FLIGHT COMMENT

ROYAL CANADIAN AIR FORCE

JANUARY • FEBRUARY • 1959

EDITORIAL

Aircraft accident prevention must be directed at all activities associated with the flying operation. However, large numbers of accidents are concentrated in certain specific areas, and prevention in these areas will yield the greatest dividends. Consequently, Flight Comment intends to conduct a special educational campaign aimed at the reduction of accidents occurring on and in the vicinity of aerodromes. Seventy per cent of all RCAF aircraft accidents occur in this area and although virtually all cause factors are involved, corrective action in most cases will be within the direct reach of local supervisory personnel. A six month special campaign will be waged during the first half of 1959 through the media of this magazine, Flight Safety Posters and Flight Safety Notes.

With advance knowledge of the intended monthly topics Unit FSOs can plan their local programs accordingly and while it is not intended to bypass other current and important prevention fields, it is hoped that a simultaneous concerted effort to improve local supervision techniques and facilities will achieve a major reduction in avoidable aerodrome accidents. Watch for the following topics in the first half of '59.

Jan-Feb	—	Supervision and Aerodrome Accidents
	—	Aerodrome Accidents General Analysis
Mar-Apr	—	Aerodrome Conditions
	—	Aerodrome Facilities
May-Jun	—	Personal Equipment
	—	Maintenance and Aerodrome Accidents

K.C. Dobbin

K.C.M. Dobbin, W/C
Flight Safety

F/O N. F. FRANCIS

F/O N.F. Francis was giving dual instructions in an Argus aircraft. While carrying out an overshoot from 500 feet, the pilot at the controls, F/L E. N. Starink, called for the last 15° of flaps to be selected up. F/O Francis noted that the aircraft was assuming a marked starboard wing down attitude, and could not be returned to the level attitude. He suspected a differential flap condition and reselected flap to 15°. With this selection control was regained. A visual inspection revealed that the port flap was down to the 30° position. The emergency flap switch was used to lower the starboard flap to match the flap on the port side. An uneventful landing was carried out.

The correct analysis of the emergency, and the decisive action taken by F/O Francis to correct the emergency, indicates a thorough knowledge of his aircraft and prevented a major accident.

Inspection of the flap linkage revealed that bolt, nut, washer and pin which connects the torque tube assembly to the coupling wing flap were missing. Refer to EO 05-120A-4 Vol.1, page 756 items 16, 26 and 70.

F/O F. C. BLACK

F/O F.C. Black an instructor at 3 AW (F) OTU was flying Number 2 in a three-plane Vic formation in a CF100 during an Air Show at Portage la Prairie. The total formation was made up of 36 T-33s and 3 CF100s. The CF100s were flown 200 feet below the T-33s at a height of 500 feet above ground. As the formation approached Portage for the fly-past F/O Black slid out of the tight formation to complete a cockpit check. All the aircraft systems checked normal and the aircraft was repositioned in tight formation.

Following the fly-past and while still at 500 feet, at a speed of 300K, the flying controls locked. F/O Black deboosted the controls and flew under Number 3. He deemed it inadvisable to attempt to gain altitude because the 36 T-33s were 200 feet above and ahead. He reduced the aircraft speed and maintained a position clear of the airfield and allowed the mass formation to land.

The undercarriage flaps were lowered by the emergency method, and a successful landing completed using the hand brake to bring the aircraft to a stop.

Investigation revealed the blanking plug AN-814-8D ref 05-25E-4 came loose allowing complete loss of hydraulic fluid. F/O Black's prompt and decisive action during this in-flight emergency, prevented what could have been a major disaster.

ON BLAMING THE PILOT

by Maj. Oliver Stewart, M.C., A.F.C.

That classical ballad, "She Was Poor But She Was Honest", contains the lines "It's the rich wot gets the pleasure; It's the poor wot gets the blame." And the song writer concludes with the philosophical comment: "Isn't it a bleedin' shame?"

In many aeroplane accidents it's the pilot who gets the blame while most everybody else is exonerated. The words "pilot error" occur repeatedly in the conclusions of investigating committees, and the basic assumption is that, if all the regulations have been complied with in the building of the aeroplane, and if all the bits of paper have been correctly filled in before the departure, the only person who can be at fault when things go wrong is the pilot.

Never Turn Back

In the early days of aviation the commonest accident was associated with a failing engine on takeoff. Instructors used to drill into their pupils the precept, "Never turn back on a failing engine. Go straight on. It's safer to hit the side of a house than to try to turn back." But pilots did try to turn back; and because the aircraft of those days had a slender margin between flying speed and stalling speed, the consequence was normally a stall and spin into the ground. The instructor would tear his hair as the remains of the pilot were being carried away. "The silly so and so," he would rave, "I told him never to turn back on a failing engine." And the verdict was then duly inscribed: An error of judgment on the part of the pilot.

The possibility that there was also an error of judgment on the part of those who had failed to build a trustworthy engine was not considered. Nor was the possibility raised that those responsible for the stalling characteristics of the aeroplane might have a share in the blame. The pilot, through his inability to overcome the natural instinct to turn back to the aerodrome when the engine failed, was held to be the "cause" of the accident.

Supreme Command

In those days there was some excuse for this attitude. Engine and aeroplane designers were struggling with imperfectly understood problems. Moreover the pilot had authority. He was in supreme command. He alone was entitled to say whether he would fly or not; he alone was entitled to check the fuel levels, the functioning of the controls and the condition of any part of the airframe and engine. When he took off, there was no kind controller in the tower to tell him if the way was clear. He had to look around and peer into the sky and make sure that it was clear and that no other machine was approaching to land.

There was, then, this measure of justification for the custom of putting everything down to the pilot. But the custom continues today without the justification. The pilot is no longer in supreme command: Thousands of people, through written and spoken instructions, tell him what to do, bombard him with documents, stuff him with detailed information. On the other hand, the trustworthiness of all aircraft components has increased. The pilot is looked upon as an automaton which sits there and does what it is told. In these circumstances it is surely time to give up the custom of attributing accidents to pilot error unless there is powerful supporting evidence.

I would like to discuss in general terms two comparatively recent accidents, both of which claimed a heavy death toll. I shall not refer to either individuals or aircraft by name. The reason I have selected these two particular accidents is that they fall into clearly established categories: The first is concerned with engine failure at takeoff; the second with weather. Both involve four-engined aircraft.

Theory and Practice

Now, four-engined aircraft provide an additional margin of safety through their ability to fly on three engines. Their three-engine performance is measured, and loadings are laid down which still permit the aircraft to climb after the failure of any one engine. That is the theory. The practice is not always the same. The rate of climb on three engines at full load may be small and it will be affected by temperature, turbulence, trim, and even the age of the aircraft. It will, of course, be affected also by whether or not the propeller of the defective engine is feathered.

Imagine, now, a four-engined aircraft, fully loaded with passengers, taking off in a gusty crosswind of medium strength, say 20 knots. Just as the aircraft becomes airborne, one engine in an outer position fails. In theory the pilot should be able to climb slowly with a feathered propeller. However, under the best conditions, the climb rate would be marginal. In other words, small contributory factors—the amount of turbulence in the crosswind, and even the form of the gusts—might wipe out that margin. In the first case to which I referred, the propeller had not been feathered; but whether it was because the captain was still hoping to obtain some power from that engine, or because there was a failure of the feathering mechanism, or because the pilot made an error of judgment is not known or knowable. The destruction on crash was too great to enable the point to be decided, and no one in the aeroplane lived to give evidence. But the court of inquiry rejected the first two possibilities and chose the third: pilot error.

Not Proven

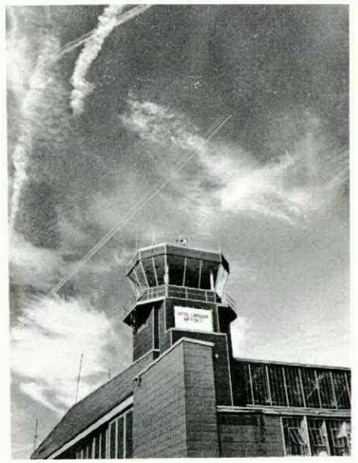
Very properly the British Air Line Pilots' Association protested. But their protests were of no avail. Now the point I make here is that, although there might have been a pilot error, it was never proved. The court went the way of so many courts; when the evidence was insufficient to point inescapably to a single cause, it turned to the pilot. Being dead, he had no effective means of replying to the charge.

Now let me take a case in which the pilot lived. Here the interest lies in the fact that, had he not lived, the chances are that the accident would have been attributed to pilot error. For there was no sign of the failure or malfunctioning of any important component in the aircraft or in its four engines. Everything was in order, and examination of the wreckage confirmed that everything had remained in order. It was because the pilot and the co-pilot survived and were able to relate the remarkable series of events which led to the crash, that the court was able to find that the accident was due to unexampled and unpredicted weather conditions.

While the aircraft was being made ready to leave, storms were raging in the area. None of them was near the aerodrome, and the closest line squall was given as several hundred kilometres away. The aircraft captain noted the squalls and took the greatest care to obtain the latest weather information. Everyone agreed that there were no storms close enough to the aerodrome to delay the flight, let alone endanger it. In order to avoid turbulence from the overhang of any of the storms, the pilot discussed with other members of his crew the advisability of slightly adjusting the course to be flown.

