way down the strip. The pilot attempted to apply the brake but the tail began to lift, so he released.

With forward speed less than five miles per hour, and the propeller at less than 600 RPM, the wheels dropped into loose sand at the end of the runway; the tail lifted, and the plane came to rest on the propeller.

The accident was caused by overshooting the touchdown point and electing to brake to a full stop with less than half of the usable surface left. The pilot had carried out many landings and takeoffs on identical strips for the three days prior to the accident, but they were smooth and under conditions of virtually no wind. The wind on the afternoon of the accident was 15 to 20 gusting.

In view of the pilot's lack of experience, and his demonstrated capability of carrying out short landings under difficult conditions, he was re-briefed by his CO, and no disciplinary action was taken.



BOLTED

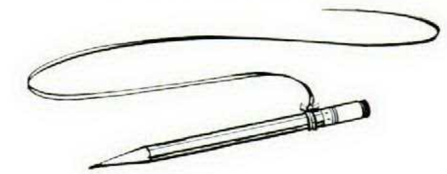
At the end of the landing roll after a pilot training period, the tower operator called to report that the starboard elevator on the Argus seemed to be hanging loosely. When the condition was confirmed, the aircraft was shut down on the spot to prevent further damage. A bolt, suspected to belong to the elevator assembly, was picked up later, 1800 feet from the end of the runway.

Investigation revealed that the inner and outer starboard elevators were distorted; the upper and lower lugs at station 299 elongated and broken; and the stabilizer center hinge support was cracked and distorted. The skin on the lower trailing edge of the starboard horizontal stabilizer was damaged.

The bolt bore no evidence of split pin shearing, and thus it is possible that the pin was omitted at the time of assembly. The only other work carried out in the area was by MRP. As far as can be determined, the upper hinge bolt was not disturbed at that time. Special inspection of all Argus aircraft has not yet revealed any other similar condition.

(It's a good thing this tower operator had sharp eyes—and used them.—Ed.)

"MOTHER, TIE MY MITTENS AROUND MY NECK"



Remember when we were small, with a tendency to lose things, like mittens, toys, caps, and school books? One of the most effective remedies our mothers employed was securing the item to the wearer either by pins or string.

You might ask how these thoughts of childhood apply today—but it has been pointed out to DFS that aircrew members are frequently dropping pencils and pens in difficult-to-get-at places in aircraft.

THESE OBJECTS MUST BE RETRIEVED!

It has been suggested that a string connecting pilot to pencil might be the cheapest and most effective remedy. Talk it over with your groundcrew....

ADF TUNING

This information will be "old hat" to long-time captains but it may be useful information to relatively "new" co-pilots.

Due to the known quadrantal error of aircraft ADF equipment and the method employed to compensate these errors within the ADF, it is unwise for a pilot having dual ADF installations at his command to tune both to the same station at the same time. Because of the perfectly normal electrical reactions between two closely related loop antennas, one of the two will almost certainly reverse its quadrantal error compensation and indicate an error of bearing which could be as much as 20 to 30 degrees.

Before tuning your ADF to a desired facility, look to see what the captain has tuned his to. Don't tune yours to a station being covered by the captain.

Flight Safety Foundation

LETTERS TO THE EDITOR

Dear Sir:

I would like to bring to your attention what would appear to be an error in Sep - Oct 1961 issue of Flight Comment.

Article entitled Hydraulic Lock on page 22 states in para 3 "EO 10A-1-1J states that personnel will ensure that a piston engine is pulled through before starting attempt is made".

Para 7 of referenced EO states (dated 20 Oct 58), "All engines equipped with direct drive electric starters are to be motored by continuous engagement of the starter". Engines with inertia starters are to be turned by hand.

