Flying Safety

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THE COVER STORY

Soon after beginning the takeoff run, a B-29 veered to the left and ran completely off the runway. The takeoff was continued, however, and the pilot steered the B-29 back on the runway. Again the bomber swerved to the left and as it ran off the runway at about 110 mph the pilot pulled it off the ground. At this point the wing dipped and the plane settled and exploded on impact. The crash took the lives of two crew members and resulted in major damage to 28 parked P-47's.

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WHY HAVE RULES?

THROUGHOUT HIS EXISTENCE, man has found obedience to law his most certain means of survival. With every new discovery he is forced eventually to apply laws to its use so that the effects will be beneficial rather than destructive. To disobey laws born of experience is to thumb one's nose at intelligence and invite the punishment clearly due offenders. By enforcing rules, society seeks to protect itself from the outlaw.

In just 44 years man has written a whole new code applying to the use of a new machine, the airplane. These airplane laws were written painfully and literally with the blood of thousands who died performing wrong acts with this new machine. Perhaps it was necessary that someone do a wrong before it could be known that there should be a law to prevent someone else from making the same error, just as before man found fire he did not know that it could burn him.

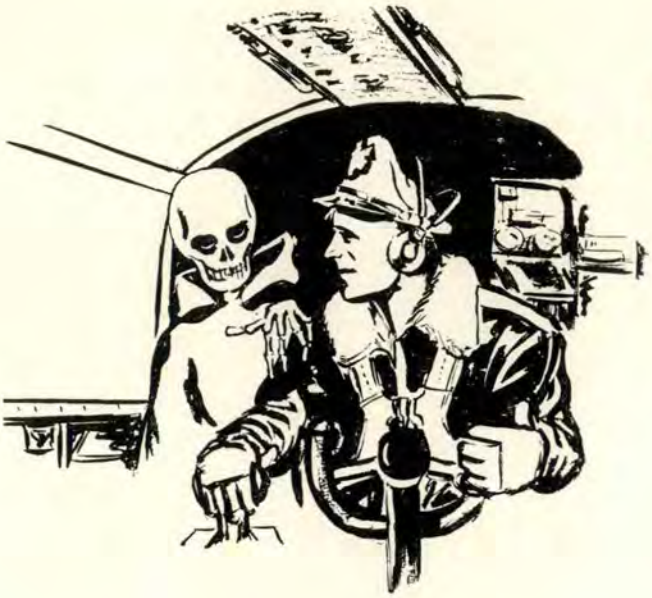
Despite the fact that man has learned much from his airplane experience, and has written laws to prevent repetition of disastrous acts, there are those who disobey, who deliberately mock the wisdom of those who have learned by experience. Air Force pilots are subject to a large measure of supervision and discipline, yet violations of flying laws continue to contribute to the USAF accident rate. These violations may be unintentional, such as flying in danger areas by mistake. Or they may be wilful, such as buzzing, prohibited acrobatics and unauthorized deviation from flight plans. Strict disciplinary action has been taken to cope with these conditions, including court martial proceedings and resulting fines, discharge and other penalties. The rate of violations decreases from time to time, but the problem is never fully solved.

One of the most conspicuous decreases in cases of confirmed violations of AF regulations came in the period between January and September of 1947. The rate went down from 20 violations per 100,000 flying hours to seven violations for the same number of hours flown. Over that period of nine months there were 260 individual cases of confirmed violations. This was in contrast to 1944 when there were 236 violations in one month. The most frequent were buzzing and low flying.

The decrease in 1947 can be attributed in part to the vigorous enforcement program of all commands. Each month the Field Office of The Air Inspector publicized the number and type of violations committed by members of each major command and pointed out the effect of violations on aircraft accident rates. That office, acting as a clearing house, submits all reports of violations to the major command concerned and a report is requested of an investigation of the matter and the corrective action taken.

The USAF has shouldered a heavy responsibility in formulating flying regulations. In every sense it has made an effort to make these rules realistic and practical. In conceiving flying regulations the principal guide has been that the rules themselves must be the embodiment of the safest practice.

The airplane has not yet been made foolproof. Carefully thought-out laws and regulations are an attempt to make it fool-resistant.



DEATH RIDES THE JUMP SEAT

By LT. HAL J. BASHAM
Flying Safety *Staff*

Two pilots stood at the operations counter of a Texas air base filling out Forms 23. Both were requesting 500 on top clearances to Wright Field, Ohio. Neither had any foreboding that one of them would die that day.

The B-25 pilot finished his clearance, got his weather and left operations with his copilot. The A-26 pilot spent some time talking to the weather officer because he had neither de-icing equipment nor oxygen aboard. He took off approximately forty mniutes after the B-25 had left the field.

Top of the overcast was approximately 9,000 feet over North Texas, but went up steadily as the two flights proceeded across Oklahoma and Missouri. Approximately 100 miles southeast of St. Louis the pilot of the B-25 called a range station from 12,000 feet on top requesting a lower altitude. He was given ATC clearance to maintain 9,000 feet to Dayton, 1,000 feet below the maximum altitude for instrument flight without oxygen permitted by Air Force Regulation 60-16.

Shortly, the A-26 pilot approached the higher deck of clouds. Without hesitation he switched to high blower and climbed to 15,000 feet. He proceeded on course at 15,000 on top as death climbed into the jump seat and sat down to wait.

Approximately two hours later the B-25 called in over Dayton and made a normal letdown and landing with an 800-foot ceiling. While the B-25 was on the final approach, the A-26 pilot called in from 15,000 on top and requested letdown instructions. This was the last word ever heard from him.

The plane was discovered late that evening with the pilot and crew chief dead in the wreckage. Investigation clearly disclosed the plane was in a steep turn with power on at the time of the crash. The pilot had flown at a critical altitude without oxygen for two hours, perhaps dulling his perceptions and reaction time to such an extent he had been unable to make a successful instrument letdown. The passenger in the jump seat had apparently pushed him into a death spiral when he attempted a procedure turn.

The B-25 crew, also without oxygen, had remained below the critical altitude and had made a normal landing at their destination. Like all other USAF pilots this hapless A-26 pilot had received a briefing and instructions on the necessity for using oxygen and obeying rules of higher altitude flight. But also like many pilots he either forgot or chose to disregard the common sense rules of oxygen and altitude flight.

Indications were that this pilot was killed by anoxia, which means literally a lack of oxygen. Anoxia is insidious because its symptoms vary with individuals and from time to time in the same individual. In its milder stages it often offers no detectable symptoms at all, leading the pilot to assume he has full, normal control over his faculties, when in reality his reaction time has been slowed

considerably, his ability to think has been impaired and his visual acuity has been greatly reduced.

A pilot is rarely in more danger than when he thinks he is physically normal while his physical capacities have been reduced by lack of oxygen incurred through protracted flight at altitudes higher than normal. Night vision is affected, seriously in some individuals, by flight at altitudes above 5,000 feet, hence, the recommended use of oxygen from ground up at night.

A recent C-47 crash killing 20 persons occurred when a pilot was making an instrument letdown at his destination after flying without oxygen more than five hours at 12,000 feet.

Another recent accident in which a P-51 pilot lost his life was attributed directly to anoxia. This pilot was leading a formation of four Mustangs when an Air Force tower requested he investigate an unidentified object flying high over the field. The formation began a climb immediately. Upon reaching 18,000 feet all the planes but the leader's turned back. Although he had no oxygen the leader said he would go on up to 25,000 feet and then come down if he was unable to identify the object.

One symptom of anoxia involving personality traits is known to be over-confidence, similar to that brought on by alcoholic intoxication. This pilot was apparently in the grip of anoxia at 18,000 feet where he announced this decision. He probably passed out shortly thereafter because he could not be raised on the radio afterward. His plane continued to climb as he had the trim tabs adjusted and was known to be pulling nearly full power. Finally the plane slanted off into a spiral and headed for the ground under full power. It disintegrated at 10,000 feet on the way down.

How suddenly and how severely anoxia strikes depends upon rate of ascent, duration at altitude, individual physical condition and a number of other variables. But anoxia is known definitely to affect pilots, whether they realize it or not, at altitudes above 10,000 feet. The higher a pilot goes above this altitude without oxygen and the longer he stays the more likely he is to find an unexpected passenger riding the jump seat with him.

Paragraph 43 in Air Force Regulation 60-16 is based on sound medical knowledge. It reads in part, "Any crew member will use oxygen when the flight level is 10,000 feet or above under instrument conditions and when the flight level is 12,000 feet or above under visual conditions." It is one of the most frequently and carelessly violated regulations in the Air Force.

Anoxia is the one accident cause usually most difficult to establish definitely, therefore its appearance in flying safety documents is relatively rare. But it is an enemy every pilot must guard against constantly because it is insidious, invisible and frequently undetectable. When your altimeter has gone once around the clock, check your jump seat for an extra passenger.

HI SPEED BAILOUT

JET PLANES being put into use in ever-increasing numbers by the Air Force have presented a new hazard for pilots who are forced to make high speed bailouts. A recent study completed by Air Force headquarters disclosed the bailout fatality rate for jet pilots is quite a bit higher than the bailout

fatality rate for pilots of other types of aircraft. This has led some jet pilots to be rather pessimistic about their chances of making a successful jump. The picture is much brighter, however, than some pilots believe.

Eighteen accidents involving bailout from jets were studied and the conclusions thus obtained are of value to all jet pilots. The facts of this study reveal the sources of troubles encountered by the pilots involved and what they did to try and overcome them.

In 15 out of the 18 accidents the aircraft was uncontrollable at the time of bailout or attempt to bail out. There were eight fatalities — all caused either by the canopy striking the pilot's head or by the pilot hitting the stabilizer after getting out of the plane. Eight pilots were sucked out of the cockpit safely; one forced himself part way out and the slipstream carried him clear. His plane was in a 90° bank at the time with the nose down. In the 18 cases studied, the planes were abandoned at speeds from 180 to 530 MPH.

Six out of 18 had difficulty with the canopy release. One pilot was killed attempting to bail out when the aircraft was near the speed of compressibility. Of the eight fatals, four pilots were definitely struck by the canopy and four were unknown.

