

F E B R U A R Y

1 9 5 8

# ***FLYING SAFETY***

U N I T E D   S T A T E S   A I R   F O R C E



HUMAN

FACTORS

**LOOKING  
AT  
YOU**



Lieutenant General Elmer J. Rogers  
The Inspector General USAF  
Department of the Air Force

Major General Howard G. Bunker  
Deputy Inspector General  
The Inspector General USAF  
Department of the Air Force

Major General Joseph D. Caldara  
Director of Flight Safety Research  
Norton Air Force Base  
California

Colonel Daniel M. Lewis  
Supervisor of Flight Safety  
Publications

Lieutenant Colonel Ralph R. Springer  
Chief, Editorial Branch

•  
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**Assistant Editor**

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**Managing Editor**

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M/Sgt Steven A. Hotch

**Production**

Major Ben H. Newby

**Editorial Assistant**

Amelia Askew

**Distribution**

WO Robert Blum

•  
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## File Thirteen

Coincidences will happen. Take for instance the fact that we chose the month of February to talk about Human Factors—and the happenstance that this is also the month for Valentine's Day. Some observant lad may suppose that this fact had something to do with our choice of subjects for the month. Admittedly, there was a lot of mental gymnastics going on during the process of pairing subjects to months, but the business of Valentine's Day didn't enter the discussion.

The choice was really a simple one. All that had to be done was to answer the question, "What problem area affecting safety of flight will pay the biggest and most rapid dividends as a result of serious study and action?" The solution: People. In one, two, three order, the plan was obvious. Recognizing that the Commander could effect the quickest change in the scene, we discussed the problem as related to the Commander in January. Our discussion for February follows logically—Human Factors: What makes men tick—What makes them good, bad, or indifferent.

Recently, my boss, General Caldara, was asked, "What is a good pilot?" Here is his reply. "Of the twelve separate and distinct definitions of what is meant by the word 'good' in Webster's Collegiate Dictionary, the first is, 'Sufficient or satisfactory for its purpose.' Definition number nine, however, seems to apply much better to the flying business. It is, 'Of comparative excellence in its kind.'"

"In the Air Force our 'good' pilots are professionals, excellent in their kind. They pay constant attention to details. They do what they are supposed to do—when they are supposed to do it—the way they are supposed to do it.

"The 'good' pilot flies safely. Flying safety to him is a way of life—a 'code.' And yet, this way of life cannot be negative, flight-inhibiting, operation-limiting pattern.

"The Air Force pilot must train continually for his basic mission—the defense of the United States. He must train for that mission with the facilities and the equipment he has available to him. He must do this as safely as possible.

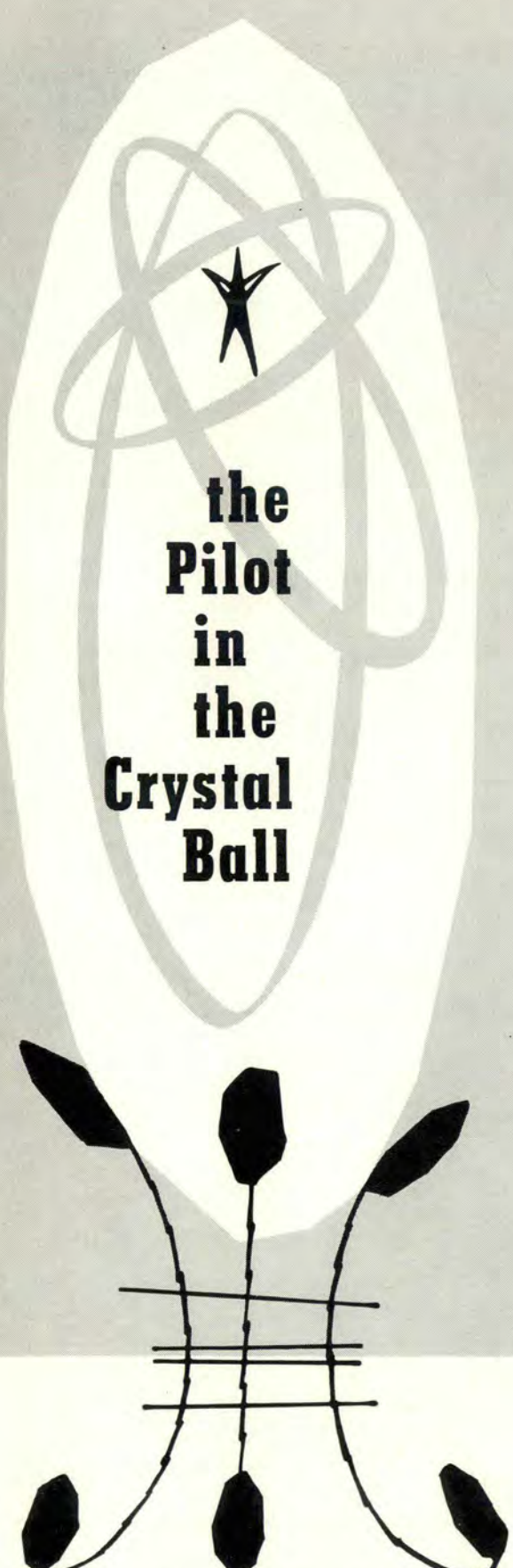
"Only then can he be a 'Pro,' a 'good pilot,' excellent in his kind."  
'til March,

*Vernon R. Stutts*

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# the Pilot in the Crystal Ball

Anchard F. Zeller, Ph.D.  
Aero Medical Safety Division, DFSR

**O**NE QUESTION IS ASKED REPEATEDLY: Can man cope with the demands of flight in the high mach number, high altitude ranges of the future? The number of pessimistic articles over the past several years indicate that there is considerable doubt regarding the future of manned flight.

Many of these articles stress the idea that man has almost reached the limits of his capability and that the era of the piloted aircraft is rapidly drawing to a close. In the face of these prophets of doom, it is refreshing to report that a recent study conducted by the Directorate of Flight Safety Research does much to suggest that there is currently no insurmountable operator deterrent to advances in flight altitude or performance.