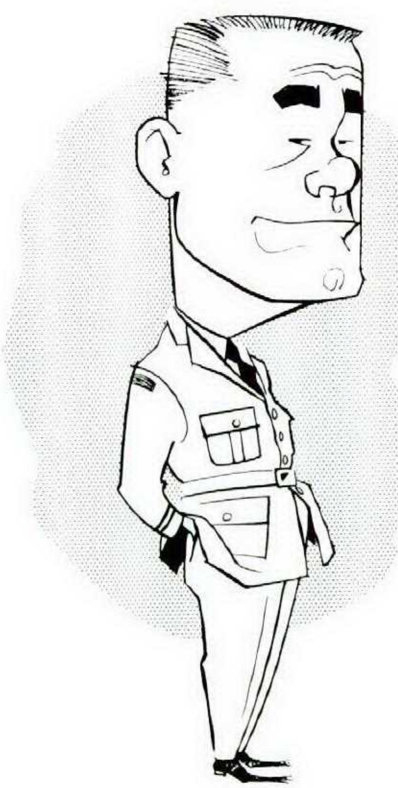
Since Expeditor has a direct drive electric starter, it should be turned over as the pilot in question did.

G. Hunt, Sgt
406 Sqn

Whichever way you look at it the pilot was wrong. In theory, he was wrong because he made the mistake of proceeding with a normal start—i.e., with the ignition switches "on"—before motoring the engine over with the direct-drive electric starter as EO 10A-1-1J states in para 7. In practice, the requirement of turning the engine through at least one complete firing cycle before starting is satisfied by hand-turning the propeller—with ignition "off"—in lieu of motoring the engine with the starter.

Had this engine been turned through by hand or starter prior to "firing-up", the hydraulic lock condition would have been discovered before harm could be done. Because both methods of turning were omitted a damaged engine was avoided only because no power impulse had occurred.

H. E. Bryant F/L
AIBEng2-2



FAMOUS LAST WORDS

The following two sentences are direct quotations from D14s crossing the Editor's desk.

1. "I noticed that the hitch was difficult to operate but did not check for a positive lock when hitching up the energizer."

Result: One T-33 damaged by an energizer.

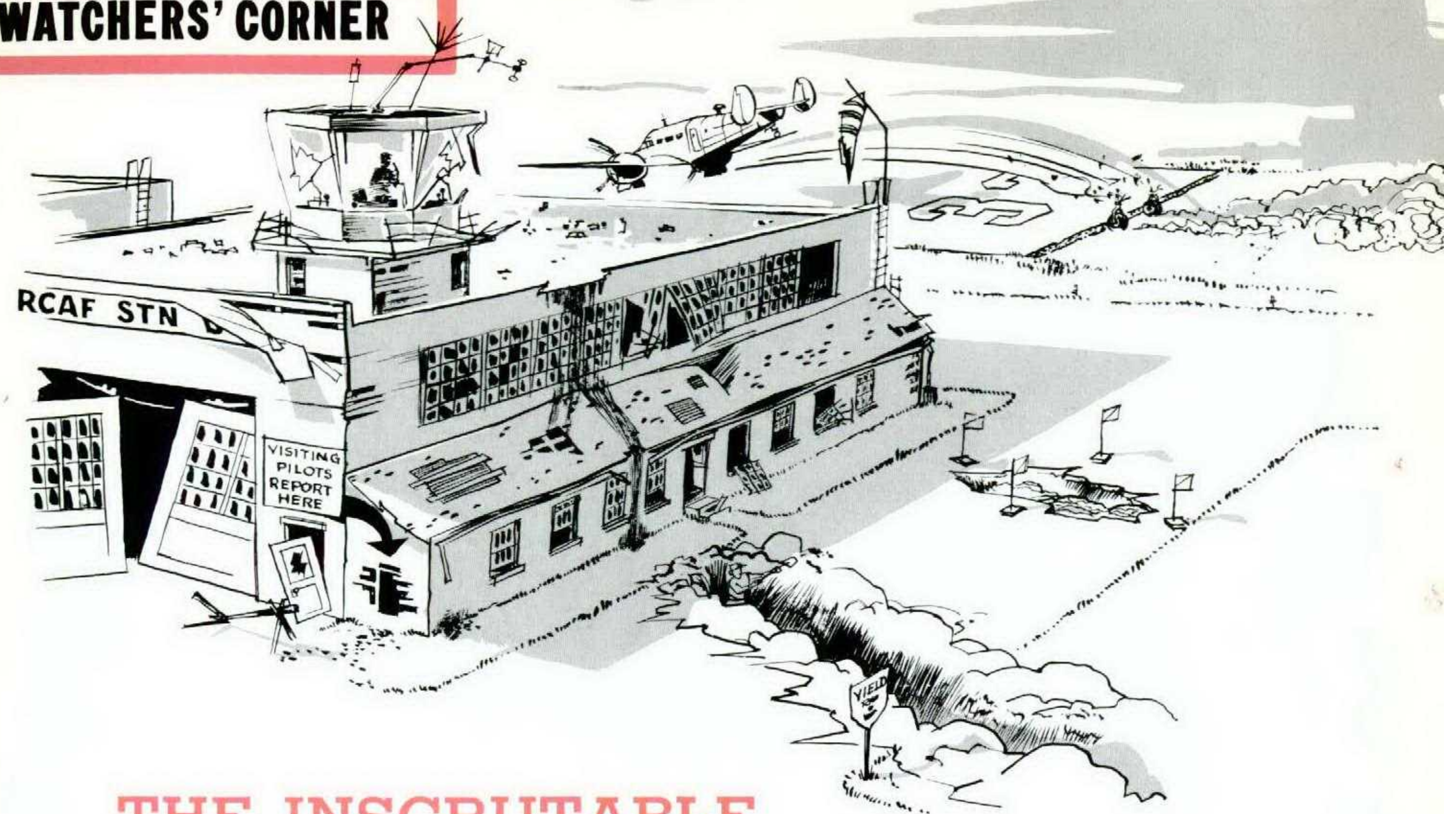
F/O Phingerin says: "How was he supposed to know there was a T-33 parked there?"