Extensive research has been carried on in an attempt to establish the trajectory of the canopy when released in flight. The most reasonable and commonly accepted belief is that the negative angle of the canopy forces the front end into the cockpit. Due to a yawing motion of the airplane the canopy doesn't go straight down and back, but may go to the right or left and down. This makes it even more difficult for the pilot to escape it. Experiments have shown that when the canopy is partially open the external-internal pressure differential is reduced, thereby lessening its violent motion when released. At present the installation of an explosive charge is being considered which will force the canopy up and to the rear before it is carried away by the slipstream.

From the experiences of pilots who have successfully bailed out of the P-80 comes this advice: "A crash helmet is one of the prerequisites for safety. If control is not lost, try to slow down before attempting to bail out. Then disconnect all attachments, crack the canopy open, bend forward, drop the seat, and lower your head while pulling the emergency canopy release. After all of the above is accomplished release your safety belt and clear the shoulder straps."

Some pilots advise placing the feet up in the seat and springing from the cockpit, or if necessary, crawling out of the cockpit over the side.

It was recommended by one experienced test pilot to stall the airplane in a bank so that the plane falls away as the bailout is begun. If at a higher speed, he advised winding the elevator trim forward and releasing the stick at the last moment. This method has been known to throw pilots clear.

One pilot bailed out of a jet plane at 530 mph. He described the moment of first clearing the airplane: "The initial blast dazed me temporarily, and practically tore my eyeballs from their sockets. I had a pair of sunglasses on which probably saved my eyes." Thus it becomes evident that a visor of some sort should be used for the protection of the eyes and face at high speeds. This contention was borne out in tests conducted by the Navy.

The study revealed that most of the successful bailouts were made with the airplane undergoing extreme maneuvers, such as an inverted spin, high speed vertical dive, or a snap roll. It seems that the more violent the maneuvers the better are the chances of clearing the aircraft. If the pilot is able to jettison the canopy safely, chances are in favor of his completing the bailout successfully.

Some of the diffiulties encountered by jet pilots other than those mentioned above are bulky flying clothes, uncontrollable aircraft with the stick bobbing around like a hula dancer, negative G-forces, and shoulder straps that barely allow the pilot to bend his head below the level of the canopy. Lowering the seat usually remedies the latter of these difficulties and a short pilot can usually duck the canopy much easier.

The T-10 canopy remover (the explosive type), is receiving final tests at the present time. It is expected that the T-10 will be incorporated in the "C" series of the P-80. Ejection seats are going to be installed in the later "B" models and the "C" series. Meanwhile, jet pilots should make the best possible use of the experiences of those who have parachuted safely. Lessons learned in every successful jet bailout make future high speed bailout a safer proposition.

AIR RESCUE

THE AIR FORCE takes care of its own. Whether you fly from New York to San Francisco, Seattle to Nome, or in your local flying area, there is a permanent, trained organization ready 24 hours every day to come to your rescue if you get in trouble and have to bail out or crash land. This completely equipped organization in existence for the sole purpose of guarding the lives of Air Force personnel is the Air Rescue Service.

Everywhere United States Air Force planes fly there is a unit of the Air Rescue Service on permanent alert to come to the aid of anyone in distress. During the war, search and rescue facilities were maintained by individual air forces, but today they are combined in the Air Rescue Service, a specially trained and equipped world-wide organization set up under the Air Transport Command exclusively for search and rescue activities.

The Air Rescue Service is responsible for the search for missing or crashed Air Force planes and rescue of their crews. The area of responsibility covers the continental United States, the Canadian provinces of Nova Scotia and New Brunswick, and within the operational radius of the assigned aircraft over the ocean air routes bordering the United States. Trained personnel and special rescue units are provided for overseas areas as required by the Chief of Staff, United States Air Force, and the Commanding General, Air Transport Command.

Headquarters Air Rescue Service is located with the Air Transport Command headquarters in Washington, D. C. Under this headquarters nine units are placed at strategically located Air Force bases.

From these air bases Air Rescue Service units are assigned areas of responsibilities similar to those of the Flight Service. In addition, a special winter unit is assigned to Great Falls Air Force Base, Montana, to provide added coverage to aircrews flying the Alcan Route to Alaska.

All units are supplied with varied equipment for carrying out the mission. Aircraft utilized are Boeing B-29 Superfortresses, Boeing B-17 Flying Fortresses, Consolidated-Vultee OA-10 Catalinas, Douglas C-47 Skytrains, Fairchild C-82 Packets, Sikorsky R-5 Helicopters, and Consolidated-Vultee L-5 Sentinels. Newer Consolidated-Vultee L-13's are now replacing the older L-5's. All aircraft are especially equipped with rescue equipment for their operations. The B-17 carries the airborne lifeboat that has been used successfully for dropping to survivors in the water. Ground equipment consists of amphibious caterpillar "weasels," radio equipped jeeps, and other vehicles.

Special rescue teams are presently being organized for difficult and remote operations. These teams are known as the Fairchild C-82 Packet, Sikorsky R-5 Helicopter Teams and the Pararescue Teams. The Packet-helicopter is ready for immediate dispatch to the scene of rescue operations. R-5 helicopters are partly disassembled and loaded into C-82 Packets and flown to an airfield near the rescue scene and there reassembled for rescue operations.

In May 1946 one Packet-helicopter team was flown from Massachusetts to Managua, Nicaragua, 2,500 miles away and was ready for rescue operations within 24 hours after departing Westover. It took part in the rescue of 14 Air Force crewmen.

Six Packet-helicopter teams and six Pararescue teams will be organized in the United States. Pararescue teams consist of five qualified parachutists who are ready to jump to the aid of injured aircrews. One doctor, two medical technicians and two survival specialists make up each team. Both the Pararescue teams and the Packet-helicopter teams are designed for difficult rescue operations away from populated areas where the terrain and distance makes prompt rescue by ground parties or aircraft impossible.

How soon Air Rescue finds you if you go down depends largely on how many position reports you make. The more frequently you make position reports along your flight path, the smaller area Air Rescue has to search. If an aircraft on a flight from Lowry Field, Colorado, to Hamilton Field, California, goes down it will be located much quicker if a proper position report was made over Battle Mountain, Nevada, for example, than if no position reports were made. By knowing a last position as over Battle Mountain all Air Rescue Service aircraft can intensify the search over the remainder of the flight path and not have the entire route to check. By making proper flight clearances and following them to the letter, aircrews insure that in case assistance is needed it will be there for them with maximum effort in minimum time.

After your flight is completed, be sure the flight plan is properly closed, by phone to Flight Service if necessary. When aircraft are overdue one hour at their destination and no special contacts have been made, the Air Rescue Service is alerted and starts a search for the plane and crew.

When in trouble a pilot should contact the nearest ground radio station or aircraft in the area and give all possible information as to the estimated position, nature of trouble and what action is being taken. A request to notify Air Rescue Service always receives compliance. When first contacted by

Air Rescue Service aircraft, follow instructions and give all information possible. If you do not need medical attention, and are in a remote position, sustenance kits and radios will be dropped. Air Rescue Service pilots and aircrews will guide a ground party to the crash location to return all survivors safely, or if needed a Pararescue team or Packet-helicopter team will be sent to perform the rescue.

Air Force planes in the air can reach Air Rescue Service by calling any Airways and Air Communications Service ground radio stations or any Civil Aeronautics Administration radio range station on either VHF channels or HF frequencies and requesting that the information be passed to the Air Rescue Service. When on the ground, Air Rescue Service units may be contacted through Flight Service on Plan 62 or by telephone.

The location and telephone numbers of each Air Rescue Service unit are as follows:

MacDill Air Force Base, Tampa, Fla. (Tampa Hillsborough-H 8811—Ext. 628)

Pope Air Force Base, Ft. Bragg, N. C. (Fayettesville 4151—Ext. 26215)

Westover Air Force Base, Chicopee Falls, Mass. (Chicopee 1740—Ext. 657)

Selfridge Air Force Base, Mt. Clemens, Mich. (Mt. Clemens 2511—Ext. 3105)

Biggs Air Force Base, El Paso, Texas (El Paso East-E-3181—Ext. 412 & 3991)

Hamilton Air Force Base, San Rafael, Calif. (San Rafael 5800—Ext. 3227 & 3228)

McChord Air Force Base, Tacoma, Wash. (Tacoma Lakewood 2121—Ext. 5126 & 5144)

March Air Force Base, Riverside, Calif. (Moreno LD-20—Ext. 4203 & 4206)

Lowry Air Force Base, Denver, Colorado (Denver Freemont-FR-2861—Ext. 820 & 989)

MEDICAL SAFETY

PILOTS ARE PEOPLE

FOR A LONG TIME tradition had pilots in the class of supermen — sharp, fast thinking and quick acting. With the majority of airplane accidents each year being charged to "pilot error" investigators have become more and more concerned with the human element. While they arrange "pilot errors" into groups such as "poor technique," "bad judgment" and "carelessless," and point to the effects of age, experience and previous crashes on accident rates, they end up with one fact for sure: pilots err because they are human.

It is possible to write specifications which will change the structure of aircraft, but as yet it is not very practicable to alter human nature. The best possible approach lies in the selection of humans which will be less likely to err.

Studies made by the Flying Safety Division in collaboration with the Air Surgeon have begun to trace faint outlines of what constitutes a safe pilot and what is a portrait of a dangerous pilot. As yet they have no clear-cut labels under which every individual pilot can be segregated.

Of the studies currently underway by the medics, that of "repeater pilots," or men who have a series of accidents, points to a broad field for future exploration. In a sampling of 461 accidents during a three-month period, one third of the accidents were charged to pilots who had already had one or more major accidents. It has been found that "repeater accidents" follow quickly on the heels of the first accident regardless of whether or not "pilot error" is involved.

Why is this? Medical investigators have suggested various ways in which human nature may figure in repeated air accidents.

1. The pilot may have been a poor prospect in the beginning or poorly trained. The lack of proficiency that resulted in the first accident results, as well, in the second.