Although there had been a consistent decrease in the jet fighter accident rate for a number of years, a question of paramount importance was whether or not this decrease could be expected to continue with the introduction of high performance jet fighters.

A second problem—directly related to the first—was whether this high performance would result in a marked increase in the portion of the accidents which were attributable to pilot error.

In view of the fact that Century Series fighters have now been in use for almost five years, it was considered that enough evidence had been gathered to support a critical analysis of the kinds of accidents and errors being experienced. Contrary to some expectation, the accident rate was quite good.

As is the case with any new aircraft introduced into operational use, the first few months of such use reflected a very high accident rate. This was, however, no higher than that experienced by past fighters with considerably lower performance characteristics. The initial high peak was followed by a rapidly declining rate so that by the end of nine months of operational use, the rate had decreased so that it compared favorably with that of other fighter aircraft. This is a remarkable accident record.

From the standpoint of the pilot, an equally or even more gratifying finding is the fact that those accidents which did occur were primarily the result of materiel failure. Forty-one per cent—two out of five—of the accidents involved this type of breakdown. The pilot, on the other hand, was considered the responsible agent only 29 per cent of the time. When it is considered that repeated studies have consistently revealed errors on the part of the pilot to be the cause of half of all aircraft accidents, this finding is remarkable.

Although the pilot's contribution to these accidents is less than in the past, the high performance characteristics of the aircraft have made minor mechanical deficiencies of major import and have emphasized the need for precision maintenance. The challenge to maintenance personnel is indicated by an increase in the number of accidents charged to maintenance errors. One in nine accidents which occurred was the result of some type of maintenance deficiency.

When the phase of operation in which the majority of the accidents occurred was considered, it was apparent that landing was critical and that the landing roll portion of the landing was particularly so. Over one-fourth of all the accidents evaluated occurred during this phase. This high proportion is readily understood when it is recognized that this is the portion of flight during which the pilot transitions from three-dimensional to two-dimensional flying.



This transition is accomplished by highly complex hand-eye coordination manipulation which requires precision accomplishment.

The higher speeds and high angles of attack reduce the margin of error to such a point that even minor deviations result in the precipitation of accident situations. It is in the precision accomplishment of the landing process that greater accident prevention potential lies than in any other of the human failure areas.

Although the landing process, as such, accounts for the greater proportion of pilot error accidents, the type of accident which occurred with greatest frequency was fire or explosion in the air.

Engine or power failure or a flameout were also very frequent types of accident cause factors. When you recall that materiel failure plays such an important part in these accidents, this finding is not surprising. As you would expect, the greater proportion of the accidents involving these conditions were not charged to the pilot.

It is also apparent that the high performance designed into modern aircraft has placed greater demands than ever before on the power plants and structures—particularly the landing assembly. The correction of deficiencies in these areas will be required before greater performance can be achieved. This means that for the first time in many years, even the statistics show that engineering and materiel considerations have become more important than operator limitations in the progress of manned flight in higher performance aircraft.

One implication of higher performance is the decreased margin for error which is permitted the human operator. Although the record gratifyingly indicates that the man can handle the product of the engineer's design, an evaluation of the human error accidents which did occur shows clearly that precision accomplishment of all procedures is mandatory.

As has been the case with other aircraft the first few hours of experience in the model is of critical importance; the first few in this case is the first 35 or 40. Past that point the accident potential definitely decreased. In general, pilots who had greater amounts of total jet experience had lower Century Series accident rates even though they had comparable time in Century Series aircraft.

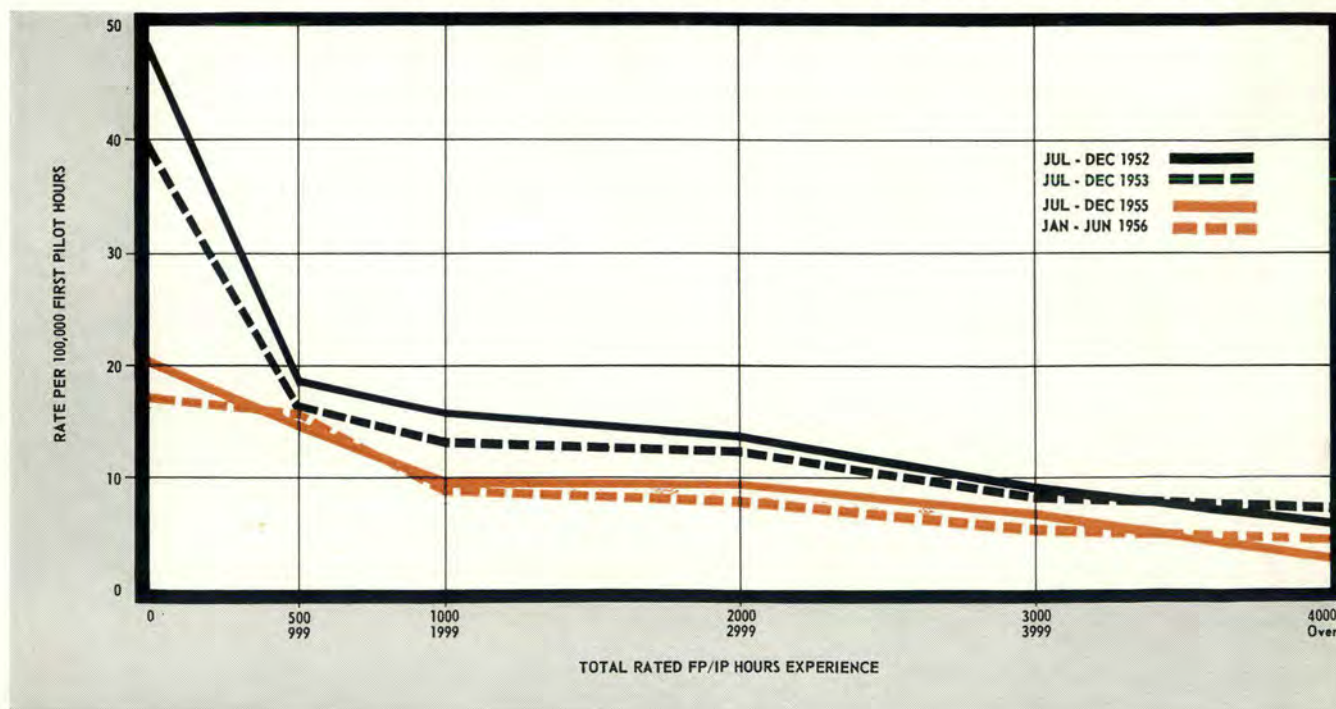
As would be expected, increased time in the Century Series was definitely conducive to lower accident potential. For pilots who had less than 500 total hours of jet experience, the rate during the first 50 hours of Century Series flying was approximately three times as high as was the rate during the next 50 hours.