2. "Although the brakes didn't appear to be operating normally, a second high-speed taxi test was carried out."

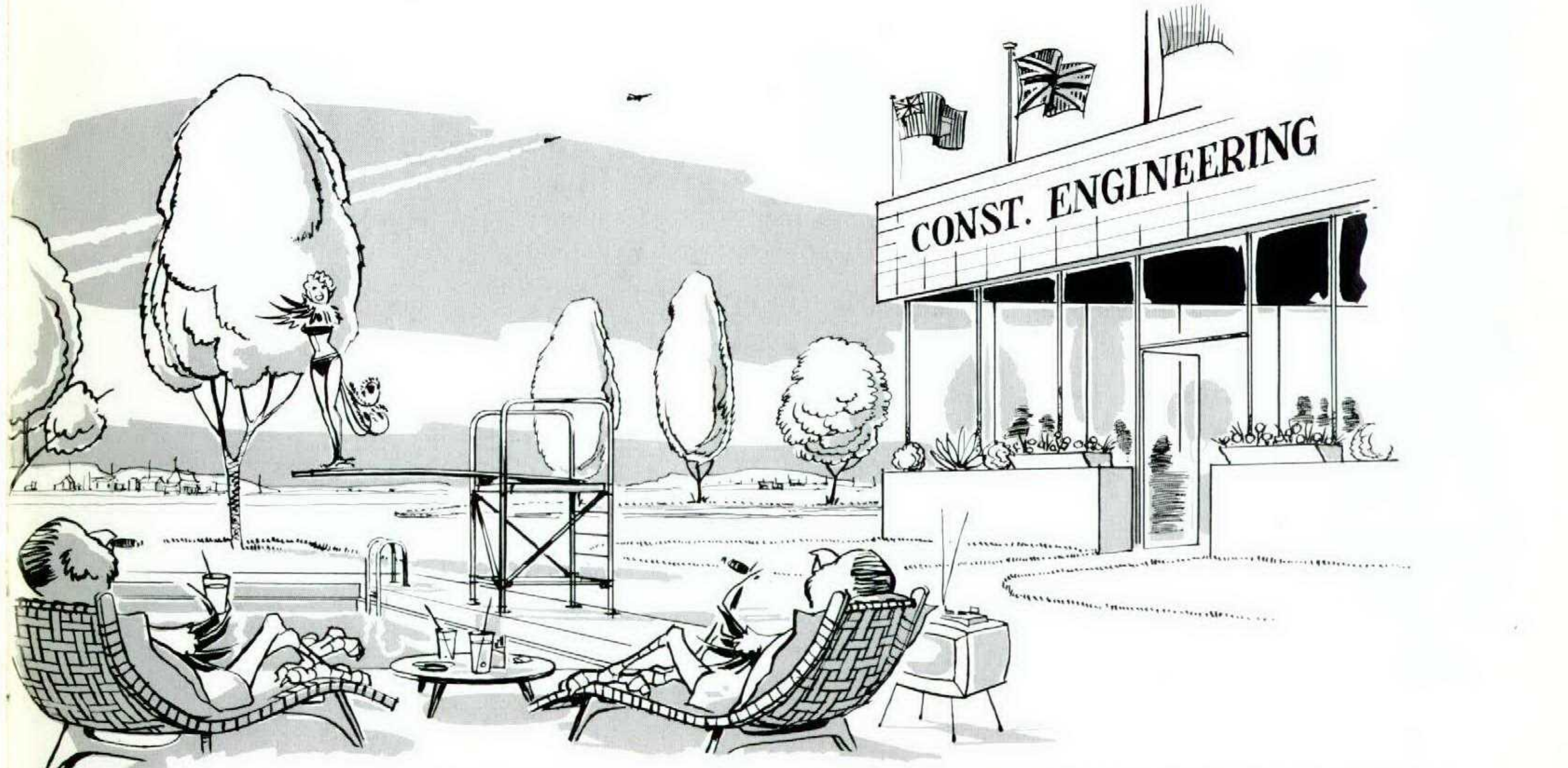
Result: Stbd tire, mainwheel, brake unit, all burned, and replacement required.