2. The pilot is "unlucky," a calamity collector his personal problems and maladjustments are reflected in his accident record. All psychiatrists know that many individuals have "accidents" whenever things go wrong in their personal lives.

3. Some pilots may have their proficiency disrupted by the hazardous experience of the first accident, making them nervous and tense in subsequent flying. Along this line is also a theory that if a pilot, after an accident, manages to fly for sometime without a subsequent accident he can gradually regain his confidence and composure and thereby diminish his chances of becoming a "repeater."

Because the flying training curriculum tends to eliminate the first type, and the pre-induction psychiatric examination pretty well disposes of the second type, the medics at present are favoring this third explanation for the "why" in the quick "repeater problems."

In any case it is obvious that the accident rate can be reduced most effectively by keeping the "pilot error" accidents from occurring. The medics have shown that a pilot who has had more than his share of accidents is likely to continue having them unless something breaks the chain of events. Based on the research accomplished by the Medical Branch, the Air Force adopted a requirement early in 1947 that a pilot charged with three "pilot error" accidents in a five-year period must meet a flying evaluation board.

Despite the common impression to the contrary, flying evaluation boards are not created for punitive action. In these cases they are trying to break the "repeater accident" chain. Pilots are evaluated for the purpose of remedying a condition, which if allowed to go unchecked, will continue to cause accidents. Such evaluation may result in the pilot being completely cleared because of inherently dangerous types of flying he has been required to accomplish or the pilot may be recommended for additional training. Removal from flying status is the last thing the boards seek to do.

Of 166 "repeater" cases recently before evaluation boards, only five resulted in suspension from flying duties.

Research on personal factors in airplane accidents is in its earliest stage. Yet it is already evident that such studies will contribute to accident prevention by detecting the unsafe flier and assisting in the selection of the best-qualified candidates for safe flying.

ON THE 44TH ANNIVERSARY of the Wright Brothers' first flight two serious young men climbed aboard a strange-looking aircraft, gunned its six jet engines, roared off Boeing Field and headed east from Seattle. Probably no pilots in history had been so carefully prepared for a single job as for this one: the first flight of the Boing XB-47 Stratojet bomber.

Sitting in the pilot's seat was Robert Robbins, a pleasant-faced, blondish young man who looks as though he might have been designed to play guard on someone's college football team. In the co-pilot's seat was studious-looking Scott Osler, an experienced test pilot at 28.

For nearly two years they had been getting ready for this hop. They learned everything there is to know about the XB-47, which is a considerable amount, and had acquired also a vast bit of knowledge on jet airplanes in general. To their way of thinking, however, their first flight represented more than the result of two years of effort. It was the climax of everything they have ever done in an aviation way since long before they first heard of the XB-47 or any other jet airplane.

"We've been building up to this ever since we got into the aviation business," is the way Bob Robbins looks at it.

Their specific preparation for the Stratojet flight program had involved a great deal more than study. They had accumulated practical experience all the way from Moffett Field, California, to Schenectady, New York. They flew the Forty-Seven — in a synthetic way, of course — before it was out of the jigs.

Bob Robbins first found himself in the Stratojet program, on a tentative basis, in early 1946—when the XB-47 was little more than an array of lines on a drawing board bearing the name: Model 432. At that time he was called into the office of N. D. Showalter, chief of Boeing flight test.

"The company is in the process of design study on a jet bomber," Showalter told him. "Are you interested?"

It was just that simple, that informal. Robbins decided he was interested.

Thus launched on his jet career, Robbins followed the 432 project in a casual way for several months. He watched the engineering progress and he read what literature was available on jet planes.

In June of last year, Robbins suddenly found himself getting deeper into the program, though his assignment was still largely unofficial. This was

at the time the engineers decided to put a bicycle landing gear on their yet-unborn jet baby. Robbins and Osler were dispatched to Wright Field, where they flew the XB-26H, a special B-26 equipped with a bicycle gear.

Thereafter Robbins was sent to Schenectady, where he flew a Boeing B-29 which General Electric was employing as a test bed for its new jet engines. This was Robbins' first personal experience with jets, and he tried some things he had been wanting to try with them, making starts at various altitudes and "playing with the engines" for an hour and a half of flight. He came home with a pretty sound knowledge of the differences between conventional and jet engines.

In February of 1947, Showalter again called him in.

"If you're still interested in flying this Forty-Seven," said Showalter, "the job is yours. But first give it some more thought. Take your time, and let me know when you've made a decision."

It took a month to reach that final decision, and for Robbins it was the roughest month of the entire XB-47 program. Until now, the job had been tentative. Now it was right in his lap, to pick up and carry all the way or to drop.

On the one hand, the Forty-Seven would be probably the hottest, most radical piece of flying machinery ever taken aloft. It had not only half a dozen jet engines and a tandem landing gear, but sweptback wings and tail as well. It would travel

JET TEST PILOTS

By REYNOLDS PHILLIPS
Boeing Airplane Company

How do test pilots of a "hot" new plane like the XB-47 get that way? This is a play-by-play account of their thorough training.

at speeds Robbins had never before even approached. The first flight of any new-type airplane is a matter calling for study and precautions; the initial hop of a plane as revolutionary as the XB-47 would be a step into something so new as to make any ordinary first flight seem like merely another airline takeoff.

With this in mind, he studied the engineering data that held the proof, the performance predictions, of the XB-47. Combined with past records, it was good enough for Robbins. He had satisfied himself that the jet bomber, though it looked like something out of a pseudo-science novel, was in reality a thoroughly safe, flyable machine.

Upon Robbins' acceptance of the assignment, Osler was added to the program, together with Robert Lamson as an alternate pilot.

After that Robbins and Osler devoted full time to the project; they lived with that airplane eight hours a day and thought about it during their hours at home. Lamson, too, kept in close touch despite the fact he was simultaneously serving as project pilot on one of Boeing's Stratocruiser test ships.

Experienced as the two regular pilots were, however, neither of them had ever flown an all-jet plane. Robbins and Osler were sent early last summer to Muroc Air Base. Here they were introduced to the P-80 and each of them spent more than five hours aloft, getting the "feel" of jet and the increased speed it gave them, and they learned to handle it with familiarity.

Landings and takeoffs were an important part of their Muroc training, and so were air starts and "refused landings." The Aerojet company supplied them with jato units, with which each of them made jet-assisted takeoffs and "refused landings."

When the pilots' tour of duty at Muroc was finished, the next phase of their training program was ready. It took them to the giant wind tunnel at California's Moffett Field.

At Moffett they first "flew" their own plane, the Forty-Seven. What this amounted to was a steel fuselage section familiarly known as the "iron monster" upon which were set the tail surfaces built for the No. 2 XB-47. They provided an exact duplication of the flight performance that they found when the plane itself got into the air.

Sitting in the iron monster's cockpit, Robbins and Osler flew it and trimmed it, worked the rudder and elevator controls. When they were finished, they knew the XB-47's aerodynamic characteristics; they knew how it would takeoff and land, how it would handle in flight.

On the first actual flight from Seattle to Moses Lake, they knew what to expect and they had the feeling that they had been through much of this

before. They escaped some of the tension that ordinarily would accompany the first flight in such a plane.

"I felt as much at home in it as in a B-29," Robbins declared in a post-flight engineering conference after landing at Moses Lake in the speed-shaped Stratojet.

Robbins went on to say that while the tasks to perform on a maiden flight are tremendous, the Stratojet handled so easily that both he and Scott Osler, second pilot on the 52-minute flight, had time to comment on the weather, the scenery below, and the quality of pictures that the accompanying photo plane should be getting.

An interesting example of the manner in which every detail was covered in the preparation of Boeing's two jet pilots is their final pre-flight trek: to Wright Field once more. Here they were prepared, physically and psychologically, for the unlikely circumstance which might necessitate their bailing out of the XB-47 in flight.

In the Wright Field ejection seat rig, as in the seat on the Forty-Seven itself, pilot and copilot are quite literally sitting on a powder keg. A 37-mm shell loaded with a special powder charge, hurls the seat into mid-air. In the case of the test rig, seat and pilot are thrown aloft on the 100-foot track, with gravity halting their ascent at some forty feet.

In their home-base training, the pilots had become just about as much a part of the plane as its engines or its wings. They followed it across the drafting boards and through the shops. They examined the most minute of details in its fabrication, its assembly, its inspection. They spent endless hours simply "poking about" the plane, until they knew its inner workings.

Both Robbins and Osler have backgrounds that enable them to talk the language of the engineers who designed the XB-47 and the mechanics who built it. Robbins graduated from Massachusetts Institute of Technology in aeronautical engineering, and has an aircraft and aircraft engine mechanic's license which he values almost as much as his pilot's license. Osler has a degree in aeronautical engineering from the University of Washington. Both men had long experience on commercial airlines before joining Boeing.

When they headed down the runway and into the skies on the first of a long series of flights, they put to use the most complete educational background ever given a pilot team for one program of flight tests.

TUMBLE IN THE TUMBLEWEEDS

SOMETIMES IT'S A MATTER of personalities. Take the case of the AT-11 pilot here. Joe Latchey, the most cantankerous pilot in the Air Force, used to be an easy going guy. When a passenger who was hooking a ride to Joe's destination started badgering him to make the takeoff Joe gave in pretty easily. The passenger was a lieutenant like Joe and seemed like a good boy.

"I was checked out in this crate a year or so ago," the passenger said confidently. "I got plenty of time in it. How about letting me fly from the left seat and make the takeoff?"

Joe hedged a minute saying the plane was his responsibility and he didn't have any brakes on the right side, but finally gave in when the passenger kept insisting. Friend passenger started out wrong to begin with.

The tower advised that runway 17 was in use with winds south southwest at 12 mph with gusts. The passenger, now ensconced in the pilot's seat, requested takeoff on runway 26 to the west. The tower cleared him to use this runway at his own discretion and gave the wind direction and velocity twice more.