Normal Takeoff

At takeoff the conditions were satisfactory, although storms with lightning could be seen in the far distance. The aircraft was watched from the tower as it made a normal takeoff run. Rain was falling but visibility was still reasonably good. As the aircraft disappeared from the view of the watchers in the tower, they saw a red glow in the direction it had taken. Rescue and fire fighting teams were alerted immediately. Despite rough ground



beyond the end of the runway, they were on the scene in 10 minutes.

Here is the story as related by the surviving members of the crew. The takeoff had been normal, and the aircraft started a normal rate of climb at normal air speed. Then the point was reached where the captain retracted the gear and gave the order for a reduction in power. All checks had been made and everything was functioning efficiently.

The pilot then noticed that, in spite of the settings for steady climb, the aircraft was beginning to lose height. A rapid re-check showed nothing wrong, so the pilot said later that it was with "horror" that he noticed this sudden change.

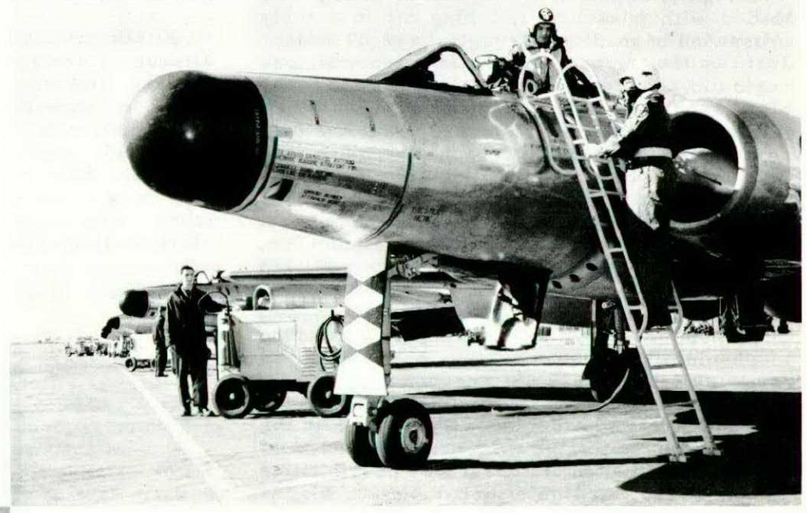
He called for full power and was given it at once, although the propellers were not adjusted to obtain maximum rpm. At full power the aircraft was still losing height. The first officer looked out and saw that they were near the ground, flying with the fuselage apparently about level. The captain looked out to see the top of a tree ahead, and the aeroplane so near the ground that a sharp turn would have put one wing tip into the ground. He took the most drastic evasive action possible, but a wing tip struck the tree and the aircraft was brought to the ground where it immediately caught fire. The aircraft broke on impact, and it was partly this that enabled a few people to survive the accident.

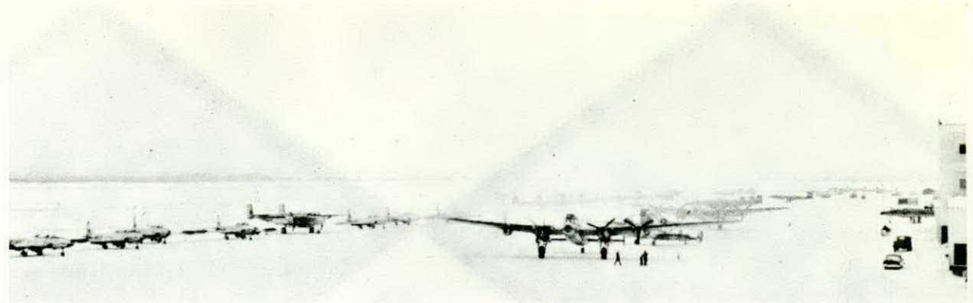
The usual procedure of investigation was followed. In addition, witnesses were obtained who were able to tell what the weather was like when the crash occurred. The picture that eventually emerged was of a storm cell whose violent wind fluctuation produced the gusts and wind gradient which were in fact the "cause" of the accident.

Age-Old Controversy

This case is particularly interesting because of the light it sheds on the age-old controversy about the effects of wind upon an aircraft. Theoretically (as we are repeatedly reminded), when an aircraft is in the air, it is of the air; consequently it should be unaffected by wind changes, as far as its flying speed is concerned. In practice, as most pilots know, an aircraft in the air can be affected by wind movements. That is why the downwind turn used to be a dangerous manoeuvre for the low-speed aircraft of the old days.

Some say that the inertia of the aircraft is involved, and certainly the wind gradient is a factor. At any rate, in the accident of which I am speaking, it was the considered view of the court, after a painstaking inquiry, that the aircraft had been brought down by (1) a sudden wind change which caused it to be flying into wind at one moment and downwind the next, and (2) a violent accompanying down-gust.





Had the pilot not lived, the members of the court of inquiry and many other people would have been skeptical of a weather explanation, for the "into wind" and "down wind" controversy has been going on since the beginning of aviation. Only because the evidence was so complete was it possible to state precisely what had caused that accident. Otherwise the temptation to put the blame on the pilot would have been strong.

Scapegoat?

Over the years I have seen many accidents and I have collected data on many others. When I was the air correspondent to the old Morning Post, I was sometimes dispatched to places where aircraft had crashed, in order to report "all the 'orrible details" rather than to obtain exact and interesting technical information. Nevertheless, I frequently concluded that the pilot was being made the scapegoat too often.

In the Flight Safety Directorate at the Air Ministry are many highly competent and impartial officials who have always tried to state the truth without fear or favor. But the "pilot error" judgment is, one might almost say, traditional. I believe we should be more careful before we accept it in future.

Perhaps the term is used partly because we do not like to see any accident left unexplained. When an aircraft crashes, and no cause for the mishap can be found, it seems to be a reflection upon aviation itself. Yet it would be fairer to the pilots if we were to admit that sometimes the evidence is insufficient for us to establish any cause with absolute certainty.

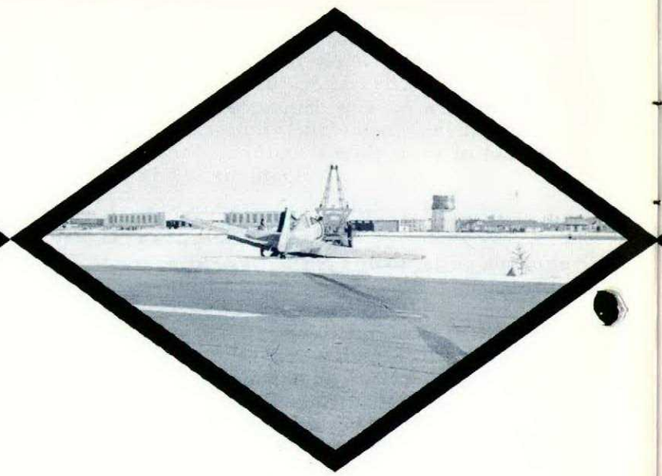
Finally, I would like to urge that the greatest frankness be adopted in the treatment of air accidents. Daily newspapers often deserve the criticism directed against them for the lurid manner in which they treat air accidents; but it is well to remember that they treat other kinds of accidents in the same way. Presumably this is what the general reading public prefers. However, to go to the other extreme would be equally undesirable. I myself have never looked upon an air accident as something that ought not to be written about or discussed. There is nothing shameful about an air accident, whether the fault be with the designer, the manufacturer, the service engineer, the controllers or the pilot. All these people try their best to prevent accidents, and even if one of them is eventually "blamed" for some mishap, it is not the kind of blame which implies any dereliction of duty. No human being can always avoid making mistakes, and an air accident is sometimes simply the expression of a mistake. So let us not react to the horror treatment of air accidents by trying to hush them up. They are often of the most absorbing technical and human interest; and they deserve the fullest and freest discussion.

New Outlook, Please

My plea, then is not that we should treat air accidents as if they were acts of God, or as if they were matters unfit for open discussion, but that we should look upon them as sources of new information. And above all, I would ask that, before we conclude that the pilot has made an error, we should be careful to examine all the possibilities with equal attention and equal open-mindedness.

Hawker-Siddeley Review

Whenever the contributions of the pilot to an accident are being considered, the term "pilot error" is commonly employed. This term does not imply either negligence or wilful violation on the part of the pilot. It is, rather, a descriptive term indicating that the pilot failed to make an adequate response to the demands of the situation. This lack of response is often directly caused by inadequate design in the equipment being used, insufficient training preceding the emergency, or excessive environmental-situational demands which exceed the built-in limitations of the human operator. Only a clear understanding by pilots and administrative personnel of the implications of the term "pilot error" can lead to a satisfactory evaluation and the necessary corrective action.—ED



INFIELD ERRORS

by S/L G. L. Sheahan

Did you know that 70% of all RCAF aircraft accidents occur within the airfield area? This startling fact means that, theoretically, 70% of all our accidents happen within sight of the supervisory staff!

What sort of accidents are they? Actually there is plenty of variety. A partial recital goes like this: A Sabre turned final for a landing and spun in. A C-119 was written off while attempting an overshoot on a single engine. A North Star blew all four tires on a heavy landing. A C-45 swung on takeoff and sustained severe damage. A Canuck ran through some water on a runway during takeoff and lost one wheel. A Harvard groundlooped during an overshoot. Yes, all these and more—totalling 281 accidents of a similar type—happened last year.