A question which has repeatedly been asked is "how much flying is required to maintain proficiency?" The answer to this question becomes rather complicated because increased proficiency and lowered accident rate may not be synonymous. In general, it can be said, however, that increases in current flying lead to a lowering of the accident rate. Evidence also indicates that in high performance fighters proficiency is lost much more rapidly than in other types of aircraft and that the pilot who would keep his accident potential to a minimum must fly consistently.

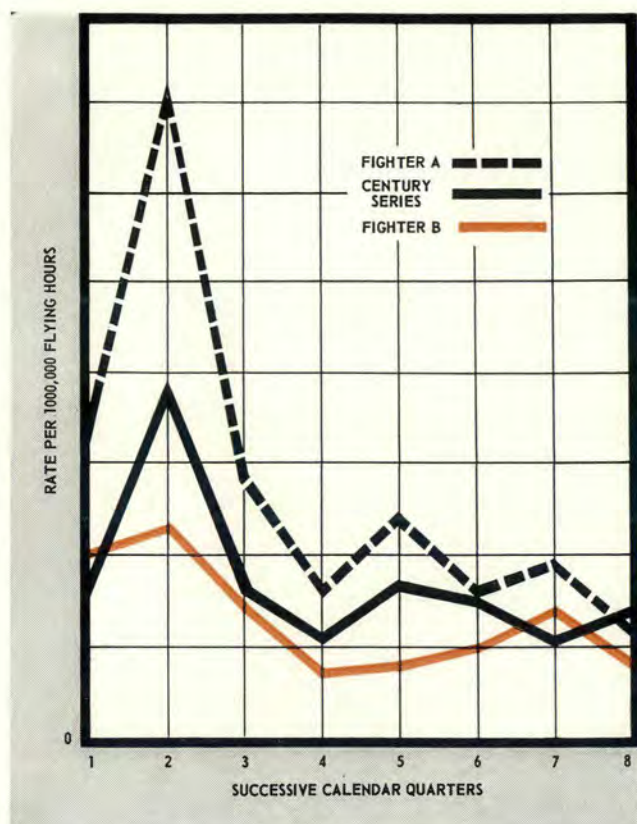
Although increased hours of flying is one way of obtaining proficiency, a factor of equal or even more importance is how the pilot spends the time that he does fly. The maximum utilization of all time available is the best guarantee of decreased accident potential and increased proficiency. This point is emphatically brought out by the relation of the knowledge of flying procedures to the accidents which were experienced.

In order to obtain a sound practical evaluation of this, Lt. Col. William H. Lewis, currently assigned to the Fighter Branch of the Directorate of Flight Safety Re-

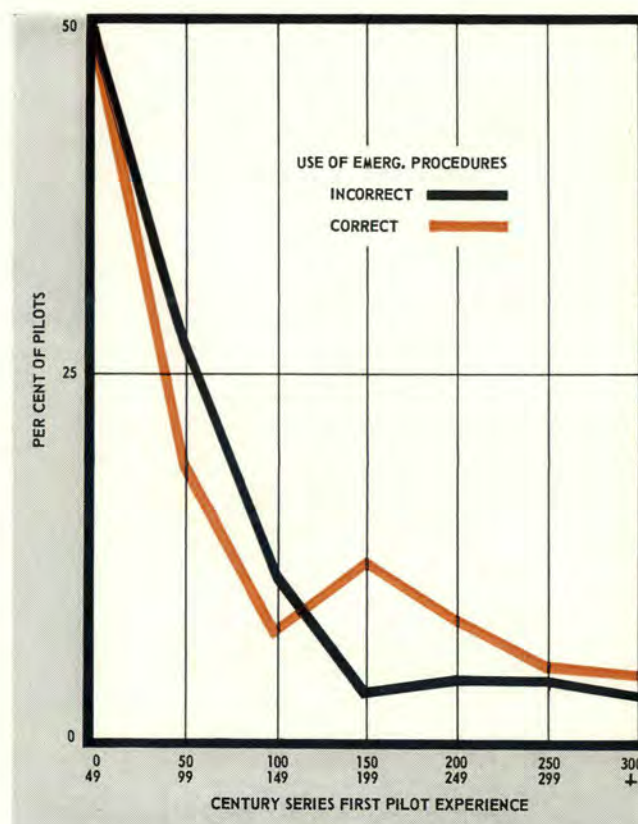
Major aircraft accident rate trends by levels of pilot experience considered over four 6 month periods.







Rates of three jet fighter models following earliest operational flying.



Century series pilot use of emergency procedures by experience levels.

search, examined the accident histories of a large number of Century Series aircraft. He wanted to determine whether the use of prescribed emergency procedures could have prevented the accident and if this were the case, whether such procedures were followed.

Before being assigned to his present position, Col. Lewis was for two years the commander of a squadron flying Century Series aircraft. During that time his squadron experienced only one accident and that was charged to materiel failure.

The results of his evaluations indicated that emergency procedures were necessary in almost 95 per cent of the cases. They were used in approximately 85 per cent but that over half of the emergency procedures utilized were incorrect. This emphasizes the fact that in a piece of equipment where materiel failure is relatively frequent, the pilot must be aware of the procedures designed for handling the situation—or an accident will result.

One interesting factor associated with the inadequacy of emergency procedures was that increased F-100 experience did not appear to be associated with an increased proportion of correct emergency action. This is very simply explained. Emergency procedures are a precise type of action which is required only during an emergency.

