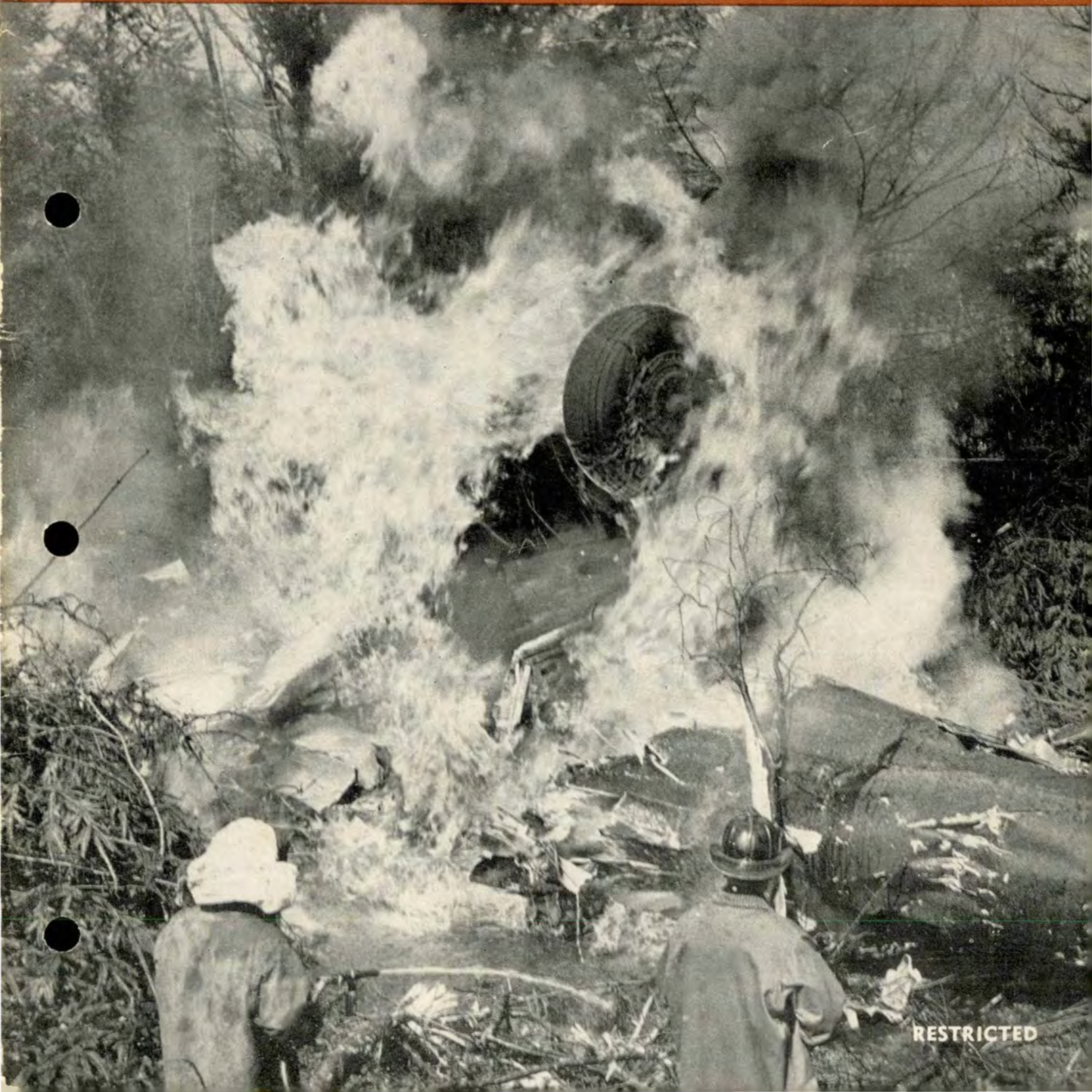
Flying Safety

HEADQUARTERS UNITED STATES AIR FORCE • RESTRICTED

JULY 1948



COVER STORY

At about one-fourth of a mile from the end of the runway, a P-61, making a simulated GCA approach stalled out, struck a group of trees, crashed and burned. The GCA final director had instructed the pilot to pull up to 1500 feet. All the evidence pointed to overcontrolling at low airspeed. Same old story.

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FLYING SAFETY

RESTRICTED

Volume 4 No. 7 July 1948

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FLYING SAFETY is printed with the approval of the Bureau of the Budget, Executive Office of the President of the United States.

Direct communication is authorized with the Editor, FLYING SAFETY, Field Office of the Air Inspector, Langley Air Force Base, Virginia.

FLYING SAFETY MEETINGS

AN EDITORIAL

AIRCREW PROFICIENCY, good maintenance and continuous supervision are without argument the first requirements for safe flight operations. They offer clear-cut answers to the oft-repeated question "what shall we talk about in our base Flying Safety meetings?"

There is a story of a lively, aggressive program behind every winner of a Flying Safety pennant, behind every reduction in the accident rate. A base that merely tacks slogans on the walls and exhibits pictures of past accidents is not conducting an effective Flying Safety program. Flying Safety means more than mouthing don'ts; it means improving the skills of pilots and crews, showing the way to better maintenance, and it also means that supervisors do more than sign their names to regulations.

Every unit on a base must be enlisted in the constant campaign to train personnel in safe operations and promote serious interest in accident prevention. This can be done.

Mather AFB, California, like most bases, has as the nucleus of its Flying Safety program two monthly meetings of all personnel connected with flying activities. But rather than just complying with the regulation by holding a meeting, Mather conducts them for the purpose of sharing talents, experience and specialties. Pilots are treated to fresh instruction in weather, flight planning, navigation, emergency procedures, engine operation and other subjects needed to keep them up to date. Supporting the program of lectures and discussions are weekly Flying Safety Bulletins compiled locally and issued to each pilot.

Maintenance personnel have their Flying Safety meetings too. At first, mass meetings similar to the pilot sessions were held. However, after a few such classes, with over 600 men attending, it was realized that more training could be accomplished if the meetings were broken down to the individual squadrons. The base Flying Safety Officer continues to organize the classes, gathers helpful information on safe maintenance, and monitors the meetings, providing subject matter for at least half of each class period. The other half is left to the individual maintenance squadron to discuss problems peculiar to itself.

One of the best ways to strengthen a Flying Safety program, Mather officers have learned, is to extend it into day-by-day operations. They start before the pilot is checked out in a particular plane by teaching him standardized procedure. Then after he has been checked out, he may at any time receive a spot check ride from a qualified instructor to determine if he is following safe practices.

Base regulations can and do contribute to accident prevention. Such rules as those which prescribe who can taxi an airplane, who can perform a test flight, and who can give a refresher check to a pilot who has not flown in 60 days, all influence the accident rate. Mather allows a crew chief to taxi an airplane only after he has been checked out and released by one of the base Flying Safety Officers. These same officers also inspect each airplane once a month for emergency equipment, using a 26-point worksheet.

Even the Post Exchange can be called on to boost the Safety Program. At Mather, for example, book matches with varied flight tips and maintenance reminders are handed out with purchases of tobacco.

It all adds up to a better record in lives and airplanes saved. Mather has had only two accidents since 1 June 1946, with 33,816 flying hours. If more time is devoted to a program like Mather's, the accident rate will be lowered.

It is evident from interviews with airmen at many bases that one of the greatest needs is for information and help on how to make safety meetings the heart of accident prevention. FLYING SAFETY Magazine throws open its pages to any unit that will contribute details of successful Flying Safety meetings and base accident prevention programs.

NOT JUST LUCKY

FLYING SAFETY—those are magic words to the 46th Troop Carrier Squadron at Kimpo Air Force Base, Korea. Magic because they mean the difference between staying in the flying business or going bankrupt. In Korea, replacement parts or new airplanes are hard to get. Consequently, any plane damaged in an accident is either out of commission for a long period or lost forever. So it is easy to see why everyone at Kimpo is flying safety conscious.

Although the primary job of the 46th Troop Carrier Squadron in Korea is to operate the "Korean Airlines," it also has a flying program in progress to maintain the proficiency of AF pilots assigned to military government throughout Korea and other AF personnel who are attached for flying only.

An AT-6 accident feature published by FLYING SAFETY Magazine (January 1948) showed that in one year accidents in that type airplane accounted for 34% of the total in the USAF. The officers and men at Kimpo, a Fifth Air Force Base, feel that they have set some sort of a record in the past year in counteracting that rate.

By the 10th of April, 1947, eight AT-6 airplanes had arrived at Kimpo for the use of 97 military government pilots and 16 MG observers in addition to base personnel—all those people to fly the AT-6, and only eight airplanes available. To make matters even more difficult, the MG pilots had only been getting their bare minimums in for the past year in L-5's. As the "wheels" put it, the proficiency level was very low.

A year later, 10 April 1948, was a red letter day at this base. It marked a year of flying, day and night, throughout the entire winter months, for a total of 6,776 hours, and 7,120 landings, all WITHOUT A SINGLE ACCIDENT OF ANY KIND.

Here is how it was done: Realizing that the proficiency of these men was at a dangerous low, a rigid transition program in AT-6's was initiated. This program was based on high checkout requirements, close supervision of each individual pilot, and great emphasis on Flying Safety.

To put credit where credit is due, you have to look further. Figuring 365 days in the year, and flying every day, it averages out to two hours and 10 minutes per day per airplane. Of course, there were days, and plenty of them, too, that even the ducks were walking. And last January, the field was closed for five days because of snow. It all boils down to a bunch of crew chiefs who wouldn't quit. They were the men responsible for keeping the AT-6 flying, working out of doors much of the time in the cold Korean winter. Most of the crew chiefs met the AT-6 for the first time in Korea and their experience came the hard way, but they kept 'em in the blue.

Maintenance personnel did more than their share in overcoming innumerable handicaps to keep the trainers in safe flying condition.