F/O Phingerin says: "The second run was just for fun!"

BIRD WATCHERS' CORNER



THE INSCRUTABLE NEST FEATHERER



This bird is first cousin to the Impervious Fregata, and only very slightly removed from the Tight-Fisted Nest Packer. All three work in close liaison to the detriment of Operator birds.

The Nest Featherer is found in practically unassailable palace-type nests. He is concerned with curling clubs, swimming pools, painting the guard-room, and erecting STOP signs, while other birds stub their toes on runway edges, tear their feathers on odd obstructions, or exist in nests having only a vague resemblance to hangars. No effective Pest Control measures have yet been devised.

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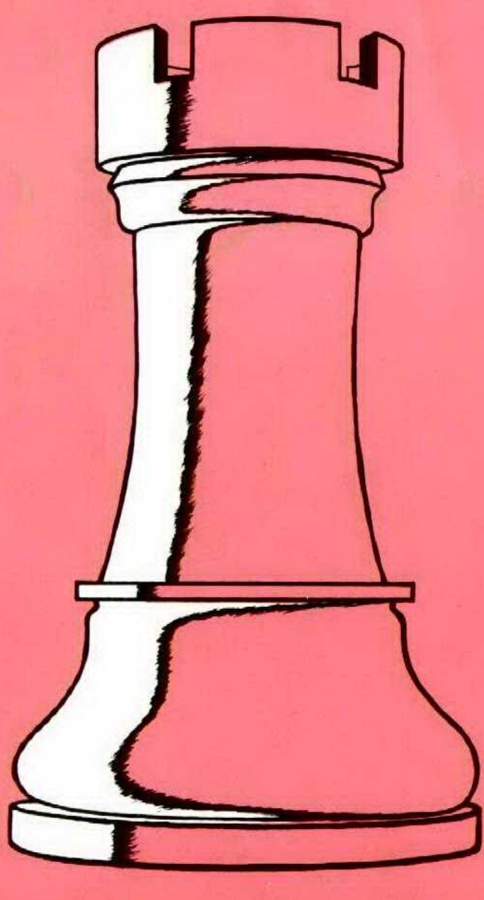

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