The question naturally arises, Why such a large percentage around the airfield? Agreed, landing and takeoff are most likely areas for accidents to happen. Strangely enough, however, the cause factor hasn't changed over the years. Statistics prove that neither the type of flying—training or operational—nor the total number of accidents change the picture appreciably. Whether the accidents total five or 25, the overall average occurring in the local area is still approximately 70%.

Once we accept these facts, it becomes apparent that here is a fertile area in which to start off our 1959 accident prevention program. No doubt some of our flight safety effort has been directed towards this particular phase of flying; but that figure of 70% emphasizes that a lot more energy must be expended in improving supervision on the ground and in the air, and in bettering circuit techniques and discipline, if we are to reduce our accident rate.

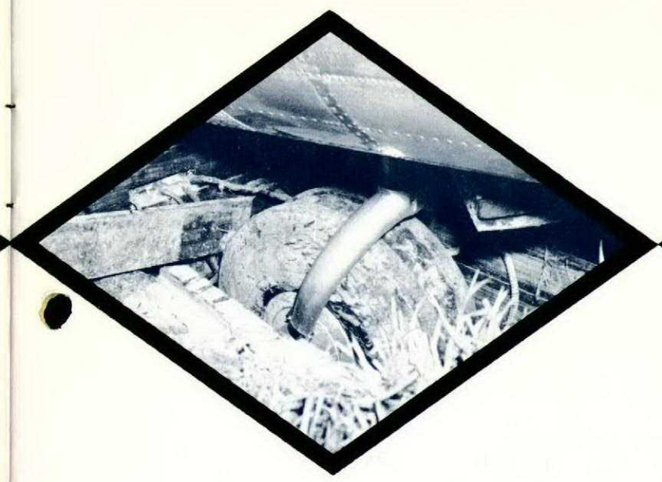
Whenever we discuss accidents in percentages, the picture is not too clear; so let's take a closer look, using numbers, and get an exact idea of where we stand.

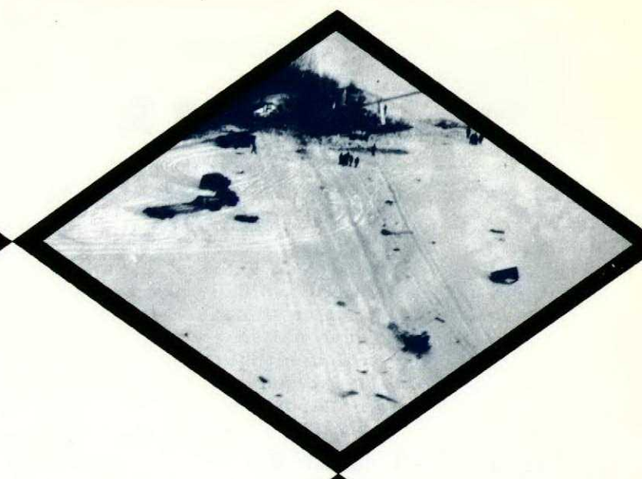
Of the 281 accidents that happened around RCAF airfields last year, 189 were caused by human error, and 92 by materiel failure. Following is a breakdown of those in the human error category.

Stage of Flight	Number of Accidents
Landing	105
Taxiing	33
Takeoff	22
Go-Around	14
In-Flight (circuit)	13
Engine Running	2

All 189 of these human error accidents were avoidable! In each and every case, the main cause factor was either faulty technique or just plain lack of know-how!

Surely this field can be reviewed and positive corrective action instigated in order to cut down or eliminate these unnecessary accidents. Many aspects would need to be covered, from flying standards, right down to the condition of the runways and infield.





To reduce the accident rate around the airfield to any great extent, everyone on the station would have to perform his function efficiently and completely. It would be the CE section's responsibility to ensure that the state of the airfield under all weather conditions conceals no hazard which might trap the unwary pilot. Servicing would have to ensure that ground handling equipment is never parked in such a way that it might cause a taxi accident. Flying control must put forth that "little extra" to assist in taxiing and the monitoring of circuit aircraft. Flying training and Operations personnel should monitor aircrew standards to ensure that unsafe techniques are not being practised, and to get the ungarbled across. Pilots would have to learn, by self criticism and practice, all there is to know about their aircraft and equipment.

Is it logical to expect a unit to reach such a degree of proficiency? The answer is yes, eight RCAF units, including some operating high performance jet aircraft, and one army unit, recently completed a full year without any kind of an accident.

We are not trying to cover all the avenues in suggesting what should be done. But we do want to point out to flying units that 281 accidents are a lot of accidents to be happening at their front door. Something must be done to reduce this awful total—and it can be done if each and every one of us puts forth that little extra, learn a little more about our jobs, and carry out that last check a little more conscientiously. Make 1959 our best year.

Some of the 189 that should not have happened and did—and all within sight of the supervisor.

NEAR MISS

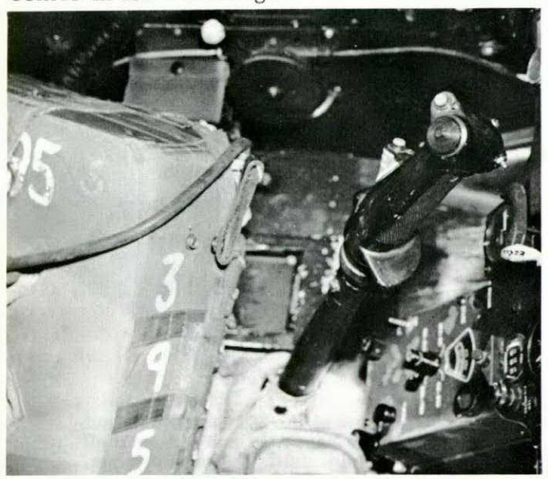
REAR SEAT ASSIST

A solo student PX-ing one mile on initial for a full-stop landing reported that he was having control column difficulties and he could not get the control column fully back.

The QFI in the tender switched to the student's channel to give him instructions. By this time the student was turning base for his landing so the QFI told him to make it a full-stop.

The accompanying photo shows the condition of the seat pack in the rear seat. The lessons to be learned from this occurrence are many.

- Always do the rear seat up properly for solo. (This student knew how but he was careless!)
- On experiencing any control difficulties inform the tower immediately.
- Never do a normal circuit with control difficulties - always request a straight-in approach.
- QFIs in the tender should ascertain the full extent of the difficulties before the pilot comes in for a landing.



200 GALLONS PLEASE

A pilot left Cold Lake in a T-33 on a weekend training trip to St. Hubert with a stop over at Malton to drop a passenger. The pilot contacted Downsview tower and was informed that no fuel could be obtained as servicing had closed for the day so a landing was carried out at Malton.

The Sanderson Aircraft courtesy car took the pilot to the coffee shop and the driver said they would pick him up after the aircraft had been refuelled. The service man returned in about twenty minutes and presented the pilot with a bill for 200 gallons of fuel which the pilot signed.

After taxiing out the tip tank red light did not go out but the takeoff was completed as ATC clearance had been received. After becoming airborne an unsuccessful attempt was made to get the tip tanks to feed. Downsview tower was called and a landing was carried out at Downsview.

On inspection it was found that the tip tanks were empty. No fuel had been put in any of the aircraft's tanks. The pilot drove over to Malton and questioned the man who had refuelled the aircraft. The operator said that the bowser had not been touched since, and that he would show it to the pilot. The bowser was examined and its fuel counter indicated that 200 gallons had been taken out. On further examinations it was found that the bowser was full of fuel. The operator ran the indicator up to 250 gallons but no fuel came out of the nozzle.

To avoid another incident like this one, the pilot suggests that when civilian companies refuel our aircraft that the covers be taken off the tanks and their contents examined.

This Near Miss proves one cannot be too careful in checking procedures while away from the home base. Luckily this pilot could get to another station without incident.

Local investigation reveals that the most logical explanation for this occurrence is that the operator must have had the selector valve turned to the "Defuel" position or the intake on "Air". This will cause the meter to operate and register without fuel delivery at the nozzle.

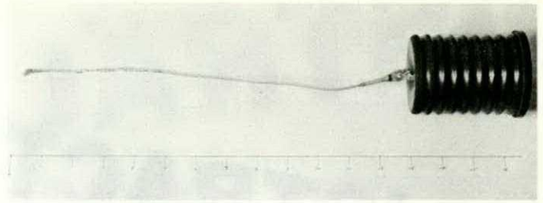
LOST, ONE DUST CAP

On completion of a local VFR flight in a T-33 the refuelling crew found a large piece of rubber hose with a bonding wire attached in the starboard tip tank.

On investigating the report that a foreign object had been found in the starboard tip tank of a T-33, it was found the object was a refueller nozzle dust cover, made of heavy black rubber. Attached to it was a length of Standard Straining Cable with the free end badly frayed.

It was apparent that the dust cover had not been removed prior to refuelling being commenced and that the pressure of the fuel on opening the nozzle had blown the dust cap down into the tank.

The aircraft in question had been at the following refuelling stops within the previous 72 hours of the object being found: Lakehead, North Bay, Downsview and returned to Saskatoon on the weekend of 26 and 27 July; at Cold Lake on the evening of 28 July where the aircraft was refuelled at 2250 hours MST before returning to Saskatoon on a night cross country.



Refuelling nozzle dust cap found in T-33 tip tank

It is considered this unusual incident occurred during a night refuelling when visibility was limited and supervision at a minimum. However, the actual location and time of the incident cannot be determined.

Although this item does fall within the definition of a Maintenance Error as set out in EO 00-80-3, it is not considered chargeable to Saskatoon because this station uses a metal spring loaded type of dust cap.