Problems of the operations section were magnified by the fact that they had no previous experience in single-engine aircraft operations. This problem was partly overcome by close and constant analysis of all USAF accidents involving AT-6's as reported in the AF Aircraft Accident Review. From these accidents, valuable information as to the cause and preventive measures was obtained.

Facts and figures, especially on the subject of AT-6 accidents don't lie. The superior record of the 46th Troop Carrier Squadron reflects the highest degree of efficiency and proficiency. They're not just lucky, they're good.

These are the men who did the job of keeping the AT-6s of Kimpo AFB, Korea in the air. Without their wholehearted cooperation and pride in their work, there would have been no safety record chalked up here.

WEATHER HAZARDS TO SUMMER FLYING

Prepared by the AIR WEATHER SERVICE

SUMMER FLYING as a rule presents considerably less weather hazard to the cautious and weather-wise pilot than may normally be expected during the winter months. Low pressure systems covering large areas are not nearly so frequent or violent; the icing hazard is practically nonexistent at medium altitudes; and high head winds common to the winter season are encountered less often. Summer, however, brings its own peculiar hazards to flying, notably those encountered in thunderstorms and fog.

Much has been written on the subject of thunderstorms—how they form, what they are like, and how and when to fly through or around them. However, it is wise when discussing this hazard to give some thought to where and under what conditions the storms usually are found. There are in general two types of thunderstorms—the frontal and the air mass storm. Since frontal storms are caused by the inter-action of adjoining air masses, perhaps it would be wise to discuss briefly the types of air masses found in the United States during the summer season and their relationships to thunderstorms and fog.

POLAR AIR MASSES. Two types of polar air masses occur within the United States—continental polar air and maritime polar air. Continental polar air originates in the sub-polar regions of Canada and moves southward into the United States, usually behind a strong cold front. At its source region it is cloudless with fair visibility and it is extremely stable. As the air mass moves southward it is heated in the lower layers, causing a certain amount of instability indicated by small cumulus clouds (fair-weather cumulus). Excellent visibility exists at all levels.

MARITIME POLAR AIR. Maritime polar air, contrary to its winter characteristics, is relatively stable and bears little moisture at high altitudes (above 10-15,000 feet). "MP" air, upon proceeding southward over the cold coastal waters of the west coast, develops ground fog. This visibility restriction is usually dissipated a short distance inland by heating during the day, but forms again at night by radiational cooling. As the air mass moves eastward across the western mountain ranges, a few showers occur, tending to remove the little moisture remaining. The air mass now becomes almost indistinguishable from continental polar air.

TROPICAL AIR MASSES. Tropical air masses are of three main types. Continental tropical air, a warm and extremely dry air mass originating over Mexico and the southwestern plateau area, presents very little in the way of flying hazards. Tropical Pacific air occasionally strays over southwestern Arizona and southern California. Maritime tropical air mass originating in the Caribbean and Gulf waters has by far the most appreciable effect of all of the air masses on summer weather conditions in the United States.

MARITIME TROPICAL AIR. Maritime tropical air developing in South Atlantic waters dominates the summer weather of the central, southern and eastern U. S. During the summer season, this air mass has a great capacity for moisture and is potentially unstable to a great degree. At night, "mT" air may form low-level stratus and strato-cumulus clouds with low visibility along the coasts. During the day, as the air mass moves inland and is subjected to afternoon heating, the low morning cumulus clouds may develop into cumulo-nimbus and form widespread, scattered thunderstorms. These airmass thunderstorms usually dissipate during the night. In mountainous regions, orographical thunderstorms may arise in addition to the air-mass storms, forming an extensive and ominous barrier to flight. As the "mT" air continues northward, should its lower layers be cooled over such an area as the Great Lakes, low stratus and fog will be formed. This condition also occurs frequently along the cold coastal waters of the North Atlantic, causing restricted visibility.

SUMMER FRONTAL WEATHER. Warm fronts may cause a widespread area of weather activity, evidenced by prolonged rain, fog, and stratiform clouds, covering an area sometimes 500 to 1000 miles in length. Lowered ceilings and visibilities should be anticipated after nightfall under these conditions. Thunderstorms may also be encountered in a warm front situation if the warm air is sufficiently unstable. As the warm air is forced aloft, released stability will cause the formation of thunderstorms superimposed over the stratiform clouds. Likewise, heavy turbulent showers may be superimposed on the steady stratiform rainfall. Pilots, flying easily through warm fronts, may suddenly find themselves exposed to extreme turbulence and precipitation.

Cold fronts usually form in the central states and move eastward and southward. Thunderstorms formed are somewhat scattered, but may become extremely intense in local areas. These fronts are narrow in width, but extend many miles in length. They are evidenced by great vertical developments immediately in the area of the front. As a rule the further south a cold front progresses, the more unstable and moist maritime tropical air it encounters. Hence, a greater storm potential is developed. During the summer season, squall lines consisting of a line of thunderstorms frequently develop ahead of cold fronts. These storms seem to reinforce each other in energy and instability so as to form a fast-moving wall of heavy turbulence, precipitation and lightning. A pilot obliged to fly through a line squall should try to determine by observing the cloud structures aloft, the least severe path through the storms and should proceed along the selected path in a direction perpendicular to the plane of the squall line. This path will be the shortest distance through the storm area.

THUNDERSTORMS. Many Air Force units operate flights in thunderstorm weather. These flights proceed around, under, over and sometimes through thunderstorms. In many cases, flight through the thunderstorms encounter only moderate turbulence. Occasionally the turbulence is severe enough to throw the aircraft out of control with such suddenness or for such a long period of time as to cause damage or injury. In rare cases, the vertical drafts may act with sufficient violence to cause the destruction of the aircraft in the air unless flown at reduced airspeed. No satisfactory method is now available to forecast the intensity of thunderstorms. The Air Weather Service is now participating in a Thunderstorm Project to determine what types or stages of thunderstorms will permit safely-conducted flights.

* * * *

A pilot preparing his Flight Plan (Form 23) should study carefully teletype weather reports of all stations en route to his destination. He should observe local cloud coverage, visibility, "spread," and surface wind direction. He should determine by discussion with the forecaster, current areas, undergoing frontal passage, and actually form in his mind a picture of the weather conditions he expects to encounter.

In planning summer flights, a pilot should avoid two hazardous conditions—(1) the encountering of thunderstorms formed orographically, by air mass, or by cold or warm fronts, and (2) flight into an area shrouded by fog.

Any pilot, provided that he analyzes his summer weather carefully and exercises ordinary common sense, may "fly through the air with the greatest of ease."

A Summer Air Mass Thunderstorm

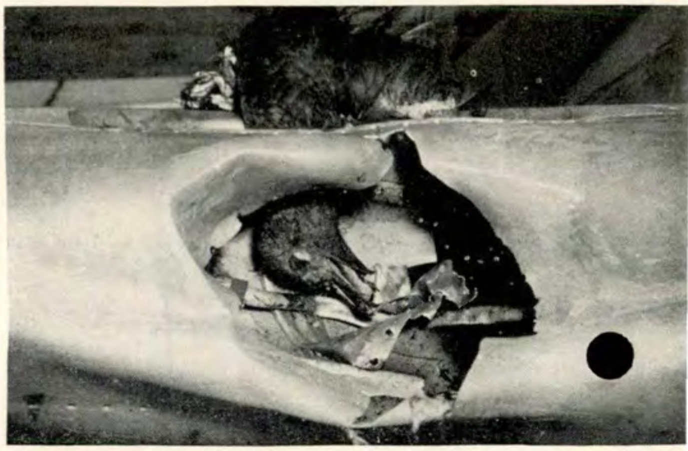
Mammato—Cumulus Indicating a Thunderstorm and Extreme Turbulence.

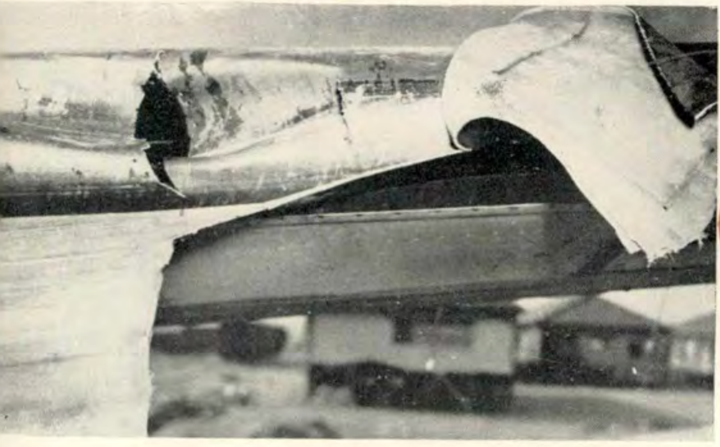
WATCH THE BIRDIE

IN SPITE of all the rules, regulations, SOP, radio direction and light signals, birds continue to fly their merry way with utter disregard for other air traffic. Whatever you can say about birds vs airplanes, they still seem to go out of their way to get in the path of airplanes. Three typical accidents illustrate their hazard to safe flight.

Cruising along in clear skies of the southwest, the occupants of a B-29 felt a severe shock. A member of the crew checked the airplane wings from the bombardier's position and discovered a bird had penetrated the leading edge and was apparently stopped by the wing spar. After landing, a 23-pound eagle was removed.