Like we said, Joe used to be an easy going guy, so he sat still in the right seat and let Passenger taxi out to runway 26. The engines were run up and the checklist was completed. The pilot turned onto runway 26 and locked the tailwheel. As the plane picked up speed, the pilot leaned on the wheel and brought the tail up. Instantly the nose swerved to the left about 40 degrees. The pilot hit the right brake and reduced the right throttle, but not soon enough. The plane was already 100 feet off to the left of the runway on the shoulder when Joe came in with belated rudder action to head it back for the concrete.

They plowed through a large pile of tumbleweeds left by Air Installations personnel who were clearing the field and proceeded along the shoulder parallel to the runway. Joe chopped the throttles and passenger applied brakes. The plane had slowed to approximately 20 miles per hour when they plowed into a second pile of tumbleweeds. The right gear collapsed and the plane swung around to the right sliding to a halt.

Joe got it in the neck from all sides for letting a passenger unknown to him take charge of his airplane and wreck it. There were other choice comments and directives waiting for him when he finally got back to his home base.

Joe Latchey *used to be* an easy going guy.

HOLDING PILOT ERROR TO A MINIMUM

By CAPT. JOHN J. HERBERT, JR.

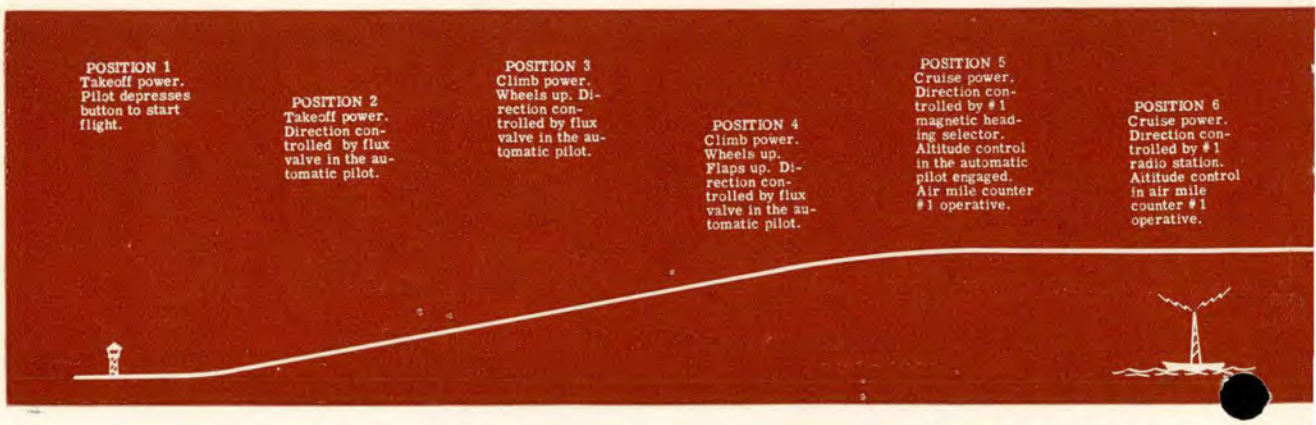
Flying Safety *Staff*

Striving to eliminate the factors of pilot error in aircraft accidents, the Air Force has conducted experiments in automatic flight at the famed All-Weather Flying Division of the Air Materiel Command, Clinton County Air Force Base, Wilmington, Ohio.

With the advent of all-weather flying, the requirement for additional safety devices became a necessity. This necessity became a reality and in doing so, became a hazard. How? Cockpits became a cross between a hock shop and a button factory. Push! Turn! Twist! Up! Down! Feel! Smell! Look! Hot! Cold!

All of these devices are essential to safe flight. There is no argument there. It is the time the pilot devotes to each knob, handle, instrument or indicator when he should be devoting his time to making a sound decision to turn, climb, let down or land that causes the trouble. The pilot must have more time for these decisions. Eliminate the manual operation of the knobs, switches, handles, stick and rudder and you eliminate the overworked accident cause factor "pilot error." And that is exactly what the All-Weather Flying Division has done.

No doubt you have followed, with some degree of amazement, the flight records of the Automatic



C-54. A few of the longer hauls made by this airplane have been well over the 2,000-mile mark. For instance: 1 September 1947, Wilmington, Ohio to Presque Isle, Maine to Jacksonville, Florida to Wilmington, Ohio. A total of 2,900 miles. Except for the fact that the pilot, Capt. Thomas J. Wells, lined the airplane up on the takeoff runway and manually depressed a button marked Wilmington, Ohio, every phase of the flight was automatic. Homing on a landing beam is an element of automatic flight used only when the automatic C-54 desires to land. On this 2,900-mile flight, the airplane flew to three destinations. The predetermined headings preset in the automatic controller directed the airplane to the first two destinations in turn, but the pre-selected landing sequence was set only for Clinton County, the third destination.

There was no "remote control" over this airplane such as was used in directing the "drones" used in the Bikini A-bomb tests. The Automatic Flight Controller, sometimes called the "Plane Brain" is entirely self-sufficient. Installed in the main cabin of the Automatic C-54, the brain stores information given to it before the flight begins, "reads" the flight and engine instruments, tunes and "listens" to beam signals, "computes" distances, time and airspeed and carries out the normal functions of the crew necessary to conduct a point-to-point flight.

The "Brain" retracts the gear when the airplane reaches an altitude of 50 feet and retracts the flaps at 1,000 feet. The "brain" adjusts the power for continuous climb to cruising altitude. Navigation is done by two mileage counters and magnetic heading selectors. These instruments control the flight until the plane clicks off the preset number of miles on the present heading.

After the last mile has been clicked off, the airplane automatically homes on a predesignated radio station. When the airplane reaches "home," throttles come back, props go forward, mixture goes into full rich, wheels and flaps come down. The automatic C-54 then orbits the station, letting down at 500 feet per minute until it reaches 2,000 feet. At this time the airplane intercepts the glide path, makes a few corrections in azimuth, flies down the glide path and lands.

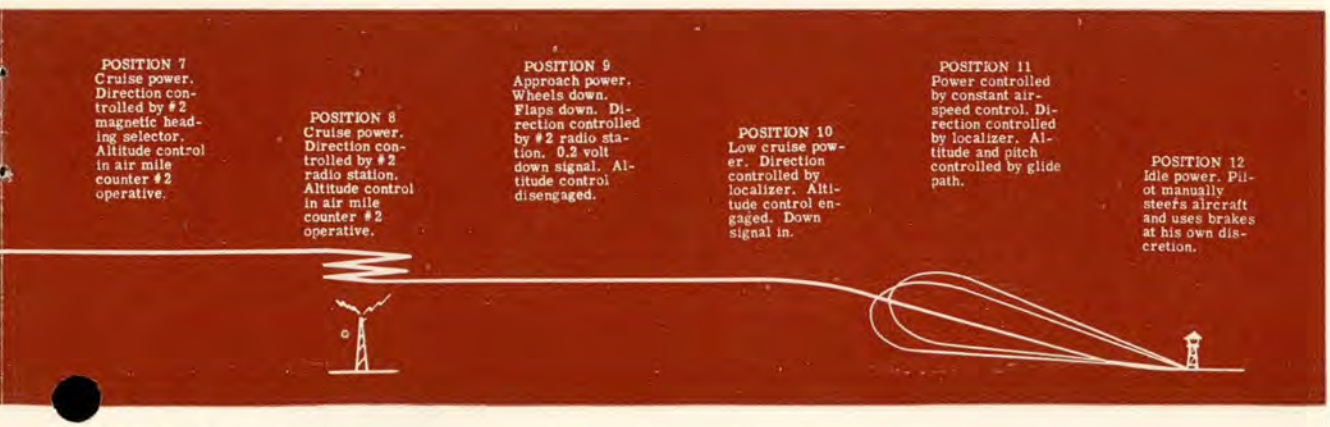
"Some of the touch-downs we have made," says Captain Wells, "could very easily be classified as hard landings. But," he adds, "that is the reason the C-54 was selected for this type of work. That gear can really take it."

Another flight, which will take a front file in the archives of aviation history, began at 1715 on the 21st of September 1947. With Colonel John M. Gillespie, Chief of the All-Weather Division in command, the automatic C-54 took off from Stephenville, Newfoundland on a transatlantic hop to Brize Norton, England. The elapsed time en route was 12 hours and five minutes. The distance 2,400 miles. Twelve sequences of the "no-hands" flight to England are shown in the accompanying illustration.

In summing up the future possibilities of automatic flight, let's query Captain Wells, the man who pilots the pilotless airplane.

"We are strictly in the model 'T' stage of development," he says.

If a model "T" can make it to England without the aid of a single human hand then I say, "Put us down for a '48 model. We'll buy it!"



IMPROPER CLEARANCES

PLANES CONTINUE to crack up because operations personnel have approved erroneous flight clearances filed by pilots.

The predominant types of errors occurring in clearances are proposed IFR flight altitudes below the minimum prescribed, proposed flights beyond the range of the airplane being flown (considering winds aloft), and proposed IFR flights to destinations which do not have an instrument letdown procedure published.

Sometimes the pilot makes the errors through either ignorance or neglect, and again it may be over-confidence or possibly he is in a hurry to keep a date at his destination. At any rate, he makes the errors and it is up to the base operations officer, airdrome officer, or other authorized representative of the commanding officer to catch these dangerous errors.

In the case of airdrome officers, it has been noted that at many bases they aren't as familiar as they should be with operations duties, passenger and load limits of different aircraft, and the range and speed of all types of aircraft currently being used by the Air Force. This is largely due to the fact that they aren't acquainted with operations work because their previous military assignments may never have included tours of duty behind flight clearance counters. When an airdrome officer just reporting for duty has to be instructed by an operations sergeant as to where he should sign his name on a VFR clearance, it is a sign of supervisory neglect. With this situation, there is bound to be an accident sooner or later.

From the above it can be concluded that it is mandatory to assign well-trained operations personnel to duty as clearance authorities. If airdrome officers are designated to approve clearances, the base operations officer should ascertain that they are properly trained before going on duty. A list of all types of the current aircraft in the Air Force and information as to their cruising speed, range, gas supply, and passenger capacity is practically essential for intelligent clearances. Such an information sheet could be posted where it could be referred to quickly by the A. O.