If a pilot experiences an emergency early in his flying, his ability or inability to cope with it is tested early. If, however, such an emergency does not occur until considerable experience has accumulated, his ability to cope with it is no better developed than it was during his early

hours of flying—if he has not in the interim become familiar with the required emergency action.

Indications are that the precise emergency corrective actions are not being practiced to the degree which is compatible with accurate accomplishment during a real emergency. This reemphasizes the point previously made that proficiency is not only a matter of the number of hours in the air but is equally a matter of the way in which this time is spent.

Taken as a whole, however, the evaluation of Century Series fighter accidents indicates that man is prepared to continue higher speed, higher altitude flight if the engineers:

- Can provide the equipment which is consistently capable of attaining this increased performance;
- Can furnish the crew an environment in which they can function adequately;
- Can develop mechanical aids which will assist during the critical portions of flight, particularly during the landing phase.

Other studies have indicated one other area in which improvement is essential. This area is in the development of more positive traffic control methods.

There is no indication that there is any limit to the era of manned flight, even high performance military flight. The present generation of Air Force pilots need not be concerned about their ability to handle projected equipment. But they must think of flying as a highly technical skill which can be accomplished successfully by diligent study and precision practice. ▲



With special emphasis on the human side of things, we continue our Air Weather Service series on Who Watches The Weather. This time . . .

# The Lady Speaks



Who watches the Weather? I do. I'm the Air Force wife whose personal interest in matters meteorological far transcends my civilian counterpart's preoccupation with the aerodynamical characteristics of the family wash in a stiff breeze.

*(Ed. Note: What'd she say?)*

To begin with, my husband's aerial activities are an integral part of our home life. Junior's first croup was likened to the nerve-shattering sound of an off-pitch prop, and to this day, he doesn't walk to the corner store, he blasts off to the commissary. Don't get me wrong; this is the air age and nobody knows better than I do that I'm part of it.

*(Ed. Note: That's better!)*

Through two wars and jet transition, I've lived with and loved a flyboy. I wouldn't change him for all the Harris tweed in Scotland; I've exulted at his success, groaned at his setbacks, and through it all, I've realized that his life and our happiness depends, in no small measure, on his attitude toward flying safety.

*(Ed. Note: Good Girl!)*

Quite naturally, our dinner table conversations have been liberally spiced with alphabetical monstrosities which appear





as unintelligible jargon to our earthbound friends. Our vocabulary includes RSDU, PFSV, GCI and the rest. I really don't mind and I'm happy just to know they exist—and know what they mean. The "why" is self-evident; everyone of these aids help the Great Man to leap from the bird with a joyous smile, clasp me to his manly bosom, and log a few more safe hours in the blue.

(Ed. Note: We'll buy that.)

Father's tiger blood, however, sometimes shows, particularly after a reunion with one of his old war pals. When it waxes warm, the children and I go into "Operation Psychology." His deeds of derring-do with his trusty P-38 are again adoringly heard, the trophies he liberated are lovingly exhibited, and we convey the impression that he's the MOST in a very convincing manner.

(Ed. Note: Are there any more at home like you?)

But—when that reminiscent gleam in his eye verges on the anticipatory and he audibly conjectures on the possibility of split-essing a Gooney Bird with no hands, we shift our mental gears. We're very nice about it. He's our hero but he finds several dog-eared copies of FLYING SAFETY next to his pipe and slippers in the living room that evening.

(Ed. Note: A reader is a reader, even if he's dog-eared.)

As has been indicated by other authorities, it's so nice to have a man around the house. From my point of view, that lyric can be shortened to "It's so nice to have a man." When Lover Boy is so irresistibly drawn to the hearth that he sticks his wrinkled neck out, I ought to be flattered but I'm not. Hacking 100 and ½ just to escort me to a cocktail party doesn't strike me as sensible. Now while I'm the most gentle of women, such disregard of flying safety will be followed—at the very least—by Friend Husband and Rover becoming close companions during those long winter nights.

(Ed. Note: Know what she means!)

When the Family Provider is 'way up there and due back, I'm 'way down here, peering out the window. Visibility markers? No Stormy Joe every squinted for runway lights like I do at the neon tubes over Nick's Meat Market. Ceiling heights? My criteria are simple; he should or he shouldn't, and when the top of the radio tower is obscured, he shouldn't. Terminal met watch may be new to you, but not to me. My observations are unofficial but the permanent crick in my neck will receive honorable mention when I reach the Great Beyond.

(Ed. Note: "Rawger, tower, got the field in sight. Nick's Meat Market off the aproach end.")

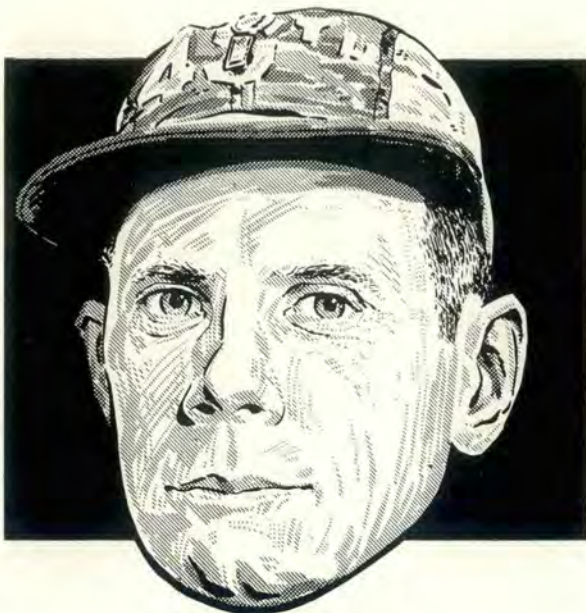
Yes, I watch the weather and I talk a good flight, but I can't switch the tanks for him or use his radio. However, the Air Force is interested in keeping him from the wooden overcoat brigade and so am I—and my contribution, I like to feel, helps.