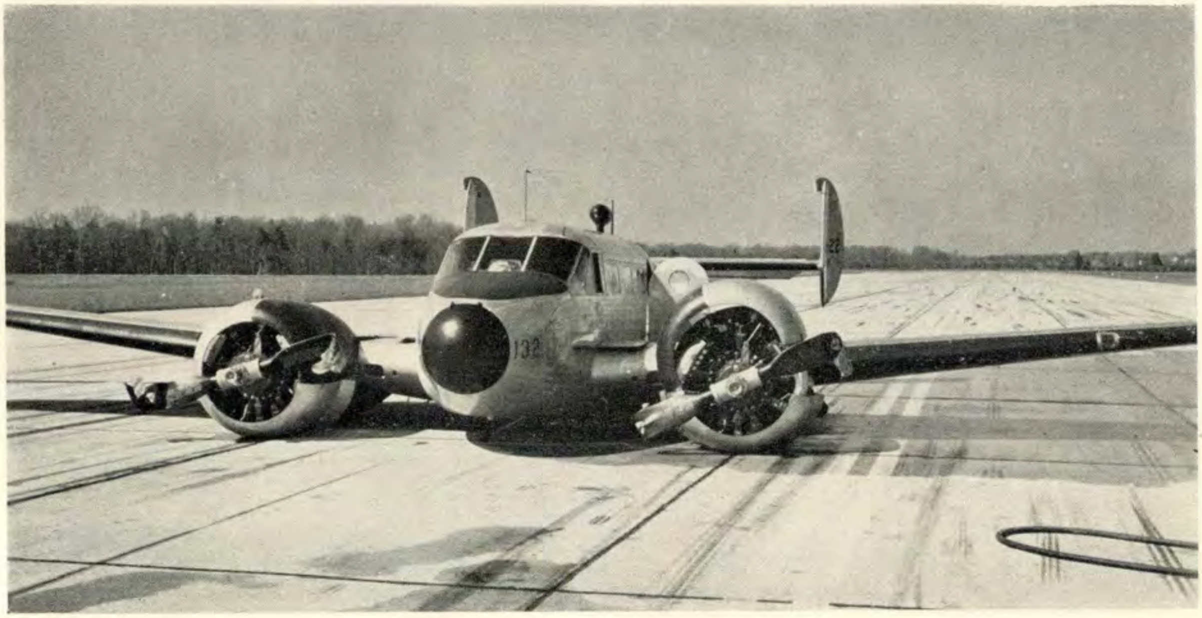
Another bird that played Kamikaze with a plane before the pilot saw it was a buzzard flying in the traffic pattern of an air base in the south. A National Guard P-51 collided with the buzzard while on an overhead approach and immediately asked for an emergency landing. Although the wing was so badly damaged it required 250 man-hours to repair, the pilot made a safe landing.





After flying through a turbulent area over Japan, the pilot of a C-54 felt vibrations and noticed that the left wing was heavy, requiring excessive trim. Looking out, he saw the outboard de-icer boot peeled back and flapping across the top of the wing and a hole in the leading edge about 10 feet from the tip. The transport was near its destination at the time and crash equipment was alerted to stand by. Upon investigation after a successful landing, the remains of a large duck were found in the No. 1 main fuel tank.

Exciting—WASN'T IT ?



EARLY in his flying career a pilot is taught to cope with emergencies, to remain cool under fire, and obey instructions. However, in this case, a C-45 pilot was misled by incomplete and hurried instructions.

The crew chief of the C-45 notified operations that he had forgotten to refasten the cowling after performing maintenance on the left engine. The pilot had overlooked the loose cowling during his exterior inspection and also during the accomplishment of the checklist. The tower operator was requested by operations to notify the pilot before takeoff that the cowl flaps on the left engine had not been fastened.

The tower had already cleared the C-45 for takeoff and about the time the airplane was 25 feet above the runway with wheels coming up, an urgent call came over the radio—"land if possible" —"land if possible!" The pilot cut power, flicked the gear switch to "down," and proceeded to land on the remaining two-thirds of the 5800 foot runway.

As the landing gear touched back on the runway, the wheels folded under. The gear hadn't time to extend fully.

After he committed himself to land, the pilot was informed by the tower that the emergency was due to the cowl flaps being unfastened.

It is not the intent here to absolve the pilot of blame in this accident. There was no conceivable excuse for flying the airplane in the shape it was in. His was gross negligence. Nor is it the intent to absolve the crew chief. Both of these people dropped the ball. However, the major fault was that of the tower operator who acted on the spur of the moment. He should have told the pilot what the trouble was before he screamed excitedly "land if possible," and left it up to the judgment of the pilot as to whether a landing should have been attempted.

WELL DONE

For an Outstanding Performance at Maxwell Airforce Base

A PILOT TOOK OFF in an A-26B from Maxwell AFB on a local transition flight for the purpose of checking out an engineering officer.

After takeoff, he remained in the traffic pattern. The landing gear was extended and all checks indicated the gear was down and locked. The pilot was cleared by Maxwell Tower for a full stop landing—and a normal approach and touchdown were made.

After rolling approximately 100 yards, the crew chief yelled that the right gear was folding. He had noticed that the strut had moved approximately one and a half feet from the extended position towards the retracted position. The instructor pilot reached forward and applied full rpm and as he did so, his student applied full throttle. With 52 inches and 38 degrees of flaps, the A-26 became airborne again before the right propeller struck the ground. After the airplane had climbed to a safe altitude, the right gear remained in a partially-extended position. The wheels were retracted and seemed to function properly. However, when the gear handle was placed in the down position, the left main gear and the nosewheel operated normally, but the right gear extended approximately halfway. This was reported to Maxwell Tower.

The Chief of Staff, Air University, flying in a C-45 with the officer-in-charge of transition training, moved into formation with the A-26 which was being flown at reduced airspeed. The occupants of the C-45 maintained a position to watch the movements of the right gear—while the crew of the A-26 retracted and extended the gear several times.

After trying the normal and emergency systems for lowering the wheels, a series of short dives and zooms at decreased and increased airspeeds ranging from 120 to 170 miles per hour were performed in an attempt to get the right gear to snap into the down-locked position. The right prop was feathered to reduce the propeller blast against the right gear and once again a series of short dives and pullups at low airspeed were performed. This attempt was also unsuccessful.

The chief of staff returned to Maxwell with instructions for the A-26 to circle until the Tech Orders could be checked more thoroughly for possible methods, other than regular emergency procedure, for lowering the gear successfully.

The chief of staff, now in the tower, instructed the A-26 crew to climb to sufficient altitude to attempt the following procedure:

a. Place 10 degrees of flaps down.

b. At an indicated airspeed of approximately 200 mph, start a power glide at an angle of about 20 degrees to the ground.

c. At an airspeed of approximately 200 mph, place the flap switch in the down position, reduce power completely and extend the gear.

Gear and flaps were extended at the same time and power was reduced to zero. This method was unsuccessful. On the second attempt, the landing gear lever was placed in the down position after approximately 25 degrees of flaps were lowered and power was reduced just after the wheels started leaving the retracted position. With the sudden deceleration of the airplane, due to full flaps being down, and sudden reduction of power, the right landing gear snapped into the down-locked position. Flaps were retracted to 15 degrees, power was added, and the A-26 was flown to Maxwell AFB at 155 mph indicated airspeed.

The tower was informed that the red light indicated the gear was not down and locked and the warning horn had sounded upon reducing power, also the right landing gear down and lock light was not on, although the nose gear and left landing gear green lights were on.

Upon clearance from the tower, the pilot made two power-on approaches to the field with 38 derees of flaps at an airspeed of 150 mph and rolled the right gear on the runway to test its down-and-locked position. Both touch-and-go landings indicated the gear was down and locked and the tower cleared the A-26 for a normal landing.

The airplane was landed under power and as the gear seemed to hold satisfactorily, power was reduced, full flaps were extended, and all necessary switches were cut. The airplane rolled to a stop and downlock pins were placed in the gear.

Investigation after landing revealed the following facts:

a. Switch assembly, P/N 4248-P.S. 100, was defective.

b. Two bolts, P/N X 46 A 473, were sheared in the lug assembly main landing gear latch release, P/N 420 802.

It was the opinion of the inspector of base shops that malfunction of the operation of the gear was caused by the broken bolts wedging in the mechanism. It was recommended that bolts, P/N X 46A-473, in all A-26's be inspected immediately or not later than the next 25-hour inspection.