The airman who found the wayward dust cover has been complimented for his awareness at unit level. He also receives a pat on the back from Flight Comment.

T-33 TIP TANKS

From January to August 1958, nine sets of T-33 tip tanks were jettisoned by pilots when they discovered either the port or starboard tanks were not feeding or were feeding unevenly. While this represents a considerable reduction in tip tank jettisons over the same period last year, more careful surveillance on the part of ground crew and pilots should reduce this figure even lower.

Of the nine incidents mentioned above, no reason could be established for non-feeding in eight cases. Briefly, there was nothing wrong with the aircraft and the tanks were so badly damaged on impact an investigation was impossible. In the remaining case the cap was found unserviceable, this fact was established by checking the tank that was not too badly damaged on impact.

In two more incidents, where the pilots did not jettison, the cap was again the culprit. Once the cap was just plain unserviceable and the other fell off (!!!) at about the time the aircraft landed.

So of a total of 11 incidents involving tip tank non-feeding, three are directly attributable to just plain unserviceabilities or not being installed correctly. It is also reasonable to suspect the same thing holds true for the majority of the remaining eight incidents.

The cost to the tax payer of this little unplanned program is estimated at $9000, plus cost of fuel lost, plus man hours for investigation and replacement of tanks, plus damage to aircraft, plus man hours spent on D14s and other paper work, in all a total of roughly $20,000.

Even more important than any of the above is the hazard involved in non-feeding tanks being jettisoned in the air, this cannot be measured in terms of dollars and cents.

Three simple steps should cut down the number of incidents still further:

- Groundcrew - Check serviceability of cap prior to installation
- Groundcrew - Ensure cap is installed securely after refuelling and before flight.
- Aircrew - Check installation on preflight check - if cap is dished or not flush with tank adaptor - the tank may not feed.

DISTRACTIONS

DISTRACTIONS

distractions

"Air Force 872..your clearance checks.. you are cleared for an immediate takeoff runway 28....Trans-Canada on final."

Controls and windows check. Away we go. As the captain opens the throttles, the crewman's hand appears and puts the mixture into auto-rich position. Now all is well.

Or in a T-33, your takeoff is rushed. Airborne, wheels up, flaps up, climbing through 5000, TOE switch off, Oh! Oh! it was never on.

Has this, or something similar, happened to you? We are all such creatures of habit, in one way or another, and if some incident breaks our routine, the stage is set for something to go wrong.

During a landing run, when you've got it made and the tower says "turn off at the first intersection," your first reaction is to apply brakes and look for the first intersection. When this happened to the pilot of a C-45, the aircraft wound up on its nose.

Now, I'm not blaming the tower for these accidents; but when the aircraft is in motion, any form of distraction may create a situation in which an accident is inevitable. Any pilot whose mind is taken off the job at hand is apt to resort to habit reflex—and that could spell disaster.

Distraction can be caused by many factors, and a review of DFS files has produced some interesting cases. A few of them are summarized here to show you what I mean.

A Sabre pilot in the lead aircraft was being given a proficiency check as a section leader. Immediately after takeoff, the pilot of the No.2, thinking he had left the landing light switched on, took his eyes off No.1 to make a cockpit check. The aircraft collided and crashed. Both pilots ejected safely.

An L-19 was taxiing on the grass infield. The pilot, while overcoming difficulties encountered in raising the flaps, taxied into a GCA marker and damaged the aircraft. He knew that the obstruction was there, but his attention was distracted when he performed a cockpit check while in motion.

A student in a Harvard was practising touch-and-go landings at night. During the last circuit, the tower contacted him with a message while he was on the downwind leg. The student had difficulty understanding the message, so numerous transmissions were necessary. The upshot of it was that the lad completed his circuit and landed wheels-up. Distracted by the tower's transmission, he had forgotten to run through the downwind landing check.

While taxiing a Dakota, the captain called for an increase in the hydraulic system pressure. At the same time a passenger was up

in the front office enquiring about transport, and the Dakota ran into a C-45.

The pilot of a Sabre turned final. He saw a car approaching the runway and informed the tower. The tower's reply was garbled, so the pilot decided to go around again. He changed his mind and elected to do a touch-and-go and touched down wheels-up.

During an instrument takeoff in a T-33, the aircraft swung to port and struck a runway light prior to achieving takeoff speed. The aircraft became airborne but suffered some damage. The safety pilot's attention was distracted by a C-47 that was taking off on a converging runway.

It's happening every day. A pilot's attention is diverted from the normal routine and, while concentrating on one new problem, he allows two others to develop. This distraction business is a difficult one to deal with because it is up to the individual to use self-discipline when he is faced with the problem.

There is no doubt that a section leader can assist his formation by using standard R/T practices in flight, and by cutting out unnecessary R/T patter, particularly in the circuit. The tower, in turn, can reduce distraction for the pilot by knowing what's going on in the cockpit. This business of transmitting to an aircraft during a takeoff roll and advising the pilot to make a right-hand turn after takeoff is just lack of know-how.

So there it is: A conscientious effort by the pilot will keep distractions from distracting. And the rest of us can remember not to experiment during the final approach by asking the pilot, "Got a match, buddy?"

VISIBILITY PLUS

Did you know that under ideal weather conditions, the bright green of your dye marker can be seen from the air with the naked eye for approximately four miles?

When seen from a plane, even at low altitude, a life raft is only a tiny dot on the ocean, while the approximate 100 foot circle of bright green water created by the dye packet makes an excellent target for searching aircraft.

The fluorescent dye powder dissolves faster in moving water than in relatively calm water. In a moderate sea, the packet is exhausted in 20 to 30 minutes and the dye ceases to be a good search target after an hour. For this reason, it is a good idea to save your dye packet until a rescue craft is known to be in the vicinity and then to disperse the dye as quickly as possible.

When tied on to the raft and dragged behind it, the dye marker gives off a trail of brilliant green which a search plane can follow. When used in surf, the dye loses its effectiveness because it is practically the same color as shoal water.

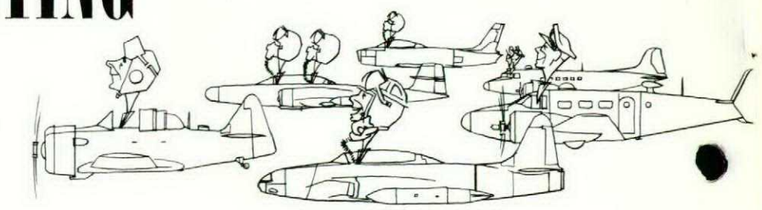
The dye marker should not be used at the same time as shark repellent; the shark repellent gives off a dark color which hides the dye.

The dye marker is also effective in snowfields.

USN: Approach


LOOK OUT!

HEADS-UP FLYING



TEAM WORK

F/O R.K. Heard took off in a Sabre from 4(F) Wing for Sardinia. The takeoff was normal but when undercarriage was selected up the nose gear showed unsafe. Repeated selections failed to get a safe indication. The aircraft was flown past the tower and flying control stated that the gear was up, but the doors were down. The wheels were selected down and all indicated down and locked. Another pilot, F/O Hayes, who was airborne at the time offered assistance, and carried out a visual on F/O Heard's aircraft. He reported that the nosewheel was cocked 15° to 20°. The tower also received this information and requested the crash team to lay a foam strip on the runway. F/O Heard tried several more selections to try to get the nosewheel straight with no success. The crash team laid the foam strip in six minutes and when they were in position a landing was carried out. The nosewheel turned sharply on touchdown but the aircraft was kept straight by brake until the nosewheel uncocked. Nosewheel steering was engaged and the landing run completed.

F/O Heard showed very competent handling of the situation. F/O Hayes showed excellent airmanship in providing timely assistance. The ground co-operation between the control tower personnel, crash crews and fire hall was well handled. An all around Heads-Up.

THE GUY IN THE OTHER LANE

You're at the stoplight, hubcap to hubcap with the guy in the other lane, waiting for the flick to green. Your next-door-neighbor-on-wheels hunches forward a little. Then something silly happens inside your brain. The traffic light becomes something like a starter's upraised gun. You seem crouched on a cinder track, digging your spikes into the starting blocks with savage, pentup steam. Old devil horsepower is beginning to needle you; beginning to take over the controls. "Beat this guy!" You nudge up, hubcap to hubcap again.

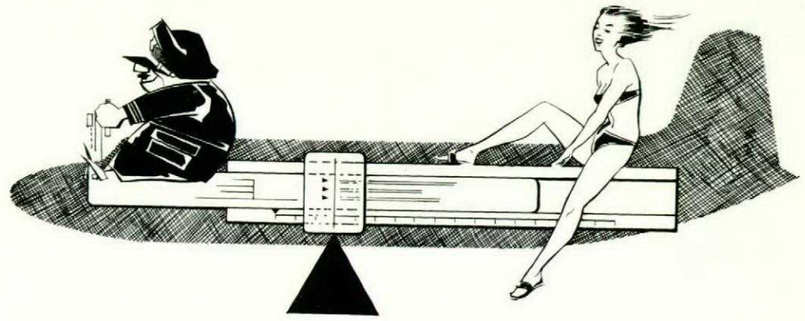
What about the guy in the other lane? Is he really out to beat you? Take a good look at him. He's brother-man! Sharer of your streets, your son, your good green earth! He's the doc who brought your first-born into the world; second vice president of your PTA; second tenor of your barber-shop quartet. He's the man whose son might marry your daughter, some day. Walking down main street with him, kneecap to kneecap, you wouldn't even think of trying to beat him to the corner! So why do humming wheels and engine lull us into stupidity? Why does old devil horsepower paralyze our brains? WHY?