(Ed. Note: We're with you!) ▲

*Unleash Wyfe*



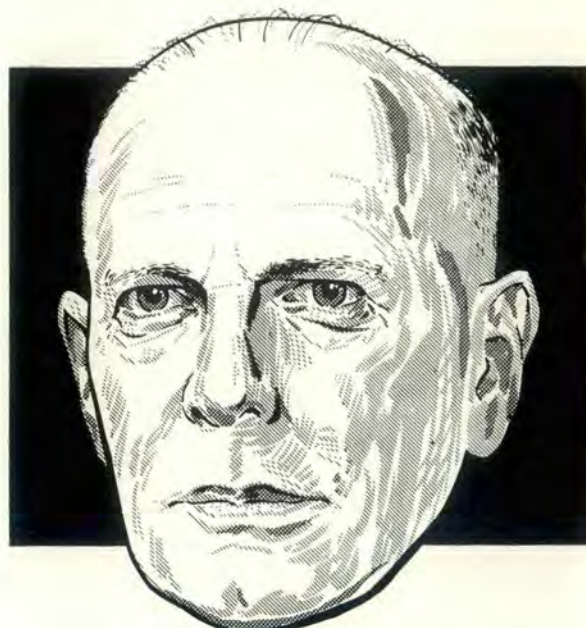




*First Lieutenant*

**FREDERICK E. SCHWAB**

*45th Fighter Sq.*



*Colonel*

**RALPH G. VAUGHAN**

*307th Bomb Wg.*

## K N O W L E D G E

## WELL

**1**ST LT. FREDERICK E. SCHWAB was test flying an F-100D recently and everything was checking out with the test card until he reached 30,000 feet. At that altitude the alternating current load-meter indication dropped to zero and the AC "Generator Out" light came on. While Lt. Schwab was in a turn back to base, the oil pressure dropped to a dangerously low reading. This reading indicated that the generator housing had failed and that the engine oil was escaping through the break.

To add to Lt. Schwab's troubles the radio transmitter failed on all channels. Unable to declare an emergency to the tower, Schwab found himself back over home base with a B-47 sitting on the takeoff end of the runway. With engine power cut well back to prevent seizure from oil starvation there was only one chance to alert the tower to his emergency. A fast, low wing-waving pass was made across the field, then a pullup to look the situation over. Both the tower and the B-47 pilot realized the F-100 was in trouble and the B-47 expedited its takeoff in time for the Lieutenant to set up his pattern for a landing. The landing was made with the throttle stopcocked to prevent further damage to the engine.

A clear and calm appraisal of an extremely difficult situation resulted in the saving of another aircraft for the Air Force. Well Done, Lieutenant Schwab!

**C**OLONEL RALPH G. VAUGHAN recently departed Biggs Air Force Base en route to Lowry in a B-25. While cruising on airways at 11,000 feet, the "Bomb Bay Door Open" light came on. Immediately afterward all hydraulic pressure was lost. The crew chief inspected the Bomb Bay section and found evidence of hydraulic leakage throughout the area.

The Colonel continued on course to Lowry where he made a number of unsuccessful attempts to lower the landing gear. He then turned the controls over to the copilot and went aft to the windswept cargo platform in the bomb bay. A quick inspection showed that a hydraulic line of the emergency braking system had broken. The only answer to the problem was a repair of this line using the material and tools at hand. To add to the difficulty, the repair had to be made by reaching over two and one-half feet of open space with the winter Colorado breezes sweeping in.

Colonel Vaughan made the repair by removing a piece of non-essential vent line, cutting it to size and replacing the broken piece. Tools available? A couple of open end wrenches, a pocket knife, water pump pliers and a Phillips screwdriver. The job done, spare hydraulic fluid was poured into the system, the landing gear lowered, and a normal landing made. Well Done, Colonel Vaughan!





*First Lieutenant*  
**RAY BLANCHETTE**  
 782nd Troop Carrier Sq.



*First Lieutenant*  
**FRED M. LIEBERT**  
 314th Troop Carrier Wg.

# DONE

## T R A I N I N G

**1**ST LT. RAYMOND BLANCHETTE was aircraft commander of a heavily loaded C-119 en route from Rhein-Main, Germany, to Burtonwood, England. Twenty minutes after takeoff, while cruising above an overcast at 8000 feet, he saw that the left engine torque and manifold pressures were abnormally high. After adjusting the engine controls to reduce these pressures, he changed his destination to home base, Evreux, France. There he intended to take full advantage of the complete maintenance facilities, correct the difficulty and proceed to England.

Ten minutes later the left engine backfired several times. Lt. Blanchette then decided to feather the prop and shut down the ailing engine. He looked back to check the feathering action and saw an intense fire streaming from beneath the cowl.

Within 20 seconds, this young pilot had pushed all the correct buttons and extinguished the fire. None too soon, either. Had there been any delay in his emergency procedures there would have been quite another ending to this story. As it was, the fire had already progressed as far back as the nacelle wheel doors and burned two large holes in them.

A single engine GCA landing in a snowstorm at nearby Bitburg then capped off an outstanding display of professional flying skill. Pretty tight flying for a young lad, we'd say. Well Done, Lieutenant Blanchette!