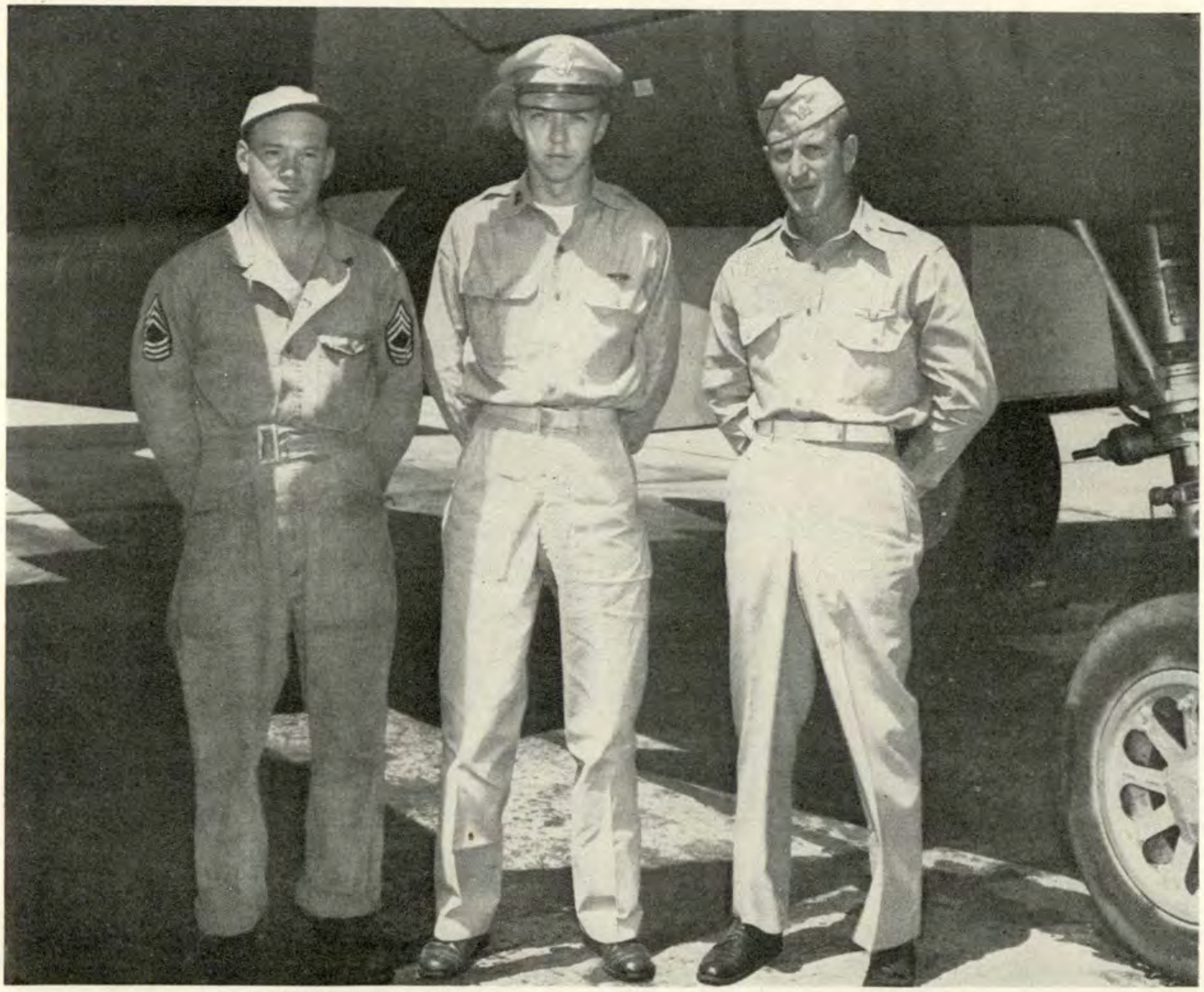
The efforts of all concerned to prevent materiel damage and possible injury to personnel are commendable and in the best interests of furthering the U. S. Air Force's flying safety program. In particular, the following are considered noteworthy:

The alertness of the crew chief, MASTER SERGEANT GARNETT C. WATTS, in observing the reaction of the landing gear on touchdown.

The alertness of both the pilot, CAPT. DON D. MARTIN, and instructor pilot, CAPT. DONALD F. DECAMP, in applying power instantly in order to become airborne before damage resulted.

The thoroughness of the chief of staff, COL. KARL T. BARTHELMESS, the officer-in-charge of transition training, CAPT. GENE F. OHOLENDT, and others in checking all operating and emergency measures to arrive at a solution which prevented a major accident.

M/Sgt. Garnet C. Watts, Capt. Donald F. DeCamp, Capt. Don D. Martin



A BASE SHARP

BY LT. RODGER W. LITTLE

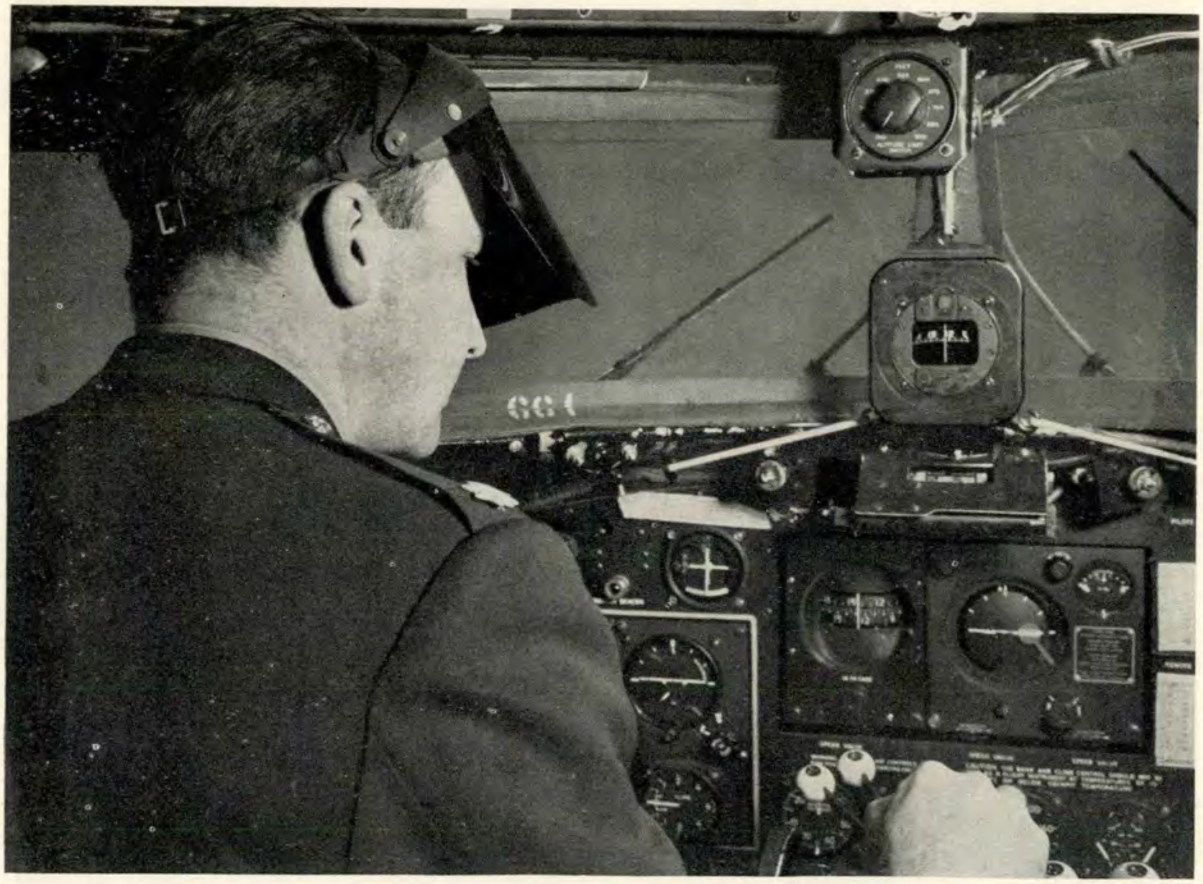
WRIGHT-PATTERSON AFB is demonstrating that a base can teach pilots to fly instruments safely and confidently by using personnel and equipment on hand.

Officers who supervise flying at this AMC base believe that it is well worth spending 20 days out of a pilot's year to keep him up to date on instrument practices. With an eye on the maintenance of flight safety and reduction of weather accidents, Wright-Patterson is trying to raise each pilot from white card level to green card proficiency. The base instrument training school at Dayton offers an example of compliance with the spirit as well as the letter of AF Reg. 60-4A.

The school operates under the direction of Capt. Felton W. Hall and is organized along standards developed by the USAF Instrument School at Barksdale. Its program is monitored by a standardization board and includes three units: flight, ground school and Link trainers.

The ground-school phase of the four-week course begins with a Flying Safety lecture, and safety is stressed throughout the entire course under the guidance of 1st Lt. S. A. Mauriello. The principal ground-school subjects are weather, instruments, flight rules, review of maps and navigation, radio equipment and procedures, and Air Force instrument approach systems. Weather is taught by a rated meteorologist who presents it from a pilot's standpoint. Most of the Link-trainer instructors are former rated pilots and are thoroughly familiar with all phases of instrument flying. There is a total of 63 hours of ground school to be absorbed during the four-week course.

Along with this, the school conducts weekly lectures on new trends, latest applicable regulations and



ENS ITS PILOTS

YING SAFETY STAFF

latest equipment. These are coordinated with the Flying Safety officer's bi-weekly program and are attended by all base pilots. Cruise control, weight and balance, air traffic procedures, CAA regulations, and polar navigation are just a few of the subjects covered in a three-month cycle. Each succeeding cycle is designed to cover the same general ground, however, each cycle will be altered to include new data, new trends, and worthwhile suggestions by rated personnel attending.

There are approximately 850 pilots on this base who require annual instrument checks. At present, one fourth of these pilots receive the full four-week course at the school within a year. Graduates of the Air Force Instrument School, now at Barksdale and formerly at Bryan, Texas, go through a one-week refresher course. Non-graduates go through a full-four-week course. Expansion of the school is planned to attempt to give twice as many base pilots the full course of instruction.

The flying instructors, headed by Capt. C. W. Walker, are all graduates of the Air Force Instrument School. Their policy is to conduct flight checks in accordance with those at Barksdale, and their loyalty and devotion to teaching instrument flying procedures and techniques is notable. They do not call a poor ride by a student a "failing ride," but refer to it as an "instruction ride." All checks are given fairly and impartially. There is special emphasis given to overcoming the particular problems of each student.

Each instructor has two students fly with him at a time, thus enabling one to fly while the other benefits by observing the exercise.

All instrument flying instruction is accomplished with 12 C-47's and they are in the air a total of

about 1500 hours per month, while the 14 Link trainers are in operation a total of 1100 hours per month. The use of a centralized turbine unit in a separate room outside the Link building prevents noise during Link operation, provides more efficient operation of the Link, and reduces temperatures during the summer months.

Students are assigned to the school for four weeks and have a busy schedule. They have no extra duties during this period and can devote all of their time to learning instrument flying. The average student acquires eight hours of Link in the new C-8 trainer, which is recognized as the best teacher of procedure next to actual flying instruction. Each student makes five SCS-51 (ILS) approaches, 10 range letdowns under the hood or in weather, and six GCA approaches. Finally, students go out and hunt weather to build up their confidence in actual weather flying. The total flying time accomplished by each student is 60 scheduled hours, one-half of which is hood time, during the four weeks.