Turn on a smile for the guy in the other lane, instead of a spurt of speed. Show him friendliness instead of trying to show him up. Be quick with good will instead of pickup. If he does carry a challenging chip on his fender, don't rise to his whizzing rate of speed; don't fall to his whizzing rate of mentality! Let him wheel on by toward that queer goal of his—a goal that's as dim and unknow to him as it is to you...and me...and to millions of other guys in other lanes.

USN: Safety Review

WEIGHT AND BALANCE

G. A. Heck, S/L



Following is an excerpt from the "50 and 100 Years Ago" column of the September 1958 issue of Scientific American: "SEPTEMBER, 1908: 'Seldom has there occurred a more pitifully tragic disaster than the sudden fall of the Wright aeroplane, . . . Experts believe that after the motor was stopped the machine, which had already lost speed on the side having the broken propeller, quickly lost its momentum; and although Mr. (Orville) Wright was able to regain his equilibrium momentarily, its final downward plunge was due to the loss of speed and the forward location of the center of gravity.' "—ED

Some years ago, an aircraft of a foreign airline was being used to transport live animals between the Far East and points in Europe and the United States. On one of their flights the load consisted of two live elephants.

During the trip the two creatures became bored with airline travel, broke loose, and moved ponderously to the rear of the aircraft. It is not recorded if they were looking for the washroom, a sandwich, a drink, or were just plain curious; but the effect on the aircraft was catastrophic. The nose rose rapidly despite the best efforts of the pilot, and the aircraft eventually stalled and fell off on one wing, pitching down as it did so. The elephants, along with everything else not tied down, shifted forward, thereby correcting the aft center-of-gravity displacement and enabling the pilot to regain control.

While further details of events in the aircraft were not recorded, the flight was completed safely. Presumably the elephants, with their reputedly superior minds, had learned—and remembered—the importance of keeping the center of gravity of an aircraft within the prescribed limits.

Now the RCAF is not likely to be engaged in the elevation of elephants, and no RCAF pilot is likely to be called upon to take part in such a trunk line operation; but this little anecdote should serve to illustrate the importance of having the center of gravity of an aircraft in the right place.

Aircraft Stability

Most of the trouble with C of G comes from having it too far aft. It is difficult, and in most cases almost impossible, to load an aircraft so that the C of G is too far forward. Unfortunately, this is not true of an aft C of G movement. Aircraft designers often have trouble keeping the C of G far enough forward to prevent extra equipment or load additions from moving the C of G too far aft.

The dictionary defines center of gravity as "That point in a body, which being supported, the body remains at rest in any position." So perhaps we can say that the C of G of an aircraft is that point through which all of the weight of an aircraft acts.

The center of rotation of an aircraft is the C of G, and in trimmed flight the principal forces involved are the moments of the mainplane lift (L) and tailplane lift (L') about the C of G. These moments balance and there is an equilibrium. A disturbance in incidence or pitch will produce changes in L and L'. If the moment produced by the change in L' is greater than the moment produced by the change in L, the aircraft will return towards its equilibrium position. It is statically stable. If the moment produced by the change in L' is less than that

produced by the change in L, the aircraft will depart further from its equilibrium position. It is statically unstable. If the moments produced by the changes in L and L' are equal, the aircraft will remain in a disturbed position in which it is said to be statically neutral.

From this it is clear that anything which affects the moment of the change of L and L' will have an effect on the stability of the aircraft. Thus, if we move the C of G aft, this will increase the moment due to the change in L and decrease the moment due to the change in L'. Since the criterion for positive stability is that the moment due to the change in L' must be greater than that due to the change in L, then moving the C of G aft clearly decreases the stability. The force available to counteract pitching is limited, in that it depends upon such things as fuselage length, control size, and control deflection. On the other hand the force created by the movement of the C of G is considerable, depending on the distance forward or aft that the C of G is moved. So it follows that we can easily make an aircraft unstable by moving the C of G aft beyond certain limits. It also follows that these limits will change as the flight forces acting on the aircraft change.

Because of this relationship between C of G position and static stability, limits for C of G travel are always specified; and aircraft should always be loaded in such a manner as to keep the C of G within the limits. Every so often someone loads an aircraft carelessly, some pilot doesn't check the load, and another aircraft and crew are written off. Remembering back to the elephants, it is essential that the load be properly secured against movement because a heavy item shifting in flight could move the C of G drastically. Incidentally, the onus is on the pilot to see that his aircraft is properly loaded.

Too Far Aft

Now the loss of an aircraft is the most serious result of a C of G that is too far aft. A number of less serious things may also occur. For example, an aft C of G will affect the cruising speed of an aircraft. If the position of the C of G produces a nose-up pitching moment, elevator displacement must provide a corresponding restraining moment—all of which produces more drag and lower cruising speed. And if an engine should fail, this increased drag (which until now gave only an annoying decrease in airspeed) may make it impossible to maintain height on one engine. Incidentally, this is true of the staff officer's friend, the "Bug Smasher". (I allude, of course, to the Expeditor.)

Movement of the C of G, even within the prescribed limits, will have an effect on the handling characteristics of an aircraft. The C of G on the aft limit may induce a certain "sloppiness" in the elevator controls. The climb may be awkward because the aircraft tends to diverge from its trimmed configuration. It will be difficult to trim, and effecting a change of speed may require opposite trim or stick force to that expected. This isn't very pleasant in cloud or at night, particularly right after takeoff.

Aft C of G may have other effects; and although many of them are obvious, it may be just as well to list them:

- The aircraft may border on instability and will be most difficult to fly with high power and low airspeed.
- The aircraft will stall, particularly power on, with a very light pull force which may even change to a push force in the final stages.
- Stall warning may be lost and the aircraft may stall with the stick rather far forward.
- The aircraft will be difficult to trim and to fly steadily, and instrument flying will be hard work.
- The tail wheel will be heavily loaded and the aircraft will tend to squat. The tail will be difficult to raise and the aircraft will be touchy. Any tendency to swing on takeoff or landing will be accentuated.
- The aircraft will land three-point with the stick central. The approach may be uncomfortable, and there will be a tendency to land tail first, to bounce, and to groundloop.
- The aircraft may run out of elevator control on the overshoot and the push force may be high—not a good combination of circumstances because the aircraft is also hard to land.
- The aircraft will tend to remain in a stalled condition. It will also tend to spin (and will spin flatter), and recovery may be difficult.
- The aircraft may tuck under in dives, and may tighten in turns.
- The stick forces in manoeuvres will be low.

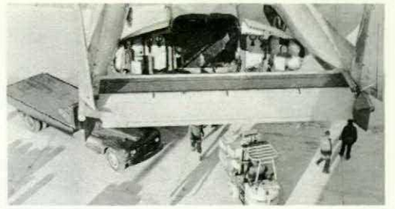
Too Far Forward

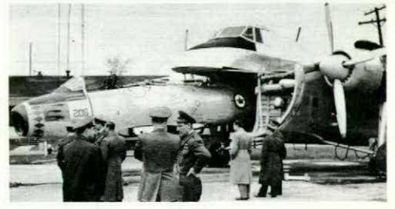
If there is a choice, it is better to have the C of G too far forward than too far aft, but a forward C of G is also accompanied by a long list of effects. Here are some things that may apply if the C of G is too far forward:

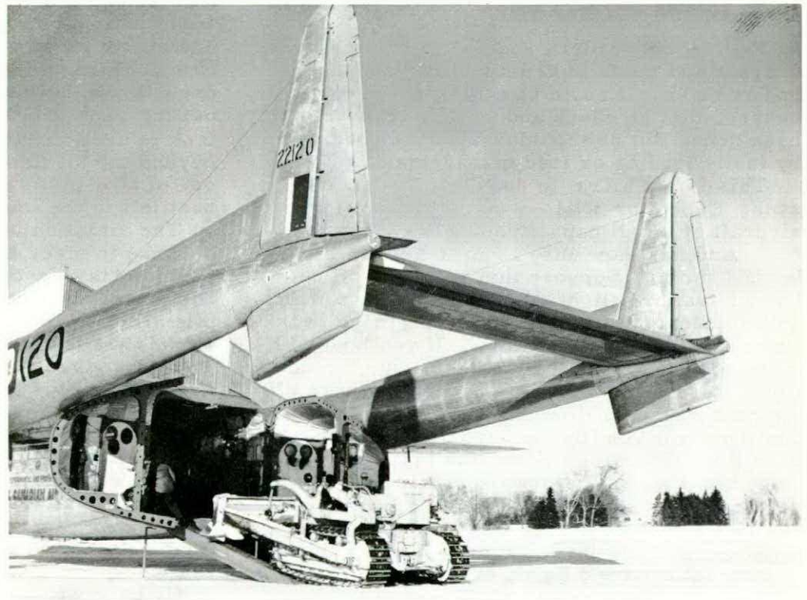
- The tail may lift during taxiing or run-up, or the nosewheel may bottom on a tricycle type.
- On takeoff, the tail comes up easily and there is little tendency to swing. However, trim changes will be large when the aircraft is off the ground.
- Engine failure will involve larger stick forces, and the safety speed may be higher.
- Stick forces will be higher, so trim will have to be more accurate.
- The nose will drop sharply if power is cut, particularly on the approach. Therefore a tail-down landing will be difficult.
- Stability is best on a glide approach, and bouncing and swinging tendencies will be at a minimum; but on the approach, stick forces will be high and the aircraft may run out of trim.
- The aircraft will be easy to trim but will be uncomfortable to fly in rough air because of rapid reaction to disturbances.
- The aircraft will be difficult to stall power-off and will require a steady, increasing pull to stall.
- The aircraft will have a minimum tendency to spin.
- Unless forward trim is used, considerable push force will be required to keep the aircraft in a dive. If the stick is suddenly released in an out-of-trim dive, high positive G forces will result.
- Stick forces in manoeuvres will be high, probably excessive.
- Changes in power, lowering of wheels or flaps, or extending of speed brakes, combined with a C of G beyond the limits, may also have a de-stabilizing effect. Also, the C of G of an aircraft may move in flight as fuel is consumed.