A pilot assigned to airdrome officer duty should be checked out promptly on the operation of the squawk box communication with Flight Service, and he should know how to contact Air Traffic Control. It may be assumed that everyone knows which button to press — but some pilots detailed as A. O. do not.

Well-trained, efficient operations personnel are a necessity for the important responsibility of approving or disapproving aircraft flight clearances. They must be sure that the pilot has made adequate and proper flight preparations. Not only will they help hold accidents to a minimum, but they also will give transient pilots a favorable impression of the commanding officer and the base as a whole.

VIOLATION

"Thou shalt not fly over the top on a VFR clearance especially at nineteen thousand feet sans oxygen."

THERE WAS A FRONT between Florida and the Washington area lying approximately parallel to the eastern mountain range. The weather officer at Eglin carefully pointed this front out to the B-25 pilot.

"There will be thunderstorms along your route beginning an hour north of here, lieutenant, but you can probably get around them VFR. If not, you should change to IFR and go through a thin spot," the weather officer advised.

"O. K., thanks," the pilot replied, taking his clearance and heading for the door.

Three enlisted passengers were already in their seats in the rear of the plane and two passengers climbed into the front section with the pilot and co-pilot.

The flight proceeded in good order on VFR for an hour. Shortly, however, the scattered thunderstorms along the route became closer together, and finally a solid wall of cumulo-nimbus clouds barred the way ahead. The pilot started a climbing turn to the west.

At 12,000 feet he was above a deck of clouds, but not over the towering cumulus wall. Once he attempted unsuccessfully to contact an intermediate range station as he continued his climb on top — instrument flight on a VFR clearance. He climbed until an altitude of 19,000 feet was reached, 9,000 feet above maximum altitude authorized for IFR flight without oxygen. He held this altitude for nearly 10 minutes, finally cleared the wall of storms and started a letdown. The weather was good behind the front and a normal landing was made at a Washington field.

A bit uneasy in his mind about making a long flight IFR on a VFR clearance and flying so high without oxygen the pilot told an officer in operations what he had done. He was advised to forget it. He had made it safely, hadn't he?

The flight was typical of one of the most frequent intentional violations practiced by Air Force pilots—going on top for a time without changing from VFR to IFR clearance. The pilot doubtless would have heard no more about the incident had some of his passengers not become ill from effects of anoxia at the extremely high altitude. As it was, some of the passengers complained. There was an investigation and a subsequent hearing by a flying evaluation board. The pilot was suspended from flying duties.

The grave danger in such flights lies in the fact that they are often successful, and this success tempts pilots to repeat the unhealthy practice of violating regulations and rules of common sense. Any time you are reported for going over the top VFR you may lose your wings and flight pay. Every time you commit this violation you move a step closer to becoming a permanent number in the fatal accident files.

BELLYING IN

A SKILLFUL PILOT can crash-land the B-29 on an airport with a minimum of injury to his crew. A study of accidents which have occurred when all of the landing wheels were not down or part of the gear collapsed during the landing roll supports the conclusion that pilot skill and crew training are related to the damage the airplane receives.

Because of this proficiency there were only a few minor injuries to personnel and no major injuries or fatalities in 54 crash landings studied. There were several outstanding reasons why the number of injuries was kept so low — cool-headedness on the part of the pilot in planning the emergency landing, alertness of the pilot during the landing, and well-trained, well-disciplined crews. Of course, all of these accidents resulted in major damage to the aircraft involved but several of the pilots turned in stellar performances and saved the airplanes from being total wrecks. From the experiences of these pilots has been gathered valuable information to pass on to other B-29 jockeys.

There are various combinations of wheels-up landings. Sometimes one wheel refuses to come down. Other times the landing gears collapse one at a time as the plane rolls down the runway. However, the initial preparation is the same for all types if there is time, and in most cases there is enough time — such as when the gear refuses to come down when in the pattern for landing.

If a wheels-up landing is inevitable, this is the recommended procedure: salvo all bombs, drop auxiliary tanks and flares. Open all of the emergency escape hatches except the bomb-bay doors. If possible close the wheel nacelle doors. Stow all loose equipment and brief the crew upon their individual duties, assign a man to each fire extinguisher and axe. Warn crew members to stay clear of the lower turret areas as they have a tendency to come up through the fuselage during the crash.

Each type of landing should be considered individually.

The "belly landing" can be accomplished without injury to personnel. One pilot brought a B-29 in on a sod runway with all the wheels up and skidded only 750 feet. There was no injury to pilot or crew. He had made a normal approach, lowered full flaps, stopped the putt-putt, and shut off fuel boost in that sequence. The fuel shut-off valves were closed when he was certain of making the field. Just before contact he pulled the throttles back, placed the mixture controls in IDLE CUT-OFF, and cut the switches. The crew was informed via

THE B 29

interphone that touch-down was about to be made and the engineer was ready to apply the engine nacelle fire selector to any engine which caught fire as they slid along. This was efficiency and proficiency at its peak.

With the main gear down and the nosewheel up it is necessary to shift the center of gravity to the rear by shifting the crew and any equipment which can be moved quickly. In landing keep the nose off as long as possible and then let it down gently on the runway. Brakes may be used as required but not excessively.

If the main gear is up and nose gear down the B-29 really takes a beating. In landing with only the nose gear extended the fuselage usually breaks about midway between the pilot's compartment and the leading edge of the wing. When this condition is known to exist before landing, it is best to retract the nose gear and "belly her in." In one case, the main gears collapsed on landing and the plane traveled about 1,600 feet on the nose wheel and fuselage.

Another combination which can give a pilot a bad time is one main gear down and the other main gear and nose gear up. By landing on the good wheel and keeping the nose and wingtip on the opposite side up as long as possible with elevator and ailerons the tendency to cartwheel or ground-loop is minimized. Brakes should be used on the good wheels when the wingtip and nose strike the runway.

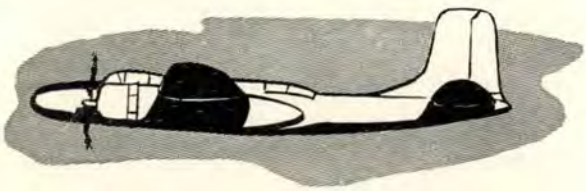
Several B-29 pilots have received a pat on the back for magnificent jobs of landing with a main gear up and the other main gear and nose gear down. They all used about the same procedure but there were varying speeds at which the wingtip on the damaged gear side began to strike the runway. They landed on the good wheel with the wing on the bad gear high.

One pilot had the plane down to 60 mph before the wingtip struck the runway. He did this by cranking in full left aileron trim in order to keep the right wing up and aided this by adding power to No. 3 and No. 4 engines. When the right wingtip contacted the runway, he applied full left brake and also left emergency brake. The plane stopped 90° to the right and just at the edge of the right side of the runway. He had started his landing at the extreme left edge of the runway.

Thus by having a working knowledge of the correct procedure, plus skill and quick-thinking many B-29 pilots have saved their crews from serious injuries and saved their planes from total wreckage.

ONCE IS ENOUGH!

(EDITOR'S NOTE: These are experiences of pilots who knew better but had to undergo a bit of a shake-up to have the safety lesson sink in. The authors of the following stories remain anonymous at their own requests. If you have had a "Once Is Enough" experience, share it with other airmen by sending it direct to the editor, FLYING SAFETY, Field Office of The Air Inspector, Langley Air Force Base, Hampton, Virginia. We will withhold your name on request.)



How's the Weather Ahead?

The moral to this story is check the existing weather at your destination while you are en route, even though you know, your copilot knows and the weatherman told you it would be CAVU when you get there. It was CAVU all right. Ceiling and visibility unknown!

My buddy and I sauntered out to our dreamboat. A brand new dual control A-26. He tossed a coin, took the honors and started up the ladder. It was close to midnight when the A-26 rolled down the runway. We were going on an extended cross country with New York as our first destination.

We had taken on a passenger who wanted to get off at Shaw Field. We agreed to take him to Shaw and gas up there. Two hours after takeoff, we were sitting over Atlanta at 9,000 feet. "Hey, Bub, call Atlanta and see if the weather is still O. K. at Shaw," I said. "What for? You can see a hundred miles," was his reply. "Besides, I've got my boy, 'Der Bingle' on the radio compass."

So, no position report, no weather, no anything, off we went.

In about 20 minutes we were flying on top of an overcast. Crosby said goodnight so we got back to flying the airplane the way we should. Wham, into the overcast we went. Just a cumulus cloud, I thought. That cumulus cloud must have been lying on its side because we were in it for about a half hour before we came out. Out on top again and I came to the conclusion that to say we were lost would be a gross understatement. Through the static I finally identified Columbia, S. C. We flew the needle into Columbia, changed to IFR and got the surprise of our young and nearly over careers when Columbia told us to make tracks for Atlanta because the range at Shaw was not operating, mainly because Shaw didn't have a range.

"How much fuel aboard and pilot's rating?" "Two fools, pilot rating 3-2," I replied. "Fuel, Fuel, FOX-UNCLE-EASY-LOVE," retorted Columbia Radio. We had so little, I could figure it in pints. Which I did.

The pilot, having too much rank to argue with, voted unanimously to try Greenville, S. C. To get a majority vote, he, himself, and he voted.

That gave him a quorum or something.

When he wasn't looking, I sneaked in a little tete-a-tete with Columbia Radio and was promptly told that the birds were walking — and slowly at that — at Greenville. Another vote, this time a forum (three and me makes four) and off we went to Atlanta.

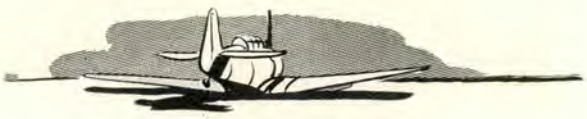
We ran the bomb-bay and auxiliaries dry. The needles on the mains were just about starting on their second time around when lo and behold Atlanta appeared on the horizon. We were back in that area where one could see a hundred miles.