The base instrument school's belief that any pilot can spare 20 days each year to improve his proficiency in weather flying is borne out by its own accident-free record in the 20 months of its operation. Its instructors and students have flown more than 10,000 hours, approximately 1,500,000 miles, without a single accident. And this time was sometimes logged under unfavorable weather conditions.

Wright-Patterson's local instrument training program to keep pilots up to par could be adapted to operations at any base. A little imagination and sincere effort will guarantee improved proficiency. And proficiency produces safe flying.

PENNANT WINNERS

MANY FLYING SAFETY PENNANTS changed hands after datum was compiled for the period of January through March 1948.

Flying time for the period was compiled from official AF Form 110 reports and all continental USAF bases were considered in the competition based on AF Letter 62-3.

As evidenced by the award of a P-80 green pennant to the Air Force Resident Representative, Lockheed Aircraft Corporation, Burbank, California, statisticians aren't missing any tricks in determining the true winner of each pennant.

Air Materiel Command bases won the greatest number of pennants, with eleven to their credit. Eglin AFB was the leader among bases by winning three green pennants (A-26, B-17, P-51) and a white pennant (Misc.). Tinker AFB was next with a green pennant (C-54) and a white pennant (P-47). AMC bases winning white pennants were: Olmsted AFB (B-17), Muroc AFB (B-29), Wright-Patterson AFB (C-46), and Griffiss AFB (C-47). Then there was the green pennant winner for the P-80 at Lockheed.

Tactical Air Command took five pennants with March AFB winning three of the five; green pennants (C-47, L-5) and white pennant (B-25). Langley AFB won the blue pennant for the P-80. Shaw AFB was the white pennant winner for the AT-6.

Training Command also had five pennant winners. Among these, Lowry won two, white (C-45) and blue (C-47). Mather AFB gathered in a green pennant for the B-25. Williams AFB won the green AT-6 pennant and Randolph AFB won the blue Misc. pennant.

Air Defense Command was a five-time winner, with Hamilton AFB grabbing off a blue pennant (AT-6) and two white pennants (A-26, L-5). Hensley AFB won a green pennant for the C-45 and Dow AFB won the same for the P-47.

The Air University had Craig AFB represent it by winning a blue pennant (C-45) and a white pennant (P-51).

Headquarters Command, USAF was represented by Bolling AFB taking blue pennants for the B-25 and P-51.

Fairfield-Suisun AFB was a blue (C-54) and green pennant winner (Misc.) for the Air Transport Command.

Strategic Air Command had one winner at Walker AFB for the B-29 green pennant.

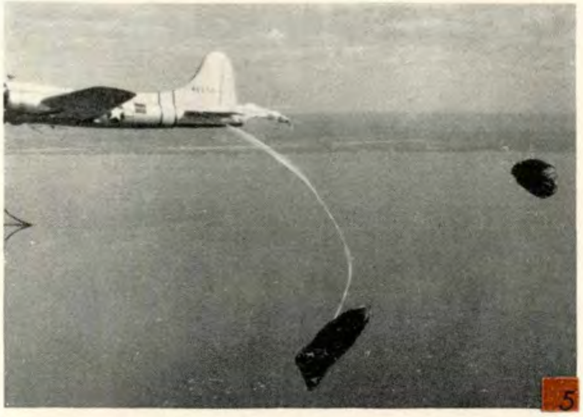
"Flying Dutchman"

THE COMPLETE RECORD of an accident is shown in the photographs on these two pages. The action pictures were taken by engineers in an accompanying plane as a new type parachute was tested on the A-1 Air Rescue lifeboat.

The lifeboat was dropped over the prescribed target at 1,000 feet and at an airspeed of 170 mph. The main parachute canopy swung up and struck the left side of the fuselage to the rear of the wing. The pilot chute dragged the main canopy into the left stabilizer, then tore loose, leaving the main chute billowing over the top of the control surface. The pilot of the B-17 experienced a momentary loss of control until the lifeboat dragged the shroud lines and main canopy free of the plane. The lines can be seen parting under the strain.

As the lines and chute dragged over the tail structure, they ripped the horizontal stabilizer, but once the equipment had torn free, the damage did not affect the B-17's flying characteristics and a normal landing was made.

Two previous drops with this type chute and equipment were successful at an airspeed of 150 mph. Engineers who observed the unsuccessful test drop advised that a secondary static line be attached to the A-1 boat to prevent the high acceleration to the main parachute bag by the pilot chute. The secondary static line will separate the parachute system from the airplane at a predetermined time below the plane, rather than allowing separation to occur merely from the force developed by the pilot chute.



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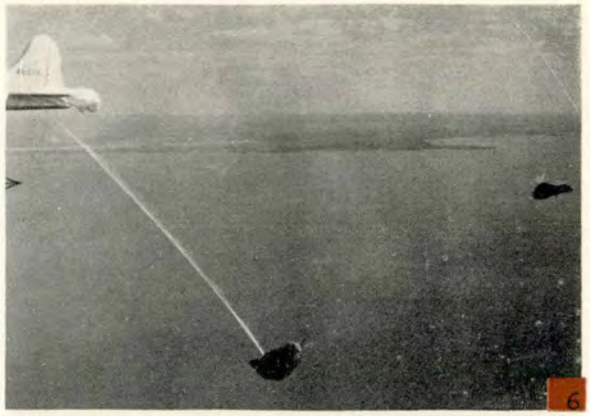

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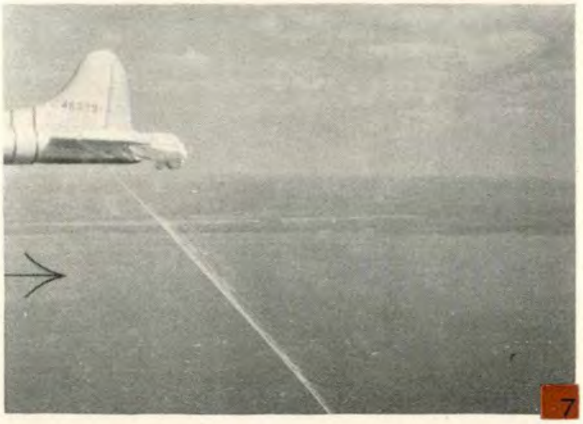

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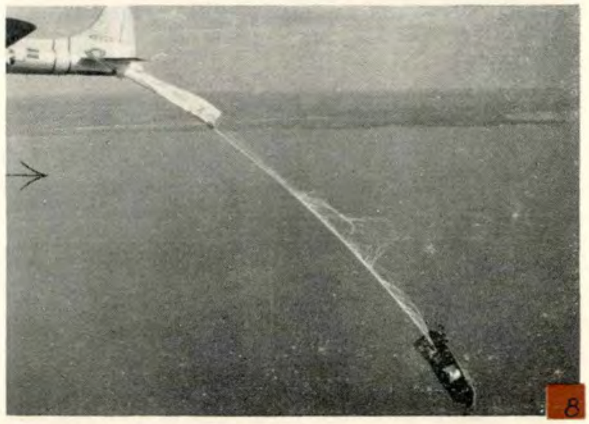

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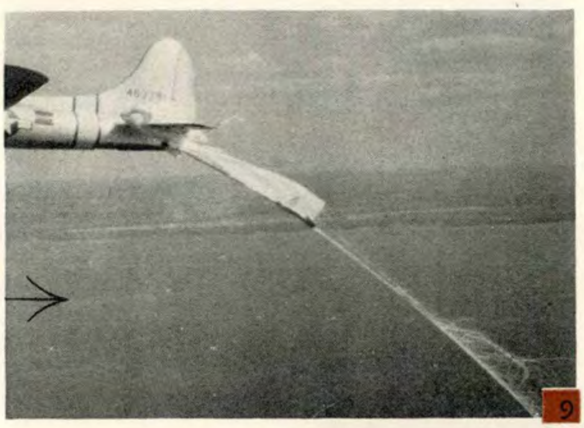

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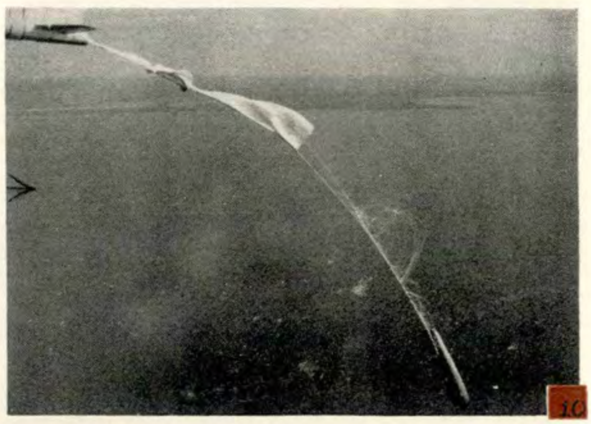

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TEST FLIGHT

BY STAFF SERGEANT CHARLES M. PETERS
Hq Eastern Pacific Wing, ATC
Fairfield-Suisun AFB

SOME YEARS AGO a motion picture called "Test Pilot" was packing the public into theaters. Maybe the reason this film was so popular was the big-name stars used. Then again maybe the appeal was romantic. After all this aviation business was only in its infancy and, with the possible exception of present-day school children, all of us can remember when the words "test pilot" would cause us to visualize a handsome young daredevil.

Today, with minor exceptions, the lone wolf test pilot complete with helmet, goggles and white scarf has been replaced by teams of specialists called "test crews."

The science of aviation has advanced so rapidly and airplanes have become so complicated that it is no longer possible for one man to do the job. The modern airplane test must be performed by a team. In addition to being airmen, these teams are also trained in airplane engineering and aerodynamics. Instead of taking an airplane up and just diving and looping until the wings fold back, this team goes about the job quietly and efficiently.

As an example of how these test crews work, let's visit the flight test section of the 2nd Air Transport Group, Pacific Division, Air Transport Service, Fairfield-Suisun AFB, California.