Tigers Please Note

Pilots of fighter aircraft (who might be tempted to say that all this talk about C of G only applies to transport types) should note that last statement. Consumption of fuel or firing of armament stores may move the C of G quite a distance, and in some configurations things may get critical. In any event, movement of the C of G will affect the flying qualities







of the aircraft. It doesn't hurt to know all that POIs have to say about this.

Faulty Loading

Engineering orders require that aircraft be weighed and the C of G determined at specified intervals. It is in the pilot's interest, of course, that he check and ensure that this has been done. But he shouldn't undo the good work by faulty loading or load management.

This is not hard to do. Let's take a look at the Expeditor 3NM—a commonplace little aircraft of small capacity, familiar to everyone. And look how easy it is to get the C of G beyond limits! Suppose that you are off on a local training flight—just two pilots. Well, with this load (full tanks and nothing in the back) your C of G is within limits. If you land with tanks dry, you will be right on your forward limit. Still safe enough. But if you burn off the rear tanks before the nose tank, the C of G will move beyond the forward limit—an unsafe condition. Carrying a navigator in the back will help; but if he walks forward to give the pilots a course to fly, or to look at the old homestead, you're in trouble again. Proper fuel management can prevent these adverse C of G shifts.

Now let's have a look at a group of staff officers on a SWANEX (Staff Weekend Air Navigation Exercise). Two pilots and two navigators pile their gear in the aircraft and off they go. Where is the C of G? Well, probably about two feet aft of the tail. But let's see: with full tanks, two pilots, two navigators, and eighty pounds of baggage in the aircraft the C of G is within limits. But if two of the crew throw their chutes in the back instead of putting them in the stowage, and if the nose tank is used first, the C of G will move back beyond the aft limit. And what happens to it if one of the pilots goes aft to the washroom is best left to the imagination!

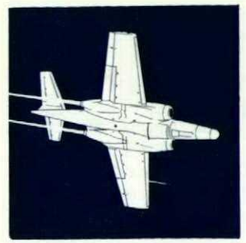
The situation is often even worse than this, because in many Expeditors the baggage compartment is a favoured stowage place for safety equipment. Also, unfortunately, most aircrew pile all of their baggage at the rear, and top it off with a few parachutes and their lunch.

If this gives you a picture of all our RCAF Expeditors plowing up and down the airways with their centres of gravity beyond the aft limit, you're probably right. And don't forget that their improper fuel management and the airman who wants to get home for the weekend will make matters even worse.

But perhaps all this isn't too important. Obviously we've been getting away with it for years.

Or have we?

ARRIVALS and DEPARTURES



Hors D'oeuvre

A CF100 was in for a P100 inspection. The canopy had been removed and shipped to the contractor for repair. Due to a shortage of serviceable canopies, a tarpaulin was used to cover the cockpit area. Following a rain storm the engines were runup for an engine and generator balance check. The AETechs had rolled the tarpaulin back to the rear cockpit and secured the starboard side to the engine mount. During the runup the edge of the tarpaulin entered the port engine air intake and several inches of heavy zipper was sucked into the engine. The intake guide vane and compressor blades were damaged. This costly engine had to be changed.

What kind of men are these technicians? They are gp 3 AETechs and, according to their superiors, are competent and well thought of. Now you may well ask, "Why did they allow this accident to happen?" Simple, they just didn't think. When you are detailed to runup the engines in a CF100, you are not playing with a toy. Extreme caution is necessary. Accidents such as this are a luxury the Air Force can ill afford.

Nene Air Casing Failures

During a normal starting procedure in a T-33 an explosion, which blew a hole in the bottom of the fuselage, occurred as the power was advanced to 30%. Investigation disclosed the explosion was caused by a split air casing on number 6 burner. It was evident that the casing has been cracked prior to start up and the explosion through the fuselage was caused by ignition of leaking raw fuel and fuel vapours. Damage in this case extended to the number 6 flame tube, nozzle guide vanes and many components of the lower fuselage structure. On the flight prior to this incident, two student

pilots smelled exhaust fumes for a few seconds during a GCA overshoot but did not report this as the fumes did not reappear.

The faulty air casing was found to have all modifications embodied and had flown 153 hrs since overhaul and 20:40 hrs since the last periodic inspection.

When an air casing fails or cracks, the cooling air is not retained and a hot spot may develop which can burn through the nozzle guide vanes and turbine blades. Generally, damage is averted if the crack does not open or spread.

The cause of these crack failures is attributed to fatigue, hastened by the pulsating action of the gases through the air casing. The contractor has recently been able to duplicate in-service failures by scratching the interior of the casing and subjecting the casing to pressure fluctuations in a water test bed. A modification is presently under development which will prevent a crack from enlarging or opening and will thus keep damage to a minimum. But in spite of continuing investigation into the causes of air casing failure and several modifications, failures continue to occur.

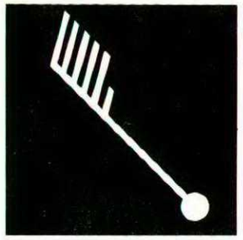
In-flight failures do not follow any pattern, however in each case there were symptoms noticeable to the pilot. It is extremely important to be familiar with these symptoms and to take immediate action. Any one of or all of the following symptoms may be experienced.

- JPT higher than normal
- Increase or fluctuation of JPT without throttle movement
- Smoke or fumes in cockpit
- Amber over heat or fire warning lights

on.

If any of the above symptoms are experienced power should be reduced to minimum necessary to ensure immediate landing at the nearest suitable airfield. It is then essential to report the symptoms through the L14.

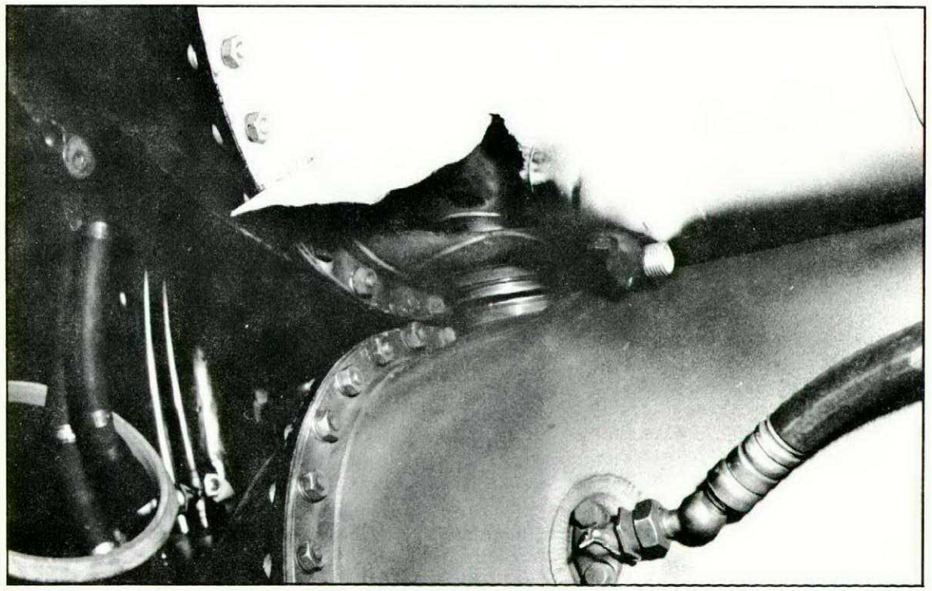
If the two student pilots who flew this T-33 on the previous flight and smelled exhaust fumes had reported through the L14 this explosion might have been avoided.



Crystal Ball

Unforecasted strong winds gusting up to fifty miles per hour struck the aerodrome and swung five of the aircraft, which were parked on the tarmac reading for night flying, into each other.

The duty meteorological officer who had been scheduled to work the evening shift was on his own for the first time. During the previous two weeks, after reporting to the station from the third phase of the meteorological officer's course at RCAF Station Trenton, he had always been on duty with one of the other met officers.



At approximately 2040 MST, the met officer tracked storm echoes west of the station on the Decca weather radar screen and estimated them to be travelling south east at 20 miles per hour. He also estimated that the path of the storm would carry it past the station about twenty or thirty miles to the north. He expected the station to get only light rain and little wind change from the fringe of the storm.

Between the time of this observation and approximately 2015 MST, the met officer was occupied with preparing a night flying briefing and, with briefing the pilots on the weather to be expected during the evening.