Over Atlanta the right engine fuel pressure started shaking in step with my knees. We were at 3,500 feet. I pulled the wheel back, to slow up, dropped full flaps and wheels, did a "180" and announced that we were on the final approach to the Navy's air station in Atlanta. The pilot took over and started to pull up the wheels, but decided against that when the landing lights showed we were heading for a runway.

Needless to say, we landed O. K. on that blacked out field, deserted by the Navy except for daytime reserve activities. Examination of the gas tanks the next day revealed that all tanks were empty. The

left one must have quit on the final or when we were rolling down the runway.—COIN TOSSER.

P. S. The passenger took the first train to Shaw Field.



Required Reading

It had been a good flight. It was fun to get back up into the air again — particularly after being tied to a civilian job for the past two months. Yes, it had been a good flight, even if it was in a trainer, an AT-6.

I hadn't flown one of these planes since flying school back in '43, and there I was out of school five years and still flying an AT-6. "Doesn't compare with the fighters overseas," I thought, feeling a bit too hot for an AT-6. "Wonder when those P-80's are coming through for the Reserves."

This landing is going to be a cinch, I thought, when it was time to go in. It's going to be a "grease job" to end a perfect flight. Easy now. Yes sir, this is going to be a good . . . clunk, screech . . . shoulder straps tight . . . and plop. Of all the dumb, unforgivable things . . .to land with my wheels up.

I hadn't used the checklist. The operations officer stormed, and rightfully so, that he was going to work up a gadget to give guys like me a shock in the seat of the pants before landing. From here on, if the board lets me fly again, the checklist is going to be my favorite reading matter.—A RESERVE PILOT.

It Finally Dawned

You are about to hear from one man who is now a walking encyclopedia as far as AF Reg. 60-16 is concerned. I learned it the hard way. Here's how.

Last fall, I climbed into a B-25 and headed out on a VFR cross-country estimating three hours to my destination. As I climbed to altitude, the sun slipped behind the hills. I spent the first hour synchronizing the props, playing with the trim tabs and shooting the bull over the interphone with my copilot. He'd tell a lie, and I would top it. I'd tell a lie, and he would top it. If I had as much time as I told him I had, I wouldn't have let myself get into the jam that I did.

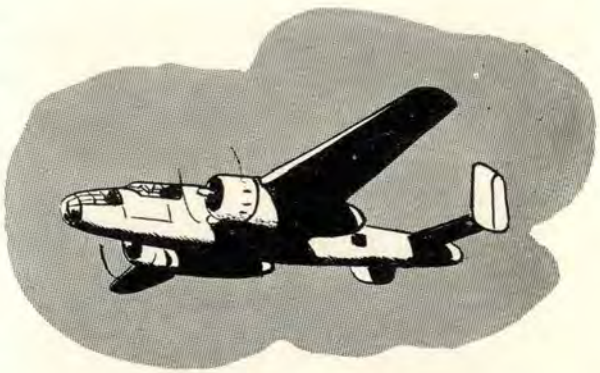
Right in the middle of the biggest war story I've ever told, I noticed that we were on top of the clouds. One hour later, we were still on top of the clouds. No position reports were made, although we had been in the vicinity of two airways facilities and three CAA range stations, hence no request for change in flight plan.

At this point I would like to add that although we looked from stem to stern, not a single map, facility chart or flashlight could be found aboard.

Fearing that I would become completely lost, I elected to go down through the overcast. Setting 2,000 feet as the minimum altitude, I nosed my airplane down. We broke out at 5,000 feet. I saw a lighted airfield, buzzed the tower and landed.

It was a civilian field about 30 miles off my course and about 110 miles from my first intended point of landing.

My copilot suggested that we get a room in town and continue on in the morning. I agreed and off we went.



At about seven in the morning, the desk clerk at the hotel, accompanied by the cab driver, who had brought us into town, were pounding on our door. The cab driver spoke first. "Were you guys on your way to Columbus when you landed here?" Before I could say yes, he said the newscaster at 7 A.M. said no trace had been found of the B-25. . . . That was enough, it finally dawned on me. I hadn't phoned in my arrival.

How did I become a walking encyclopedia, you ask? Well, my C. O. gave me two days to prepare a lecture on AF Reg. 60-16 and then arranged for me to give a one-hour talk on the subject during a flying safety lecture. Know that Reg.? Man, I could write it from memory.—JOLTED.

GOOD SHOW

FIFTEEN AIRPLANES landed by GCA in 50 minutes at a base enveloped in bad weather — that is the accomplishment of an RAF base at Lyneham, England.

The 15 planes were Yorks on an operational training mission. Upon their return to the field the ceiling was down to 100 feet with visibility one mile and night approaching rapidly. The GCA unit had not previously practiced rapid landings nor had the personnel been forewarned to expect this emergency.

Three planes were handled by the unit at a time, the others holding, and at one period the Yorks were touching down at two-minute intervals. The average spacing between landings was 3.3 minutes. This achievement reflects credit on the GCA ground crews and air discipline of the pilots. In this case, GCA demonstrated that it can and does make possible normal landings in conditions which would appear to make landings hazardous or impossible.

SAFER TO FLY

Perhaps the lessons of flight safety can be applied in some way to ground transportation. The European Air Transport Service, USAFE, flew over 12,000,000 air miles in 1947 carrying 245,000 passengers without a single fatality, while in the United States ZI, Air Force motor vehicle operators during the same period averaged 1.2 fatalities for each 5,000,000 miles driven.

A driver testing and selection program has been ordered. Strict testing of pilots pays off in a reduced accident rate in the air. Similar care may well help to reduce the slaughter on the ground.

TURN ON THE LIGHTS

During a recent flight, an Air Force crew was reminded forcibly of the blinding effect of lightning flashes encountered while flying at night in the proximity of thunderstorms. At the time of the incident, the copilot had the controls and was concentrating on the instruments. A bolt of lightning actually struck the nose of the plane and the flash was so intense that the pilot was blinded for at least 10 seconds. An accident might have occurred if both pilots had been looking out the windshield. Fortunately, the copilot was able to see the instruments immediately after the flash.

It has long been more or less standard procedure to turn on all cockpit lights as brightly as possible when flying at night on instruments through areas where lightning flashes are present. Even though the lightning struck this plane, it did not blind the copilot who already had bright lights on and was keeping his eyes inside the cockpit.

WINDS ALOFT

Winds moving across the continental U. S. at 50 knots or more are not uncommon, even at medium altitudes. In airplanes of the trainer or utility cargo type which fly slow, and types having a fuel supply of short duration, poorly planned cross-country flights are hazardous.

The pilot planning a flight, and the operations officer who signs his clearance, should study the winds aloft to assure that the flight can be completed with an adequate reserve of fuel remaining. A point of no return is generally marked off when planning flights over the oceans. It can be just as important to mark off such a point over land areas where no military fields are along the route.

Winds aloft charts are as useful as extra fuel tanks. Often, a flight plan can be shifted to an altitude of more favorable winds with the same effect as adding extra gas. A study of the synoptic situation will sometimes show head winds at one altitude, while a few thousand feet above they may be tail winds.

TOWER OPERATORS ARE HUMAN TOO

Traffic control tower operators are generally well-trained and conscientious in the performance of their duties. But pilots must know how to use effectively the services of the tower operators to obtain the maximum degree of safety. The Air Transport Command, which is the headquarters most concerned with air traffic control, believes that many accidents indicate that all pilots are not familiar with the duties and authority of tower operators.

A typical example is the pilot who cracks up taking off downwind. Tower operators are like everyone else and are not infallible. Therefore the direction of the wind, length and condition of runway and gross weight are factors that must be considered by the pilot when preparing to take off. The tower operator advises the pilot of the direction of the wind and the runway in use but the tower

instructions do not preclude the use of other available runways if the pilot deems advisable. The pilot merely needs to request the use of a particular runway. The tower will normally clear traffic for the use of another runway requested by the pilot.

It is the duty of the tower operator to control airdrome traffic to permit the maximum of safety. However, there are other factors involving safe operation of airplanes that the tower operators obviously cannot be responsible for, such as the selection of a runway long enough for a heavily loaded plane and the rate of climb and performance of various types of planes. These are in the pilot's bailiwick.

ONE FLIGHT FOR JANICE

By CAPT. JAMES L. DUMAS
Hdqrs. USAF Flying Safety Division

THERE WAS AN OCEAN of snow where the sky ought to be. Captain Larry Bates stood in the door of operations, his hands thrust deep in his flying suit pockets, and watched the flakes settling on the eight-inch layer already spread over the ground by two days of intermittent snow and sleet.

His restless eyes swept the sky and flight line and came to rest briefly on his B-25 standing in front of the tower. The snow was beginning to accumulate again on the wings although his crew chief had just finished brushing them off.

Larry flipped his half-smoked cigarette in the butt can in irritation, and stamped back into the weather office; he went back to his vigil at the teletype machines. For two days his long, angular face had been a mirror for the sequence reports. When a slight improvement in the weather to the east showed, his face would light up. When the reports were worse he would rumple his black hair and pace the floor in desperation.

Only one plane had been cleared eastward since Larry had been grounded on the Tennessee field. It quickly returned to the field, covered with ice, the pilot grimly smiling his thanks for being safely back on the ground. But Larry badgered him about his attempt. How was it? Any forward visibility? Windshield ice up? De-icers do any good? What was the temperature up there? Finally the major told him:

"Listen Captain, if you're thinking of clearing through this stuff you're nuts. Just thank your lucky stars you're on the ground. That is the worst weather I've ever flown in, and I've flown in some rough stuff."

"So have I," Larry said to himself as he turned back to the sequence reports. And he had. He had flown the Hump during the war, and no one would deny that some lousy weather existed along the route from India to China via the Himalayas.

Just then an ETA came in on a C-54 coming in from Langley Field, Larry's destination. He would get more information from the pilot of the C-54. He listened over the squawk box to the pilot's reports over various stations along the route. "Heavy icing over Richmond. Extreme turbulence over the mountains. Snow and ice over Tri City. De-icers only partially effective." With each report Larry's anxiety increased.