The Air Force requires that regular inspections and maintenance be performed on all airplanes. Certain of these inspections result in parts or sections of the airplane being disturbed physically, or maybe replaced, or perhaps a modification is made on the plane. In any event, in the interest of safety, after the ground crewmen have completed their work the test crew takes the plane up and gives it a flight test. This test will determine whether the plane is ready to be put back on the trans-Pacific run or should go back to maintenance for additional work.

The flight test section is under the supervision of Capt. Robert G. Liggett, who in turn is responsible to Maj. William A. Covington, engineering officer of the 2nd Air Transport Group.

At present, the flight test section is divided into two crews. Captain Liggett has one crew and the other is under the supervision of Capt. Wayne K. Galloway.

Each crew consists of a pilot, a navigator, an aerial engineer, and a radio man. The copilot is not a regular member of the crew and whenever a test flight is scheduled, one of the engineering officers goes along as a copilot.

A test flight made by Captain Liggett's crew is

typical. The engineering officers said a C-54 was ready for a test flight. Captain Liggett alerted his copilot, 1st Lt. Jonnie D. Winslett; the aerial engineer, S/Sgt. William E. Mitchell; Navigator, 1st Lt. A. F. Anderson, and the radio operator, M/Sgt. J. C. Fulton.

Each member of the team proceeded to make a thorough check of that part of the airplane in which he specializes. This check is twofold. First, maintenance records were examined to be sure all maintenance had been performed. Second, a visual check was made to assure all equipment had been replaced and secured properly. As these visual checks are made, the ground crew stands by to verify that each item has been inspected.

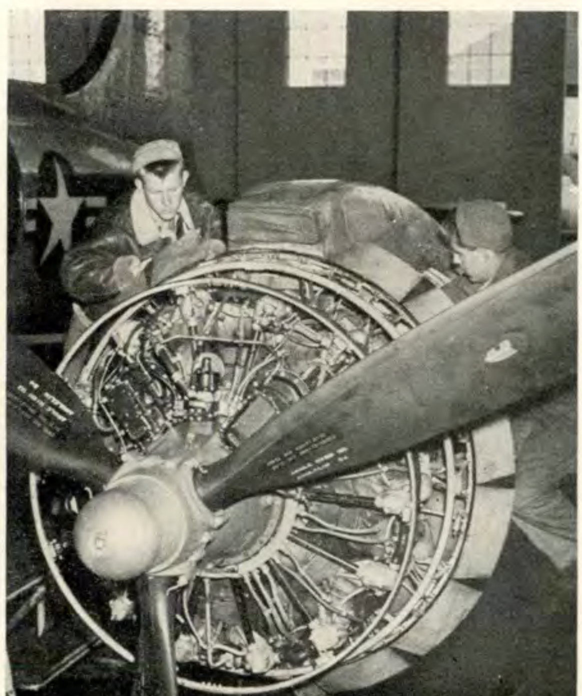
After entering the plane, it is standard procedure to run through a checklist as long as your arm before every flight test. This super checklist is designed to insure that nothing is overlooked. Every necessary preflight check is called off and the crew member who made the check answers that the valve or switch is in the proper position for flight or starting of the engines.

After takeoff, the airplane is taken over a measured distance on three runs at different speeds to calibrate the airspeed. Next the plane is flown to a safe altitude where the air is smooth. Here the compass is swung with the navigator noting the necessary corrections to be made on the card. All emergency procedures are accomplished such as dropping the landing gear and feathering each engine. The auto-pilot is checked as are the windshield wipers and de-icers. Meanwhile, the radio man is giving all radio equipment a thorough workout on all frequencies. The navigator gives the Loran equipment a complete check, and all the crew check the flight characteristics of the plane constantly.

The average test flight lasts about one and one-half hours, and if all is well the plane is released for service.

The test crew performs the final inspection to assure the safety of passengers traveling via ATC airplanes. It performs the inspection on the home ground of the plane itself. This is an example of the constant methodical approach to the ultimate in flying safety which is the goal of all air operations.

That this procedure pays off is attested to by the fact that the Pacific Division has flown since November 1945 without a single passenger fatality on scheduled C-54 runs. As of December 1947, more than one billion passenger miles had been flown.



UP-TO-DATE FLIGHT MAPS

The U. S. Coast and Geodetic Survey has released a list of the latest aeronautical charts. All charts carrying dates older than those mentioned for a specific numbered chart are obsolete for use in flight.

Of the Sectional Charts, the oldest map you should have is dated 1 August 1947. The Beaumont and New Orleans sectionals are of that date and all other sectionals were issued later. For example, the San Antonio sectional is not reliable if it is dated before 1 February 1948.

None of the World Aeronautical Charts of the United States should be older than 23 July 1947. Some carrying dates prior to 27 January 1948 are obsolete.

World Aeronautical Charts for Alaska should not be older than February 1946. Radio Direction Finding Charts carry dates from 7 September 1947 to 13 January 1948. Inclusive dates of up-to-date Flight Charts are 24 December 1946 to 16 January 1948.

For a complete check in modernizing your map files, consult the last page of the latest Airman's Guide.

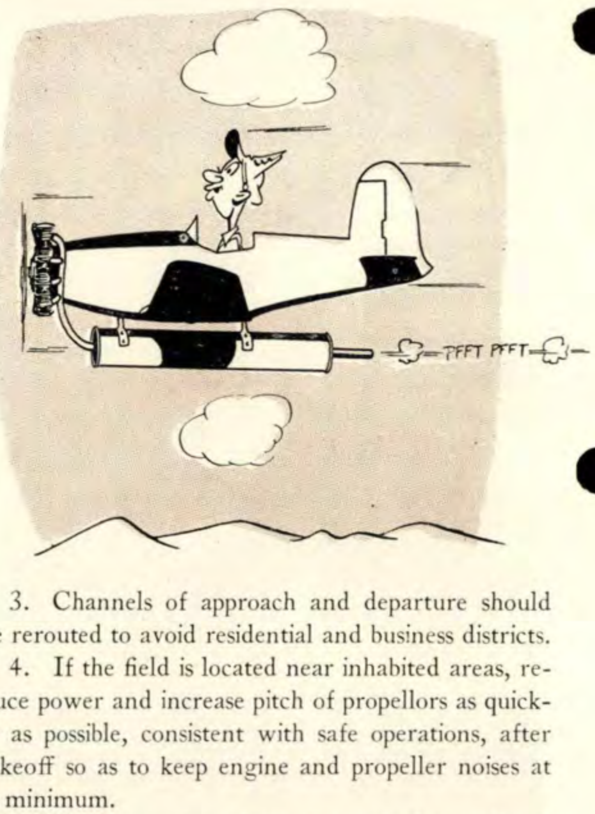
NOISE NUISANCES

Complaints regarding the airplane noise nuisance have reached such proportions that the advancement of aviation and development of new airports are in danger of being retarded severely.

To reduce the number of such complaints and allow the public to enjoy life, it has been requested by CAA that the following practices be observed by all pilots:

1. Discontinue all unnecessary low flying.

1. When weather and traffic volume permit, increase altitudes of all traffic patterns that require flight over inhabited areas.



3. Channels of approach and departure should be rerouted to avoid residential and business districts.

4. If the field is located near inhabited areas, reduce power and increase pitch of propellors as quickly as possible, consistent with safe operations, after takeoff so as to keep engine and propeller noises at a minimum.

5. Keep rpm at a minimum required operational setting when low flying over populated areas is necessary.

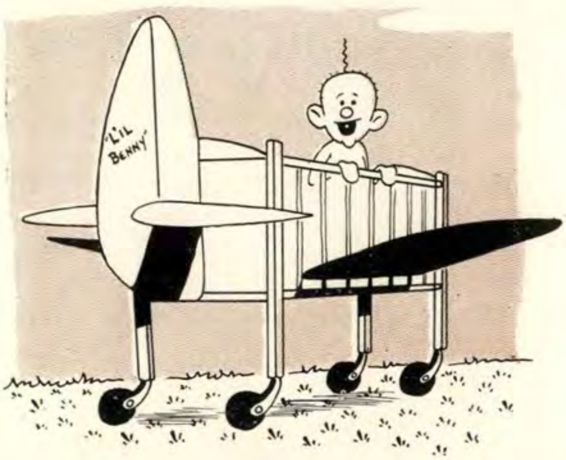
6. Avoid unnecessary "gunning" or racing of the engine.

7. As for seaplane operators, try not to disturb vacationists at the beach.

CROSSWIND LANDING GEAR

Behavior of larger airplanes proved the contention of CAA and aircraft industry engineers that planes of any size can be equipped with castering wheels for safe landings in crosswinds.

The CAA expects that definite savings in the airport-building program will be achieved when enough planes are equipped to make single runways adequate.



CAA adds that the new type gear requires less pilot skill, helps eliminate the possibility of groundloops and, by making possible single-strip landing places closer to congested areas, increases the utility of the airplane.

LOW RATE PAYS OFF

With an eye toward promoting an effective flying safety program, the Eleventh Air Force is sponsoring a contest which pays off in extended cross-country privileges to inactive reserve pilots at the base having the lowest accident rate.

Heretofore, pilots flying under the jurisdiction of the Eleventh have been restricted to flying the great circle—radius usually 50 miles—when participating in reserve activities. Now, if your base holds the lucky number, the radius is 1500 miles. As any reserve pilot will tell you, this new policy is more than enough incentive to straighten up and fly right.

GCA SAVES THE DAY

According to Airways and Air Communications Service, 40 aircraft of various types were landed safely during the first three months of 1948 through the use of GCA when lack of fuel, engine trouble or zero-zero weather might have spelled disaster.

This figure is based on world-wide AACS-GCA activities and represent approaches made only under such conditions that GCA was considered the only means of effecting a safe landing.