You've guessed it. When he had completed the briefing and returned to the Met Section, he saw, by the radar, that the storm was going to pass directly over the station. He rushed back to inform the OC Night Flying and the OC Flying, but the rain had already started and the wind had increased to 55 miles per hour. The groundcrew did not have sufficient time to turn the aircraft into wind. The high wind was of short duration but strong enough to swing some of the aircraft even though their parking brakes were set. Five aircraft suffered D category damage.

There is no doubt that the met officer's lack of experience in interpreting and assessing the significance of the weather as it developed was the major cause factor in this accident. No doubt he has learned a lesson--but what an expensive way to learn. Perhaps we can all learn a lesson here: When trying to figure the weather, it is always better to err a little on the safe side.

David and Goliath

A Chipmunk checked normally during run-up and takeoff. At 1200 feet the engine quit, but it cut in again when the throttle was closed. When the pilot again opened the throttle, full power was maintained for a short period. Then the engine quit a second time and refused to operate above idle rpm.

The pilot set up a forced landing and glide approach, touched down successfully, and shut down the engine when he was clear of the runway.

A technical investigation disclosed that a small insect had become jammed at the inlet side of the main carburettor fuel jet. How this bug ever got in the carburettor is still a mystery—but now we've heard them all!

Correct Procedures

Reading your Sep - Oct issue I noted, with surprise, the specific mention of Stn Saskatoon in a Near Miss Report "Peripatetic Pins". The specifying of a station by name was in itself surprising but the outline of an incident which could have been investigated, if reported promptly, was even more surprising. I have two comments on this item:

(a) This unit recently had an accident which was a parallel to "Peripatetic Pins". The procedure followed was to inform the station concerned by signal giving the bare essentials. This signal was followed by an information copy of the "Near Miss Report" with complete details. This action gave the unit an opportunity to correct a dangerous practice before more harm was done.

(b) EO 05-50C-7, After Flight Check, item 9, and EO 05-50C-1, part 2, para 88(d), specify that landing gear safety clamps will be installed after flight. The pilot interrupted a correct practice with a personal and incorrect instruction. All orders stipulate that the pilot is responsible for correct installation and stowage of safety clamps, locks and pins. Any help tendered by groundcrew in holding his harness, fastening his chute, or putting away his pins is subject to his approval and is a courtesy assist. I do not feel that any groundcrew error was present as the pilot should have stowed the unwanted pins personally.

I have found "Flight Comment" an invaluable aid to an interesting and active flight safety program here on the field and read with particular interest your letter from F/L Lambeth on the fuel system of the Mitchell. So don't let one goof restrain your enthusiasm.

J. A. Ling, F/L
RCAF Stn Saskatoon

(The naming of a station is not against Flight Comment policy, if we are not finger-pointing. This particular Near Miss was reported as received, and the story to be learned was self-evident.—ED)

Treasure Trove

Attached is a photograph which we think you will find interesting. The debris depicted was picked up on the morning of Aug 20th, on a routine twice daily runway inspection by the SFCO and USAF aerodrome officer.

These regular inspections usually produce their quota of nuts and bolts, but this was considered to be an exceptionally good haul. The list is quite impressive, but don't ask us how they got there. They were not there 12 hours previously. Here is what we found:

16 assorted bolts and screws, 1 nail, 7 nuts, 7 dzus fasteners, 1 1/4 spacer, 1 dzus fastener spring, 1 electrical line clip and bolt, 6 cowling fasteners, 1 metal clip, 1 piece insulating rubber, 1 piece bonding wire, 2 pieces electrical conduit, 1 jagged metal fragment, 1 3/8 x 7/16" box end spanner, 1 piece of rat-tail file, 1 rubber seal, 1 metal cowling clip, 2 jacking pads of unknown origin, 1 part of an electrical fuse, 1 motorcycle spoke nut, 3 pieces bowden cable.

Other interesting items which we have picked up in the past include one complete flying suit, 25 feet of grounding cable, numerous dog tags (USAF), and others. Our sweeping program is being upgraded and we are taking more interest than ever in runway cleanliness.

We are wondering whether this station is unique in the amount of rubbish picked up, or whether you have had similar conditions or other aerodromes. In any case, our flying control officers are aware of the dangers inherent in a dirty runway and are doing an excellent job despite certain inadequacies in our runway sweeping equipment which we are working hard to remedy.

A. G. Carswell, S/L
RCAF Stn Goose Bay

(This problem has been written up in recent issue of Flight Comment under the banner "Pattern for Disaster". We have been trying to point out the dangers of foreign objects and are pleased to see such activity in the field. To assist in the program a booklet, entitled "Aircraft Jet Engine Foreign Object Damage Prevention", has been issued to all units to assist in the control of foreign objects.—ED)

Anti-collision Lights

As an active pilot in the RCAF, I encounter a situation that both irritates and worries me to the extent that I must appeal to you for an expression of clarification.

The possibility of a mid-air collision is a real and recognized hazard within the RCAF which is becoming daily, with increase in air activity and increase in speed, a potentially more dangerous possibility.

Why, then, is the RCAF reluctant to incorporate a device on the aircraft that would greatly reduce the hazard of a mid-air collision? I refer, in particular, to the installation of anti-collision lights on ALL RCAF aircraft, especially those involved in transport, training, or communications duties.

The danger of collision, especially under VFR conditions, has been tragically exhibited by several fatal accidents, both in Canada and the US, and needs no further amplification. Flight Comment and Flight Safety magazine frequently report accidents involving aircraft landing on one another; taxiing, at night, into one another or, passing sufficiently close to one another that a change of underwear is required. Is it enough that we simply brief pilots of the problem and print posters outlining the danger? Obviously the D.O.T and U.S. Civil Aeronautic Administration believe this to be inadequate and, they have encouraged the installation of rotating beacons to the extent that the great majority of Civil Air Carriers (almost 100%) and executive private aircraft are equipped accordingly. The D.O.T. are considering making rotating beacon equipment mandatory.

There seems to be some inconsistency in the degree of urgency applied to this problem by the RCAF. While modification kits are available for Dakota aircraft, VIP Mitchells, recent evaluations on C-45 aircraft have proven non-acceptable. This is peculiar when considering the number of civil, acceptable installations. And, there are many other service aircraft requiring installation including: North Star, Argus, Neptune, Harvard, Otter, and several others. Are we guilty of using evaluations as delaying, or decision postponing tactics? It would seem so when you consider that the rotating beacon has been on the market successfully for the past three years. Surely our activities and position in Canadian Aviation dictate that we lead in the field of Flight Safety development rather than follow so conspicuously behind.

Although this is, necessarily, only one man's opinion, I know the feeling is shared by numerous other active, day to day, pilots. To realize the full beneficial impact of installing the rotating beacon, one need only view night activity of such aerodromes as Malton, Dorval, or Vancouver (or even Uplands).

If the RCAF is sincere in its appeal for pilots to be more Safety Conscious, surely the installation of the anti-collision lights would be a concrete expression of that sincerity.

R. Morris, F/L
RCAF Stn Saskatoon

(To put everyone in on the picture the following is a rundown of the situation to date:

Dakota	- Complete - Odd one not fitted but kits are available.
North Star	- Complete
C5	- Complete
Comet	- Complete
Bristol Freighter	- Complete
C119	- Final three approved, should be finished by 1 November.
Mitchell	- VIP aircraft complete - Bristol (Western) are prototyping kits for remainder.
Expeditor	- Decision passed to AMC to fit all C45 aircraft immediately with one light.
Canso	- Decision awaited regarding replacement aircraft. If no firm answer by 1 November Canso's will be modified to increase electrical capacity and one light will be fitted to the fin.
Argus	First six in for retrofit now. All new aircraft are fitted on production. Numbers seven to eleven will be done during first half of '59.
Neptune	Kits delivered by 20 April 1959.
CC106	Will be fitted on production.

DFS has recommended priority installation of anti-collision lights on all other RCAF aircraft not listed above—ED)

Comments on "Comment"

I read with much interest the September - October issue of Flight Comment.

Your article "Maintenance Pulls" certainly painted a hard picture against the groundcrew. It was a "shocker" to me and my associates. It certainly behoves us to take drastic steps to effect a tighter control on aircraft supervision, particularly following the performance of any maintenance function.

In the way of comment I would like to point out what is believed to be an error in the article "Refuelling Dilemma." You are right when you say that the NCO is correct when he did not enter fuel state. However, I believe you incorrect when you say he did not leave word for the day crew concerning the fuel state of the aircraft. When maintenance organizations commence to affix pieces of paper to L14s or leave separate notes about such things as "Fuel State" of aircraft we are immediately guilty of untidy maintenance administration. The error in my opinion, lies with the day shift personnel who failed to recognize an uncompleted L14. It has been the experience of the writer that the cure to such problems is to enforce existing EOs and Flight and Section Orders, rather than use "bits of paper". After all, why not use existing orders.

If I may be permitted to comment further, I would like to state that in our T-33 aircraft we use AVTAG fuel instead of AVGAS as indicated in the view of aircraft being refuelled on page 18 of Flight Comment.

Your article "Clobbered on the Ground" is

so true, and it hurts when we confess to participating in the total score. It has been increasingly apparent for some time, that far too many aircraft are damaged on the ground by poor handling. The tractor operator is the largest factor in these accidents. The writer feels that the task of towing (operating the tractor) should be vested in the ME career field. It is not fair to expect a trained technician to tow aircraft with a minimum of driving experience. The facilities do not exist within the maintenance organization to properly train tractor drivers. While at Winnipeg several years ago, I used OPMME's to drive the aircraft towing tractors for a six week trial period. The test was an unqualified success. Not a single aircraft was damaged, no tempers flared and less tractors were required to do the job. In addition our tractors enjoyed a serviceability unheard of before. The tractors were clean and well kept as the OPMME did routine mechanical and cleaning jobs in between aircraft moves. The worst that can happen to a technician if he happens to "bump" an aircraft while driving, is possibly a fine and withdrawal of his ME6 (which he never really wanted in the first place). The OPMME has to be a good driver, it is his bread and butter.