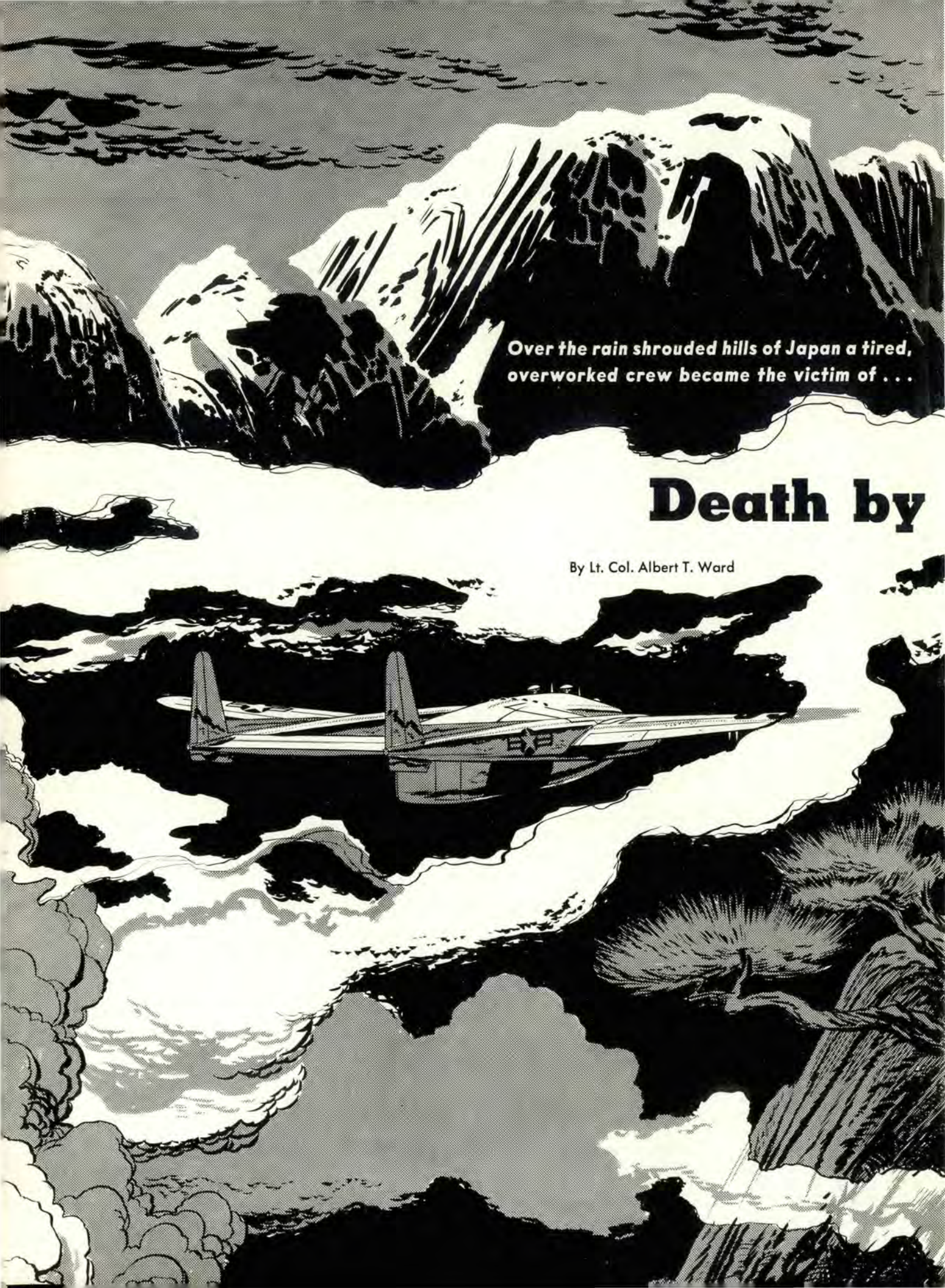
**F**IRST LT. FRED M. LIEBERT, as pilot of an H-21 helicopter, was recently assigned to make an aerial survey of possible assault landing zones for C-123 aircraft. This mission took him over heavily wooded, hilly terrain for the most part.

The Lieutenant and his single crewmember were flying at an altitude of 400 feet when the engine of the whirly-bird failed. With but a few seconds to act, Liebert went into an immediate auto-rotation and scanned the terrain for a possible landing site. The only half-way suitable spot was a small clearing bordered on two sides by trees, on one side by a power line, and on the other side by a deep ravine. In addition to its small size, this area was steeply sloped so that a slight bounce during the landing would be enough to overturn the copter.

Within 15 seconds after the engine stopped, Lieutenant Liebert had landed his H-21 safely. The area was so confined that the helicopter had to be partially dismantled and moved to better ground before the job of repair could be done.

The officers and men of the 314th Troop Carrier Wing are justly proud of their fellow pilot. His skill in performing a perfect auto-rotation under extremely adverse conditions prevented the loss of his aircraft and crew. Well Done, Lieutenant Liebert!





Over the rain shrouded hills of Japan a tired,  
overworked crew became the victim of . . .

# Death by

By Lt. Col. Albert T. Ward



THE PILOT STIRRED out of his lethargy as the radio compass needle indicated station passage. He reached up and grabbed the wheel and simultaneously released the automatic pilot. Turning to the right he said, "Jake . . . Hey, Jake, what's the next heading?"

His copilot came awake with a start and fumbled for the Radio Fac Chart, guiltily realizing that he had dozed off. Finding the chart on the floor of the cockpit he hastily flipped the pages, found page 38 and said, "Make it two twenty degrees, Dave."

Jake dug a computer out of his flying suit and figured the approximate time it would take to reach Iwakuni. He next pressed the mike button and called, "Itami Approach Control, this is Air Force seven-five-niner-niner-seven, over."

Itami answered and Jake gave his report, "Air Force seven-five-niner-niner-seven at six thousand feet over Takamatsu at zero-one-zero-niner, estimating Iwakuni at four-three."

Itami acknowledged the report and Jake settled back, reflecting that in a little over an hour they'd be back home at Ashiya. Boy, would he be glad to climb into

with three pilots along to take turns at the wheel, could a crew remain on duty for over eighteen hours.

They hadn't taken off from Misawa until five-thirty that afternoon so their crew duty hadn't started until three. By regulation, then, they had only been on crew duty for a little over ten hours. No one could stick him for violating regulations on this flight. Besides, regulations were only a guide. They couldn't possibly cover all situations.

Snow began to pelt against the windshield. Dave flicked on a landing light to see what the outside world looked like. Instantly a myriad of white flakes were reflected in the light—all seeming to hurtle toward the windshield. The C-119 began to bounce around a bit in light turbulence. He reached and turned on the wing heaters and propeller anti-icers. Next, he reached down and set the carburetor heat. "That should do it," he thought.

It looked to Dave as if he'd be able to log another hour of weather time on this flight. There certainly had been a lot for him to learn about flying during his past two years in Japan. He might even break two hundred hours of actual instrument time before returning to the States in November. Weather experience was easy to come by flying transports over here. By the time he got home, he'd have about fifteen hundred hours of flying behind him. The total time wasn't impressive, but he knew other pilots who'd been flying for ten years or more, and they couldn't touch that two hundred hours of weather time.