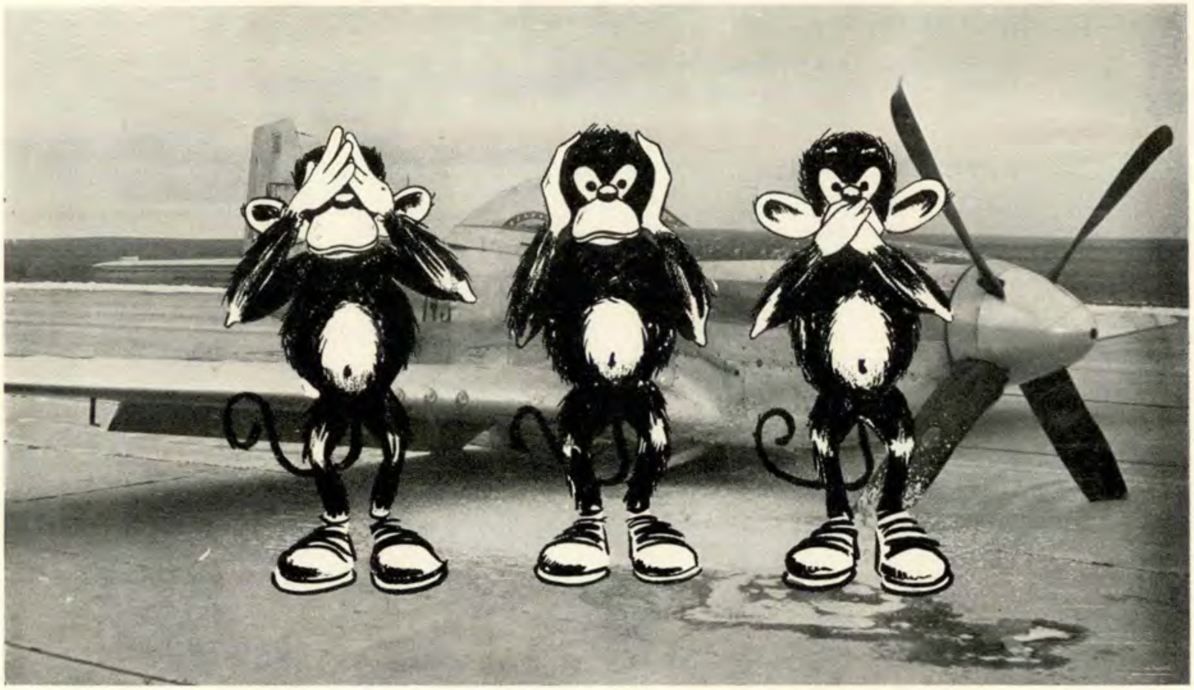
Hats off to AACS and the GCA units it operates.

FORTY-TWO THOUSAND POUND BOMB

The 42,000-pound bomb developed for the Air Force by Army Ordnance is undergoing tests at Muroc Air Force Base. The bomb is the largest yet constructed. Designed for use in aircraft such

as the B-36, it is a general-purpose bomb intended for use against heavily-armored installations. Current tests are being conducted from a specially modified B-29; future tests will be made from the B-36. The bomb with fins installed is 26 feet, 10 inches long and four feet, six inches in diameter.

THE SILENCE IS KILLING



A man who has the goods to sell
And goes and whispers down a well
Is not so apt to collar the dollars
As he who climbs a tree and hollers.

AND THAT GOES for this flying business too. If you don't speak up when you're supposed to, no one is going to benefit by your silence.

Nothing is more difficult in the Air Force's efforts to improve safety on the ground and in the air than the common reluctance of airmen to make suggestions to improve the safety record or report unsatisfactory or even dangerous conditions.

It is not at all uncommon for an accident investigator to discover that a certain defect or unsafe condition vital to safe flight was known to exist long before a crash, yet no one reported it. Here are some examples:

A fighter had been subjected to several hard landings, but the pilot did not write them up in the Form 1-A. Another pilot flew the plane, the gear collapsed on landing, the plane caught fire, and the pilot was killed.

Another fighter developed engine trouble at 30,000 feet. The pilot gradually dropped down to 10,000 where the engine ran like a watch. The pilot forgot to write up the engine when he landed. The next day, the commanding officer of this particular outfit bailed out of the same P-51. You guessed it. The engine stopped for keeps at 30,000.

A twin-engine light bomber pilot could not feather the left prop during a practice transition hop. Did he write it up? No, that afternoon the airplane was bellied into a pasture because the prop wouldn't feather when the engine quit. The airplane would not maintain altitude with a wind-milling prop. Luckily, the crew of three escaped injury.

Silence may be golden, but this old saw doesn't always apply in the flying business. In fact, the more you sound off about known or suspected difficulties, the more chance your fellow aircrews have of surviving. Just because some minor trouble didn't place you in jeopardy is no assurance that the condition may not become worse and give someone else a bad time.

Engineering officers, operations officers, and commanders are always ready to listen when you discover something wrong with an airplane, procedure or field condition. Frequently, it boils down to "speak now or forever rest in peace."

MEDICAL SAFETY

PROTECTIVE DEVICES FOR LINEAR DECELERATION

In recent years medical science has been obtaining an increasing amount of information on the subject of how much impact force the human body can absorb under varying conditions without fatality resulting.

The margin of safety with which the human structure is endowed has been considerably underestimated when one takes a close look at this information. (One of the scientific agencies has recently released information which bears out the belief that tremendous forces can be safely applied when certain conditions exist.) The Crash Injury Research Unit of the National Research Council located at Cornell Medical Center has recently released a report of an individual who fell 145 feet from a repair scaffolding on a smoke stack.

This man hit a pile of rubble at the base of the stack, making a depression in the loose earth seven to eight inches deep, bounced over a retaining wall, fell an additional 10 feet, and was found lying on flat ground. After corrections were made for air resistance, it was determined that the individual struck the ground with an impact velocity of 90 feet per second. Assuming arbitrarily that 85% of all the force acted at the point of initial impact, it is apparent that this individual who weighed 155 pounds sustained a deceleration of 162 g's or, expressed in a different way, a force of 25,000 pounds was acting on his body during the initial deceleration.

The victim of this accident suffered fractures of his left ankle, a chip fracture of the right ankle, and fracture of the lower portion of his left jaw. There was evidence of some internal injury, but recovery from the fall was rapid. The patient was dismissed from the hospital in a relatively short time. Information of this type serves to support the opinion that the human body will absorb exceptionally large amounts of impact forces for short durations if these impact forces can be spread over large areas.

It is of paramount importance that flight surgeons and pilots understand how this information relates to the proper use of restraining devices currently found in many tactical aircraft. The shoulder harness and safety belt are designed to restrain the body so that the force of impact is spread over a large amount of body space. These safety devices prevent the body from hurtling out of its position during a crash and decelerating itself against a small compact area, thus producing fatal results. It is interesting to note that in the accident mentioned here, the victim fell face-down and no fracture was sustained in the area of the skull.

If pilots will use shoulder harness and safety belts properly, they will be able to keep the vital head and chest structures away from sharp, solid objects which would deliver the deceleration to a small, concentrated area. Supervisory personnel have a great responsibility in constantly bringing this matter to the attention of all people who fly.

Could have been a humorous punch writing and action art!

A PARA-RESCUE team can sustain itself in jungles, deserts and arctic mountains, even if it means eating snakes and wildcats.

Hardly any climate or topography has been overlooked by the 5th Rescue Squadron of the Air Rescue Service at MacDill AFB, Florida, in the training of the second class of para-doctors and para-medics as para-rescue and survival specialists. Graduates of the Fort Benning Paratrooper School before assignment to ATC, the men have pursued an intensive course for eight weeks and thus have qualified to join rescue units throughout the world.

First part of the training was accomplished in Florida, and consisted of two weeks of class study and another two weeks of intensive field work under conditions which might be encountered wherever men may have to parachute from a plane to render assistance to persons in need of help.

Having previously received training as medical men, studies in the classroom stress only those points that are of importance when survival and first aid are needed in jungles and tropical swamplands. Purification of water, a study of Florida wildlife and its preparation for eating, and the types of shelters for the comfort of victims and rescuers are studied in detail.

Such animals and reptiles as the wildcat, rattlesnake, water moccasin, opossum, and alligator are caught and prepared for eating to exhibit the fact that such wildlife can be eaten safely to sustain life if knowledge is possessed as to its proper preparation.

During the first two weeks, techniques perfected at The Smoke Jumper's School at Missoula, Montana, are demonstrated to acquaint students with proper procedures for letdown from treetops. The men also undergo rigorous physical training to enable them to hike long distances through the swamplands of Florida.

Upon the completion of training at MacDill AF Base, the para-doctors and para-medics are flown to a site 10 miles southeast of Lakeland, Florida, where they parachute into the trees of that area. The men receive four jumps, each qualifying them to a higher degree in the techniques of tree-jumping, and procedures of letdown from the tops.

Next, the class is flown to Lake Immokolee, Florida, where they parachute to the site designated for five days of training in fresh-water survival. Here shelters of trees are constructed to insure comfort for the five days.

After the fresh-water phase of training, students are sent on a 25-mile land navigation problem to Fort Myers, Florida, and from there they are transported by truck to Venice, Florida. There they undergo five days of training in salt-water survival. Trainees dig crabs, oysters, and catch fish common to the area and prepare and eat them. Then the students are flown back to MacDill AF Base for critiques with their instructors.

This is followed by a flight to Lowry Air Force Base, Denver, Colorado, where they undergo another week of training in the techniques of mountain and snow jumps, and the survival measures necessary to sustain life in this type of terrain.

Upon perfecting mountain and snow jumps, the class is flown to the Air Rescue's 9th Rescue Unit at El Paso, Texas. Here they receive another week of training in the desert surrounding the field. After this phase is completed the class is again returned to MacDill and graduated as para-rescue and survival specialists.