And now, Mr. Editor, let me thank you for this opportunity to comment on various articles in such a top notch publication as Flight Comment.

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400 (F) Sqn (Aux) Support
Toronto, Ont

(DFS, in the article "Refuelling Dilemma," is not recommending the use of "bits of paper" and agrees with F/L Millar's observation. After all that is what the L14 is for. This Near Miss was reported as it was received. Refuelling a T-33 with AVGAS was intentional (see bottom of column 1, page 23 of the September - October issue of Flight Comment).—ED)

THE "RED-FACED" NURSE

A Dakota from 121 C&R Flight was dispatched on a Mercy flight over the mountains, and was flying at an altitude of 12,000 feet. The Nursing Sister on board, being a generous, helpful soul, opened a thermos of coffee for the crew. The thermos was the conventional two quart size and design. Her lapse of thinking at this time proved disastrous as the cork blew out and a rush of hot coffee caught her full in the face. The Nursing Sister was indeed "Red-Faced" for several days afterwards.

FLIGHT COMMENT

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DIRECTORATE OF FLIGHT SAFETY
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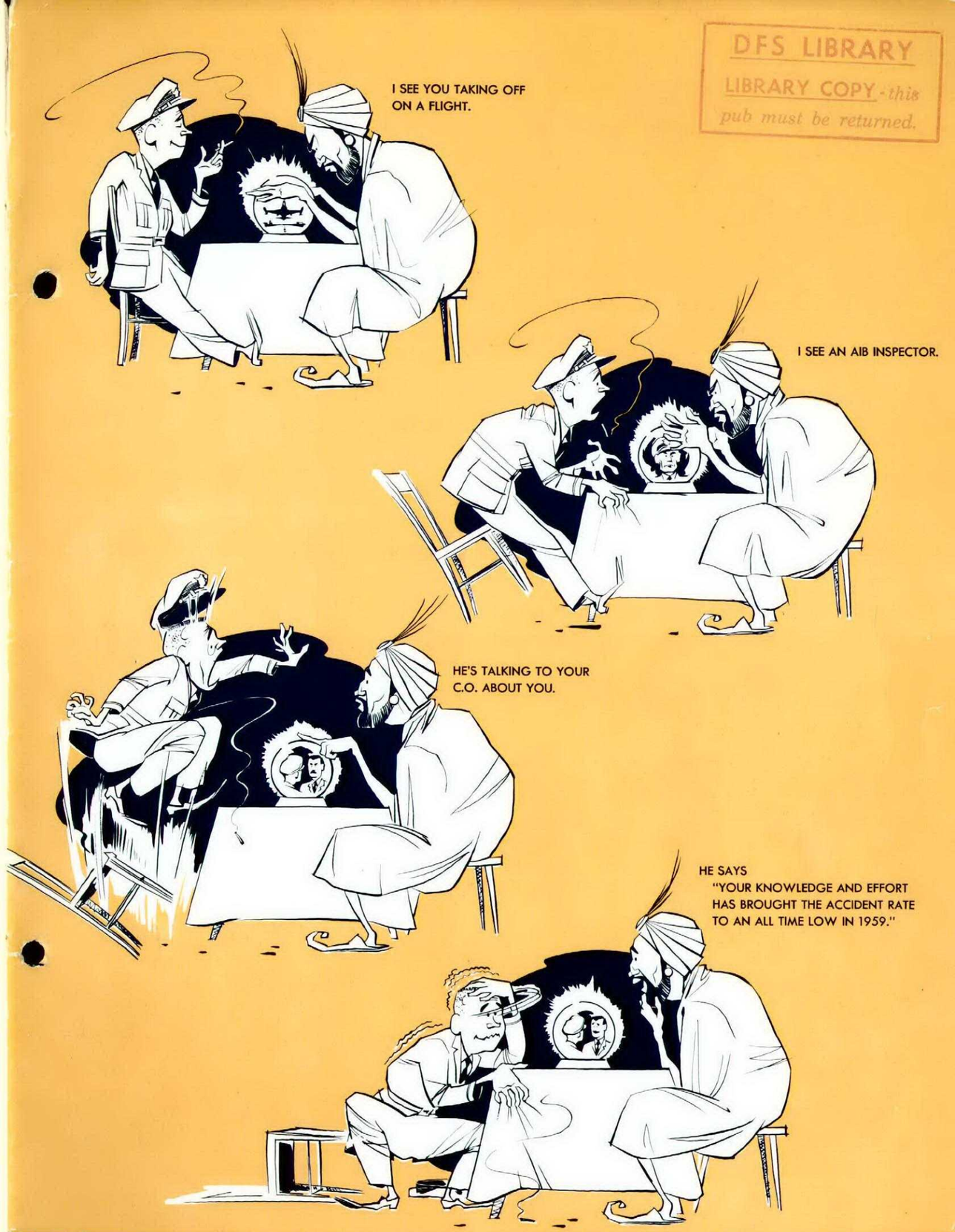

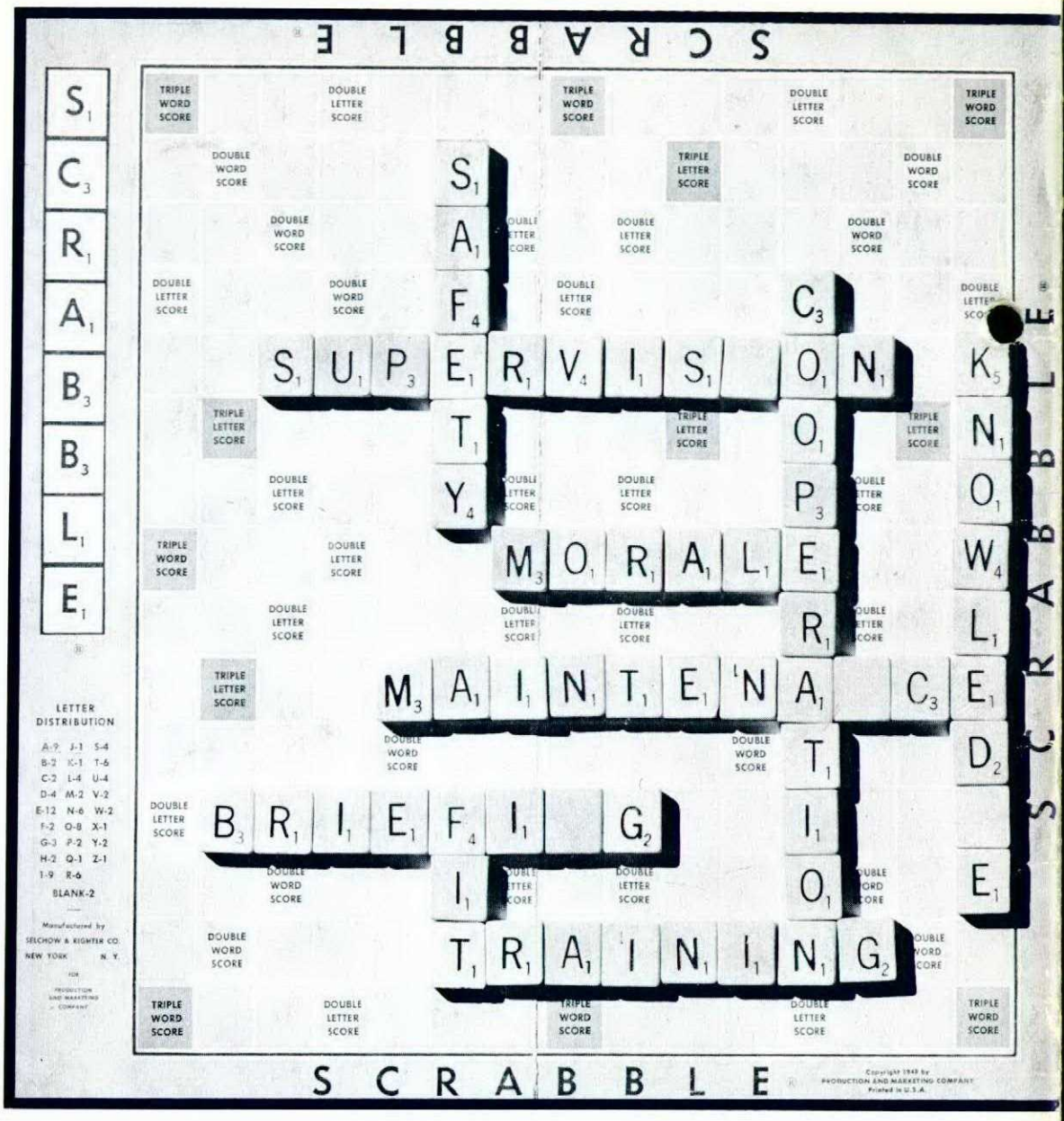

Scrabble means to scrape, paw or scratch with the hands or feet. Well we had to scrape pretty hard to get the proper message to appear on this scrabble board. Each word has a direct bearing on our accident prevention program in 1959. Have you got the word?