Abruptly his thoughts returned to the present and the immediate problem of getting to Iwakuni. "See if you can pick up the homer, will you, Jake?" he said. Jake picked up the Radio Facility Chart once again, checked the Iwakuni frequency and tried to tune in the radio beacon.

"The signal is coming in real weak. We're still too far out. Can't even get it on aural null yet," Jake said.

"Well, don't tune it back to Takamatsu; we're too far out for it to be reliable," Dave replied. "We'll just have to dead-reckon for ten or fifteen minutes more."

The C-119 was booming along at one hundred and seventy knots, flitting in and out of broken clouds. Snow streamed over the wings, and the light turbulence continued to cause slight changes in the aircraft's attitude and altitude.

Dave's thoughts turned to his wife Elaine. He thought of their conversation two nights before. Elaine had reminded him, "Don't forget that Sue's birthday party is all set for three o'clock Saturday afternoon. Please try

"Jake came awake with a start and fumbled for the Radio Fac Chart. He hastily flipped the pages, 'Make it two-twenty degrees, Dave.'"



## Degrees!

that sack. It was now Sunday and he could get up when he felt like it in the morning.

Squirming to get comfortable, he noticed that Dave was tracking outbound from Takamatsu at two twenty right on the nose. It'd take about 20 minutes before they could pick up the radio beacon at Iwakuni, 90 miles away.

Dave trimmed the aircraft and re-engaged the autopilot. Through the diffused red glow of the instrument lights he noted the engines were running perfectly. They had been hitting their ETAs over each station like clockwork, all the way from Tachikawa. Home was near.

He glanced over his shoulder and saw that the radio operator was asleep at his station, and the flight engineer's chin kept dropping on his chest. This annoyed him, and he was about to wake them up when he decided not to. After all, weren't they long past the time when he should have declared a crew rest? They had both put in a lot of extra hours working on that prop at Misawa.

As for Jake and himself, they'd been on the go since six-thirty that morning. It had been his decision that caused them to be flying home now instead of sacking in at Tachikawa. True, the entire crew had been eager to get back home again. That bad prop at Misawa had kept them stranded for an extra thirty six hours. It was cold in northern Japan in February, and none of them had brought enough warm clothing for an extended stay. Then, too, they were all a little short on cash. It was just two days until payday.

Sure, he knew that regulations prohibited crews flying when they were over-tired, but they were within the letter of the law. He and Jake had been out of bed for almost nineteen hours at that moment, and the airmen had been up for over twenty. The regulation specified that aircrew duty starts two and one-half hours before take-off. It also stipulated that, under no conditions, not even



to be back in time. You did promise and she'll be awfully disappointed if you aren't there."

He had answered, "Honey, I told you that the itinerary for this flight calls for me to be back at noon Saturday. If everything goes all right, I'll be there. If not, I won't. But I'll sure try to make it. You know that."

His thoughts shifted to his daughter Sue and how she had looked at three o'clock Friday morning. He had looked in on her just before leaving. Her brown hair had been tousled, framing the angelic expression of a sleeping child. He had gently untangled the rumpled blankets from her left leg and carefully tucked the covers around her shoulders. "She was five years old yesterday and I missed her party," he thought.

If it hadn't been for that left prop. They'd been right on schedule at Misawa, half way through their trip, when it had acted up. He had to call all the way down to Ashiya Friday night to get parts and a specialist flown in to take care of it.

The flight engineer and the radio operator had gotten up early on Saturday to prepare the plane for repairs. He and Jake were up early also to see if the prop man had arrived and to help the engineer by contacting the transient maintenance section. They had all fussed and fumed until about ten o'clock when the parts and the specialist arrived.

Repairs were completed by 1500 hours Saturday just when the birthday party was starting, and the aircraft was ready to go after a brief test flight. They left Misawa at 1730 for Tachikawa, where they had some freight to off-load. Arriving there about 2000 hours, Dave checked in with the Air Traffic section. He found to his dismay that they had a full load of freight for Ashiya.

He made some hasty mental calculations and realized that with all the delay they couldn't possibly get off for home before 2230 hours. With the best of luck they wouldn't get in before two o'clock Sunday morning. He told the clerk, "It's going to be a rough haul, but go ahead and load 'er up. We'll take it on in tonight."

His thoughts again were interrupted as the turbulence increased. Dave disengaged the autopilot and grabbed the controls once again to ease the transport through the rougher air. He looked over at Jake to ask him to try tuning in Iwakuni again. Jake was slumped in his seat with his chin on his chest, dozing. "No need to bother him. I can do it myself," Dave mumbled.

He tried to pick up the signal from Iwakuni by turning the tuning handle of the radio compass back and forth. Through the static he thought he could hear a faint dit-dit-dit-dah-dah, but he wasn't sure.

"We should be picking it up pretty soon," he thought. "Could we possibly have drifted off course? The winds weren't forecast to be too strong, but sometimes around these islands the winds don't exactly adhere to the forecast. Sometimes they get very strong and shift direction abruptly."

He began to get a bit uneasy. Straining forward, he peered out through the windshield but could see nothing. Turning his head to the left, he looked down and to the side to see if he could see any lights — a town or perhaps a ship? Nothing!

Reaching down he picked up the radio facility chart and rechecked the Iwakuni frequency. It was correct. As he started to lay the chart down again, his glance fell on the airway between Takamatsu and Iwakuni. With a sickening flash of awareness and stomach-tensing fright,

he looked closely at the course heading. It was two hundred and seventy degrees! Not two twenty.

Shaken into alertness, he cranked the wheel over and kicked right rudder. The big ship began her sluggish turn to the north. Lifting his gaze to the windshield once again, he became transfixed with terror. A dark, looming shadow — darker than the night — appeared before him. Frantically he twisted the controls harder and pushed the throttles forward.