"Why did this have to happen to me? Janice will be madder than hops. The colonel's party is tonight. She's bought a new dress. What will I tell her? She'll never believe that I was grounded because of weather. She knows I went through the instrument school and that I'm considered a very good instrument pilot." He recalled the painful ordeal he went through with his wife the last time he was a day late getting home. This time it would be worse — he was two days late already.

Then the C-54 landed.

When the pilot walked in, Larry cornered him. The reports of the pilot were not as bad as he had expected. He could make it! He had de-icing equipment. There was no reason why the operations officer shouldn't clear him now.

Larry took his clearance in to the operations officer, the Lt. Colonel who had heard Larry's tale of woe too many times already. After staring at Larry for a while he asked, "Do you honestly feel that you have to fly in such weather just to get home? Do you think you can make it?"

"Sure, I can make it," he repeated the famous last words confidently.

"O. K.," the colonel replied, shaking his head. "I'm signing this clearance against my better judgment. I hope your insurance is paid up."

Larry practically ran to the plane. He was twenty paces ahead of the copilot and crewchief, and he was not impressed by the fact that his two passengers suddenly remembered some unfinished business and cancelled out.

After receiving several advisory messages from Flight Service, Larry was cleared for takeoff. At 600 feet he was in the clouds. Ice began to build up almost immediately. He let it build up on the wings. When he thought it no longer safe to wait, he started the boots to pulsating. The ice cracked and flew off. A thin smile came to his lips. He let it build up again.

This time, however, it collected much faster, almost as soon as the boots were turned off. Soon he could no longer see through the windshield, and his airspeed started decreasing. He checked the pitot

heater quickly. It was on. What was wrong? He turned on the prop deicers. Again that faint smile came as the airspeed started building up. The copilot, unimpressed, turned to see a note of dissatisfaction on the face of the crew chief. He usually stood between the two pilots with only the harness strapped to his body, but this time he had the chute on.

Turbulence set in as soon as they were over the foothills. Icing conditions were getting worse, and the de-icing boots would no longer clear the wings. Although Larry was now pulling 40 inches of manifold pressure and using 2,300 rpm's, the airspeed was decreasing steadily. The crewchief and copilot were exchanging more frequent worried glances now as Larry kept boring into the storm, showing no hesitance at all.

Finally the copilot said, "Don't you think we better go back, Captain?" "Naw! We can make it. I've flown in worse stuff than this over the mountains in China. We'll be home in a few minutes."

The copilot took up all the slack in his parachute harness. If this continued he was leaving the captain to fight it out the best he could.

As the airspeed decreased to 150 mph, beads of cold perspiration began to show on Larry's face. Turbulence made it almost impossible for him to keep the plane upright. The gyro instruments had spilled twice. "It's a good thing I learned to fly basic instruments — the Air Force should send all its pilots through the instrument school."

The airspeed was down to 130 now. Then 120, 110, full power and rpm's. "What made me think I could make it?" A sharp picture of Janice waiting, dressed for the party, flashed across his mind. "I can't hold it much longer," he thought. Speed still decreasing. "Prepare to bail out," he said to the crew.

That was all the crew chief needed. He dumped the hatch and out he went. Larry didn't even notice as he fought the controls.

"Better get out," he told the copilot.

"What you going to do?"

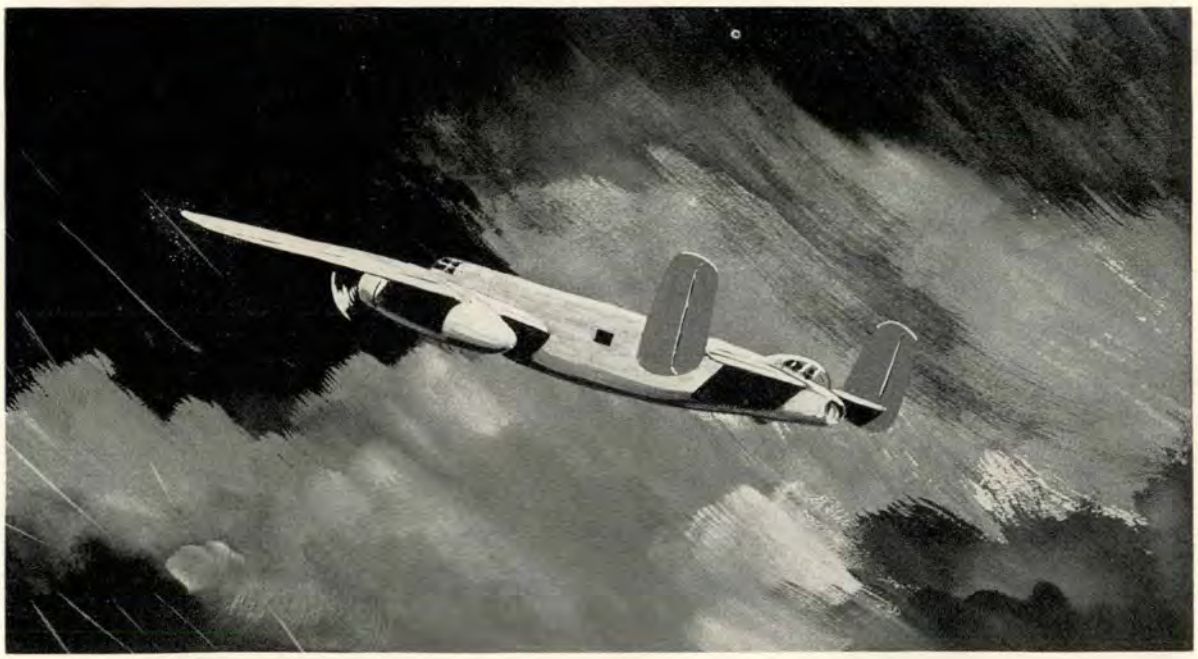
"I'll follow you."

The altimeter read 5,500 feet as the copilot left the plane. Almost as soon as his parachute opened, his feet touched the ground.

The next day, the wreckage was found in a small valley near a mining town. Larry was dead at the controls.

The chaplain didn't tell Janice the real reason Larry died. She would never have believed she was in any way responsible for his death anyhow. She would remember making his life miserable for several days because he was late the last trip, but what did that have to do with all this ice and snow? That was what killed Larry.

Or was it?



THE LOST COMMANDO

THE FLIGHT didn't run into trouble until it was 20 minutes out of Nichols Field. For nearly five hours the six crew members and 21 passengers had watched the monotonous roll of the Pacific flow under the wings. From Naha Airfield, Okinawa to the northeastern tip of Luzon the weather had been VFR.

As the C-46 approached Luzon, however, an ugly, unbroken mass of thunderheads appeared on the horizon. The third pilot, Major Peters, was awakened by turbulence and by the change in pitch as the propellers were advanced to climb above the first cloud barrier. He left his seat in the passenger compartment and went forward to stand behind Captain Smith, the pilot, and Lieutenant Jackson, the copilot.

The navigator came forward, and he and the pilot surveyed the line of storm clouds ahead and decided to circumnavigate it to the right. At this time Major Peters took the copilot's seat offered him by Lt. Jackson.

The C-46 started around the island of Luzon to the right and flew south along the western shore in an attempt to pierce the line of thunderstorms. Darkness settled over the islands as the radio operator, pilot and copilot worked doggedly to establish a radio contact that would lead them in to either Clark or Nichols Field. As long as the plane remained outside the line of storms it was possible to hear radio range signals, but as soon as a heading toward one of the fields was taken the plane would enter the storm area and static would obliterate all signals.

When a point thought to be due west of Manila was reached, Captain Smith and Major Peters decided to fly out over the China Sea, let down contact, and attempt to fly in under the storms. After flying an inbound heading for several minutes, the pilots became apprehensive of the mountains on the Bataan Peninsula, and since neither lights nor the shoreline came into view they climbed back to 10,000 feet.

After further discussion, the two pilots decided to go further south in an attempt to get around the thunderstorms. The severe weather had not been forecast and no radio report of the area covered by the storms could be obtained. As one of the pilots stated later, they figured one course of action was about as good as another.

Clark Field was finally contacted on VHF and advised that the C-46 was lost and unable to get inland on any radio range. There were no DF facilities available so the pilots continued a southward course until the navigator positively identified Lake Taal during a flash of lightning.

There the crew turned the plane north again and flew back to Lingayen Gulf and a heading was taken which would carry them over Clark Field. This heading was maintained until the navigator reported they should be at a point northeast of Manila. The C-46 was in the overcast in a blinding sea of lightning on this heading.

Clark Field was contacted on VHF and advised the plane was still lost and running low on fuel. GCA was alerted, but the pilots refused to descend to GCA working altitude because of their uncertain position and the mountains in the area.

With scarcely more than an hour of fuel remaining, the pilot sent instructions back to the passenger compartment for all passengers to don parachutes. One passenger, a pilot himself, put his parachute training to excellent use. He carefully briefed all the passengers on proper bailout procedure and personally saw that each man had his chute properly checked, fitted, and adjusted. He went from man to man answering questions and instilling confidence after giving his briefing.

Up front the crew decided to head inland to the north in search of a break in the overcast where they could be sure of bailing out over land. Another aircraft in the area inside the ring of storms was contacted on VHF, but the plane was unable to assist the lost Commando. Finally with less than 10 minutes of fuel remaining the pilot found a break in the undercast and saw lights below. The bailout order was given as the plane was slowed down to 110 mph and put in a shallow circle to the left.

The lieutenant who had briefed the passengers led the bailout. As his chute opened he looked up and saw the second man's chute blossom. The

others followed in quick order with all 21 passengers and the crew of six bailing out. The pilot left the plane on autopilot as he went aft to jump.

Twenty-six of the 27 persons aboard landed safely. The second man to bail out, a sergeant with a previous jump to his credit, was killed when he apparently used his quick release and fell from his harness at considerable altitude. He fell into a flooded rice paddy which led investigators to believe he thought he was about to hit the water and had released his chute too soon. In the briefing period prior to bailout, the lieutenant instructed all passengers to remain in their harnesses until either water or the ground was actually contacted.