The huge transport lumbered out of a cloud with its red and green running lights flashing. It hurtled toward a huge mountain that towered above it. Suddenly, as if it were a toy model jerked by a string, it lurched into a turn to the right. Skimming along the face of a sheer cliff, its left wingtip ripped into the upreaching branches of a large tree. The wingtip disappeared and as the main wing spar hit the trunk of the tree, the aircraft gave a sickening lurch to the left.

Engines roaring, it careened into the face of the cliff. Ripping and tearing and crumbling, it shattered itself against the granite. The sound of the engines was engulfed in the shrieking protest of disintegrating metal. There was a dull boom as the gas tanks ripped open and 1500 gallons of high octane fuel released its energy in seething, all-engulfing flames. As if lit by a giant flash-bulb, the skies became momentarily as bright as day. Flame and bits of metal hurtled skyward.

As the sound of the impact and explosion reverberated and echoed from mountain peak to mountain peak, the flames crackled and roared. For minutes, the entire conflagration was centered on the point of impact. Gradually, the few remaining large pieces of the aircraft started to slip and slide down the face of the cliff amidst a jumble of smaller pieces and a miniature landslide of rocks and rubble.

Several hundred feet below, at the base of the cliff, the moving mass of smouldering smoke-blackened wreckage came to rest in a deep ravine. The brilliant intensity of the flames gradually died to a dull red, and a dense smoke pall formed over the mountain peak. A short time later the flames began to flicker and die out.

About an hour after the crash, silence and darkness had returned to the mountainside. Very little remained to indicate what had happened: some smoke-stained rocks and snow, charred brush and bits of twisted wreckage.

Crew rest at last. ▲







Beware  
the  
Long  
Profile

**D**URANTE'S LONG PROFILE IS NOTHING compared to the one flown by our present day fighter jocks. Time was when a fighter type could strap himself to an iron bird, blast off to perform his derring-do and return to Mother Earth and the squadron poker game—all in the space of two short hours.

Preflight, mission, post-flight and de-briefing rarely even lost him a seat around the green felt or the Army blanket. Not so any more. With the refueling capability of the present day Century Series, one of the erstwhile yo-yo boys might be airborne eight hours or more.

Anyone who has ever sat through a double feature knows how tiresome this can be to the fundament. To say nothing of the nose-pinching, headache-producing oxygen mask which, when tightened properly, forces the old brain bucket deeper into the skull with every passing moment.

The point of this whole bit is that long flying hours plus confinement in a tiny cockpit of a fighter airplane add up to a deep fatigue which leads to serious accidents.

This condition is not peculiar to fighter types by any means. The crewmembers of the modern high altitude bomber have the same problems. It's just that this fatigue, the bone weary type, is new to lots of fighter boys. As a result, the landing phase accidents are piling up.

Ideally it would be nice if we could throw in a substitute crew with each fresh batch of JP-4. Since this is obviously impossible, what then can we do about alleviating the situation? The medics have made the following recommendations:

- Adequate rest periods (at least 72 hours) for each pilot between long range missions in single engine jet aircraft.
- Development of easily adjustable oxygen masks which can be loosened or tightened, according to the inflight situation.
- Proper inflight feeding, as well as an adequate meal before takeoff.
- Each crewmember should be tested for his individual reaction to Dexedrine Sulphate or allied drugs, if they are to be used as a strength-restoring agent during flight.
- Each crewmember should be briefed on the proper use (frequency, timing, amount) of any such drugs used.
- Re-emphasize to crewmembers the extreme importance of the fatigue-inducing after-effects of alcohol.

It is axiomatic that a tired individual is not going to do a first rate job in any situation. Therefore it follows that each crewmember must assure himself of his physical and mental fitness for his flying job. What some pilots don't seem to realize is that a man's capacity to react to an emergency is seriously impaired by fatigue. The man who "has it made" in a VFR flight is not necessarily ready for an unexpected IFR penetration and landing after an arduous, long profile flight.

As is always the case, the commander is the individual responsible for the physical condition of his men. If he is in doubt, the flight surgeon should be contacted immediately. It remains, however, for the pilot himself to beware the long profile! ▲





Rex was created by Capt. Dick Grant, 10 years ago. The above strip was the first one. Rex' latest adventure is shown at lower right.



Maj. Gen. Caldara checks over the preliminary drawing of a Rex strip with Sgt. Hotch and Maj. Perry Dahl, former editor of Flying Safety. Hotch uses actual Form 14s for factual data to create his story line.



**P**ROMOTION TIME IS HERE for the field grade types and one of "our boys" made it! For Rex Riley, it's high time. Rex has been in grade for more than ten long years and this recognition of a job well done is well deserved. Of course Rex was born a Major and this is something not many of us have managed to do since the rush of war time.

For the comparative latecomers in the blue suit ranks a little history on this lad is probably fitting. Rex was born and spent his early years in the mind and on the drawing board of Capt. Dick Grant, in September of 1947. You can see a copy of the young Rex on these pages. Captain Grant continued to guide the destiny of Rex until January of 1949. During this time his hero became an Air Force institution. Pilots looked forward to the then weekly poster of Rex and his succession of shapely, charming secretaries with interest and no little envy.

M/Sgt. Steven A. Hotch took over from Captain Grant when the latter went off to Air Tactical School. Since then Steve has been the 'father' of the strip. Under his capable stewardship Rex has won countless other friends

## It's High Time!





and, we believe, saved many lives and aircraft. There is, of course, no sure way to measure the total effectiveness of the poster over the years in terms of savings to the Air Force. Judging from the reader response, however, we are sure that Rex is a potent factor in aircraft accident prevention.

Steve Hotch has continued to improve the quality and effectiveness of Rex and his flying safety messages. The poster of today is a full color production fashioned with skill and artistic excellence. The message is always there, timely, and easy to take.

There's only one thing Steve is reluctant to talk about when discussing Rex with the many visitors who drop in. No one yet has gotten him to reveal where he hides the models. And believe us, we've asked him, too!

We think that the promotion of Rex is, in a sense, the recognition of the fine job done by Flying Safety Officers throughout the Air Force. The job this officer must do for his commander at any level is second in importance to none. Like Rex, he has a message. Like Rex, he is deserving of recognition for his day to day efforts in the promotion of flying safety in the Air Force. ▲