By the end of the next day all the survivors had been found. The abandoned C-46 made an excellent belly landing in a cane field after its fuel supply was exhausted.

The primary cause of the accident was the ring of thunderstorms around Luzon through which the pilot chose not to fly. The weather was much more severe than the forecast had indicated. However, during the time the Commando was seeking to orient itself and get through the storms a C-54 came straight into and through the ring of storms and made a letdown and landing without difficulty.

Another factor was probably the failure of any one person to assume command and direct a definite procedure for meeting the emergency. Captain Smith, the pilot, was hesitant to exert his right of command over his copilot, Major Peters, a senior pilot. Major Peters did not attempt to take full command of the plane away from its assigned pilot. As a result, a diverse variety of solutions to the problem was attempted after discussion and compromise.

The navigator knew generally the position of the aircraft at all times, but did not keep a time, airspeed, and direction log after the emergency was encountered. Neither pilot was sure of his exact position after starting the search for a break in the ring of storms.

The weather condition would not have struck the crew unexpectedly if the pilot had instructed the radio operator to obtain destination weather while the plane was still inbound in good weather.

Responsibility for the accident was divided among the two pilots, the navigator, weather and inadequacy of radio and navigation aids.

Although it is sound practice to utilize to the fullest the assistance of experienced pilots when unexpected emergencies arise, it is essential that all pilots understand their command responsibility. The pilot, no matter what his rank, is in absolute command of his airplane at all times regardless of conditions under which the flight is made and regardless of who may occupy another place in the crew or as a passenger. This absolute command can be taken from the pilot only if he voluntarily relinquishes it to another pilot of superior experience or ability.

LETTERS TO THE EDITOR

Dear Editor:

In the November issue of FLYING SAFETY, Page 28, an error was noted in the answer section of the Safety Quiz.

The answer section shows "A" to be correct. According to Par. 57b, AF Reg. 60-16, dated 28 August 1947, "B" would be the correct answer.

May I take this opportunity to say I find your magazine interesting and informative, and a valuable aid in teaching Flying Safety.

ORVILLE L. ERDMANN
Captain, USAF
Lowry Air Force Base

★

Dear Editor:

In the Safety Quiz on Page 28, question No. 2, the minimum ceiling and visibility for visual flight plan outside control zones is given as 1,000 feet and one mile visibility. Shouldn't the answer be 1,000 feet and three miles visibility as published in AF Regulation 60-16?

The pilots of this unit wish to commend the Editor of FLYING SAFETY on a very interesting publication which is an invaluable aid to our flying safety program.

GRAFTON W. STULL
1st Lt., USAF
Reserve Training Unit
Sioux City, Iowa

We are considering transferring our proof reader to some remote base where he can concentrate on his ABC's.—ED.

★

Sirs:

I read every issue of FLYING SAFETY and receive much information and many pointers from the stories.

I like the type "Two Minutes Short" and "Scratch One Packet" which appear in the November issue. I am sure that articles such as these have a direct bearing on keeping the pilot up to date and conscious of errors in flying procedures.

One question I have is why do all safety manuals and magazines stress the importance of linemen at wing tips of air planes when taxiing in congested areas when very few fields provide personnel for that purpose? The pilot is always to blame for taxi accidents but a pilot who requests a lineman to walk each wing tip is looked upon as if he should get out of the cockpit and leave the plane on the ground. If linemen are to walk at the wing tips, the personnel should be available.

This letter is to commend you and your staff for an excellent publication.

Thank you for your information and keep up the good work.

1st Lt., Air Tac School
Tyndall Field, Florida

About the wing walkers, that is strictly within the prerogative of your C. O. or his engineering officer. It is the pilot's right to park his plane and have it towed through congested areas if wing walkers are not available.—ED.

★

Sir:

Re your Dec 47 issue of FLYING SAFETY I would like to take exception to your use of the word "windscreen" (page 23) as an affected-sounding substitute for the perfectly good American word "windshield."

I deplore this and other manifestations of an overly to - Britishisms - exposed mind. Certainly our American technical vocabulary is adequate to your needs. Leave airscrew, valve (for tube) accumulator et al to Hollywood and David Niven.

RALPH P. THOMPSON
Major, USAFR

★

Dear Editor:

I'm glad to see FLYING SAFETY is trying to keep us informed of the latest developments of air safety. Articles about what various commands are doing to brighten the safety picture are surely worthwhile. Along this line may I suggest the Air Materiel Proving Ground as a source for some interesting safety articles?

Take for example the project now underway in the enormous climatic hangar at Eglin Air Force Base. There they are seeking the know-how to make flying safer in the world's worst weather. (I mean the weather manufactured in the hangar is the world's worst, not the weather at the Florida field.) Within the walls of this amazing structure it will be possible to "fly" an airplane in sandstorms or in blizzards, in temperatures ranging from minus 78 degrees Fahrenheit to a withering 165 degrees.

Other projects of AMPG include such interesting items as test-ditching of various types of planes, experiments with weapons and so on, all of which have the safety angle.

E. B. WILSON
Captain, USAF
Edgewood Arsenal

WHY?

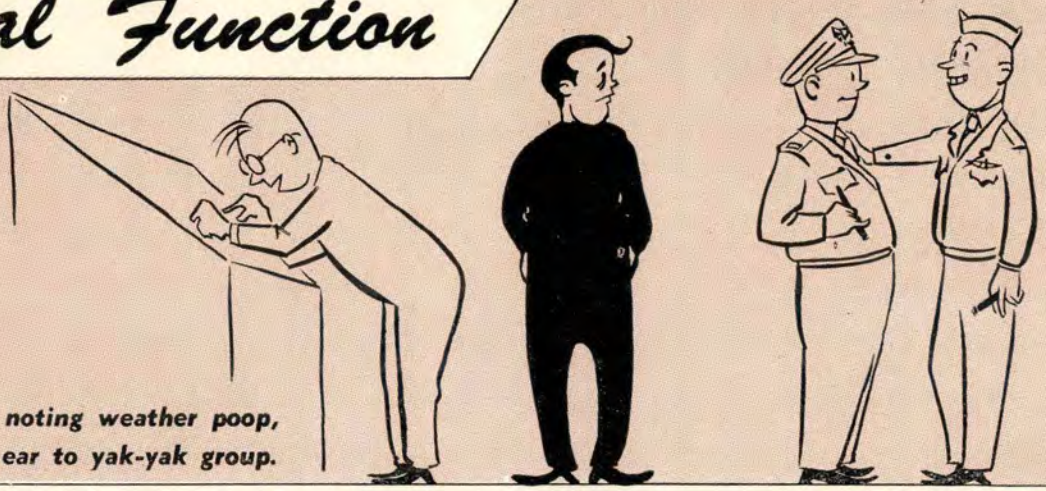
AT SOME POINT in his career a pilot gets the idea that he is one of the "hottest" pilots to ride on wings and attempts to prove it, quite often with disastrous results.

After practicing acrobatics for 20 minutes the pilot of the P-47N in this picture made a tactical approach at 300 feet and started a tight "peel-up." At about 900 feet he stalled out and was hanging on his prop in a bank of approximately 105°. A stall recovery was made and the tight turn continued. Flaps were lowered and the wheels were partially extended when the plane stalled again and crashed into the ground. The pilot was killed instantly.

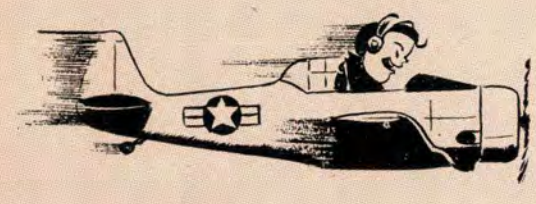
The pilot definitely over-estimated the limitations of his airplane and displayed poor judgment and technique in the traffic pattern.

WHY?

Mal Function



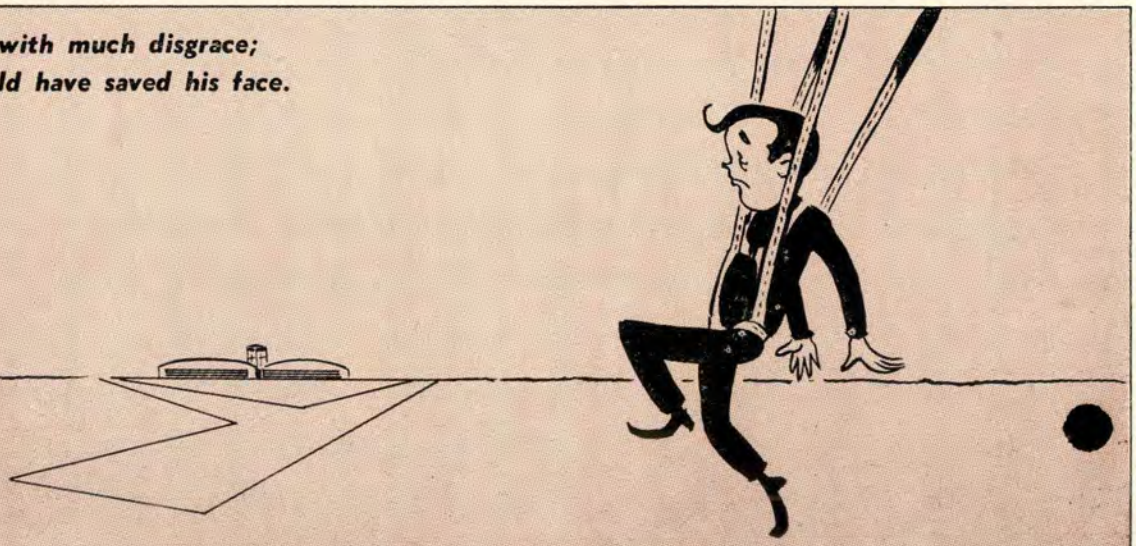
Instead of noting weather poop,
Mal cocks ear to yak-yak group.



Gobbling gas—he flies full bore;
Headwind uses even more.

Gallons more for caper cutting
Drops the total fuel to nutting.

Mal must land with much disgrace;
Flight plan would have saved his face.



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