After graduation and receipt of their diplomas, the graduates are assigned to rescue squadrons and units in the United States and overseas.

Each rescue detachment in the country, of which there are nine, will have a para-rescue team of five men standing by 24 hours a day, seven days a week, ready to jump to the assistance of anyone in need.

With aircraft capable of water landings, others capable of dropping airborne boats, and with the helicopter available for evacuation, the Air Rescue Service stands by to render assistance in any locality at any time.

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.)

I WAS CLEARED for a night instrument takeoff in an AT-6 with about a 100-foot ceiling and one-half-mile visibility. Engine and instruments were carefully checked. The takeoff was normal and I was quite pleased because the climb was very steady at approximately 500 feet per minute and the needle and ball barely moved from center. No particular difficulty was anticipated as conditions were VFR and steadily improving at destination, which was approximately 300 miles to the west.

At an altitude of approximately 1000 feet, an urgent call was received from the tower requesting that I take up a heading of due east immediately and retain it during the climb until I came out on top or until further permission was given to proceed on course. Explanation was given that another Air Force pilot had just reported that he was on instruments at 1000 feet over the station, proceeding from south to north. The tower was unable to contact the pilot of this airplane, although his transmission was received clearly.

In attempting to acknowledge the instructions from the tower quickly, I dropped the microphone in the bottom of the cockpit when it was jerked out of my grip due to the cord hooking over some projecting object. In trying frantically to recover the microphone from the bottom of the fuselage while keeping one eye on the bank-and-turn indicator, I realized suddenly that the airplane was not flying straight and level. Although the needle and ball were centered, the rate-of-climb indicator showed that the airplane was descending 1000 feet per minute. Airspeed was increasing gradually, the magnetic and gyro compasses were spinning, and the horizon had spilled. I knew immediately that the bank-and-turn indicator was not functioning, that the airplane was in an unnatural position and diving for the ground. I was unable to determine what position it was in, and therefore, was unable to take proper corrective action.

About this time, at an altitude of about 200 feet, I got about a tenth-of-a-second flash of some lights on the ground through a break in the clouds and discovered that I was in an almost vertical left bank with the nose down. I took immediate corrective action, but due to the limited flash of the ground, I could only approximate leveling the airplane. The rate of descent was pulled up to about 200 feet per minute, but it started going down again gradually. I realized that I was not in level flight, but could not determine whether I had under-controlled or over-controlled in coming out of the bank. About this time I broke into the clear for two or three seconds about 50 feet above a lighted highway, but it was long enough to get the airplane level and cage and reset the gyro compass. With the aid of the gyro compass and the flight indicator, I was able to start a normal ascent through the overcast until I came out on top at 12,000 feet.

One mistake that I feel I made was in neglecting to check my bank-and-turn indicator while taxiing out for takeoff. Nevertheless, I still could have made the check when I made my before-takeoff cockpit check—but I didn't, and that started the grief.

I believe that one of the things that saved my neck was the thought that if I crashed, I would be accused of flying in weather that was over my head. However, my real trouble was my failure to check the flight instruments before takeoff and then concentrating on the bank-and-turn indicator instead of the full panel. After all, the directional gyro and flight indicator were both working and I failed to pay any attention to them. This happened once, but it was enough to make me review my instrument flying habits carefully.—REFORMED.

VIOLATION!

Two P-80 PILOTS on a gun-camera mission started to return to their home base. The flight leader had 210 gallons of fuel remaining while his wingman had only 190 gallons.

Letting down through a mountain pass, they encountered low ceilings with visibility at about one mile. At this time the flight leader heard a radio transmission that the weather at his home base was closing in and no further takeoffs would be made.

With the wingman tacked onto his left wing, the flight leader attempted to orient himself, establish a DF contact with the home station, and at the same time play tag with the low clouds.

Being unsuccessful in all but the latter, the leader and his wingman, using power settings of 90-100%, climbed through a hole in the overcast until they were on top of the clouds.

On top, power was reduced to 50 pounds fuel pressure with 70 and 50 gallons of fuel remaining in the lead and No. 2 planes respectively. Again the flight leader tried to establish DF contact.

While this hubbub was going on, the wingman notified the leader that he had less than 20 gallons of fuel remaining. In a matter of minutes, he released the canopy, rolled the P-80 over, and at 180 mph bailed out. He had six gallons of fuel left when he went over the side.

The leader was obtaining a DF steer when the wingman bailed out. He let down IFR and landed at his home base with 20 gallons of fuel remaining.

Apparently the flight leader's poor judgment set up this unnecessary bailout. He failed to brief the flight on available weather information although he had flown for two hours previously that day in the same area and he had firsthand information about the existing weather.

Also, he elected to go on top of the overcast while on a VFR clearance when there were plenty of landing fields within easy reach behind him that had CAVU conditions prevailing.

He was still trying to reach the home base with much less than 100 gallons of fuel while group SOP required a 100-gallon minimum in the P-80 for reporting over the home base.

The flight leader has been removed from flying status until appropriate action can be taken. The wingman sustained major injuries in the bailout and the P-80 was washed out.

Contrary to some beliefs, rules were *not* made to be broken. An emergency would not have existed if the flight leader had assumed his responsibilities and considered his wingman who had less fuel. With CAVU fields behind the flight and within reach, it was inexcusable to ignore AF Reg. 60-16 by flying IFR on a VFR clearance.

SAFETY STARTS ON THE GROUND

BY M/SGT. RALPH L. THOMAS
Scott AFB, Illinois

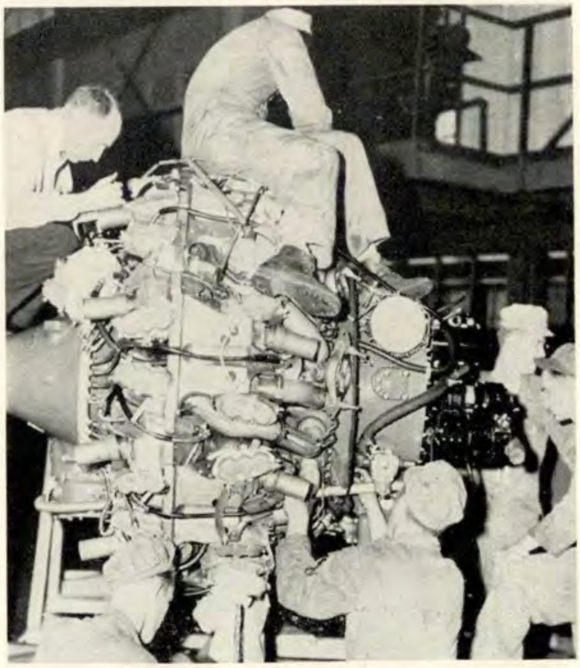
THE TECHNICAL DIVISION of the Air Training Command is firmly convinced that members of aircrews should live to an old age, rather than die young as a result of an aircraft accident due to poor aircraft maintenance.

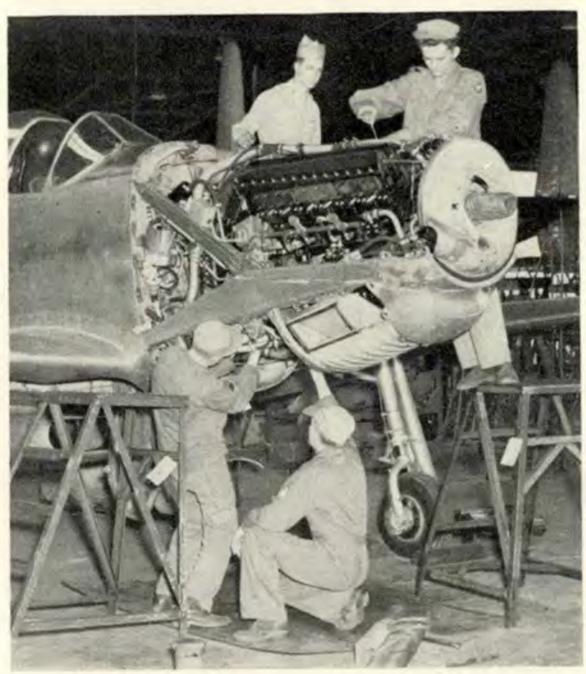
Students of the aircraft maintenance officer course at Chanute AFB and the airplane and engine mechanic school at Keesler AFB, are thoroughly indoctrinated in the belief that the efficiency of any air crew is related directly to the confidence the crew has in its maintenance outfit. Therefore, safety of an aircraft in flight is made a primary objective of these maintenance courses.

Maintenance officers are indoctrinated thoroughly in such varied subjects as critical loading conditions, maximum stresses of aircraft structural members, the use of fire extinguishers, warning systems, and instrument maintenance. The course emphasizes the effect of severe temperature changes on control systems, electrical systems, and the operation and use of de-icing equipment. Propellor feathering procedures, use of cruise control charts, and malfunctions of the induction system also share in importance. From the subjects covered it can be seen that the technical know-how absorbed by the student officer is related closely to the safety of aircrews.

The long-range missions flown today demand that maintenance officers keep abreast of the results of each new development that adds to the efficiency of airplanes. Similarly, the mechanics now being taught at Keesler are indoctrinated in accident prevention on the ground and in the air.

Those sections of AF Manual 38-0-1, "Ground Safety Rules," which are applicable to maintenance work, are primary doctrines of the program. Particular emphasis throughout the course is placed on fire prevention and control, orderly evacuation in emergencies, good housekeeping, proper use of personal protective equipment, control of health hazards, and personal protection against accidents. Spe-





cific actions are defined for the promotion of ground safey when starting, operating, and stopping aircraft engines, maintaining and repairing aircraft, servicing planes, and operating trainers (mock-ups) and all other instruction equipment.

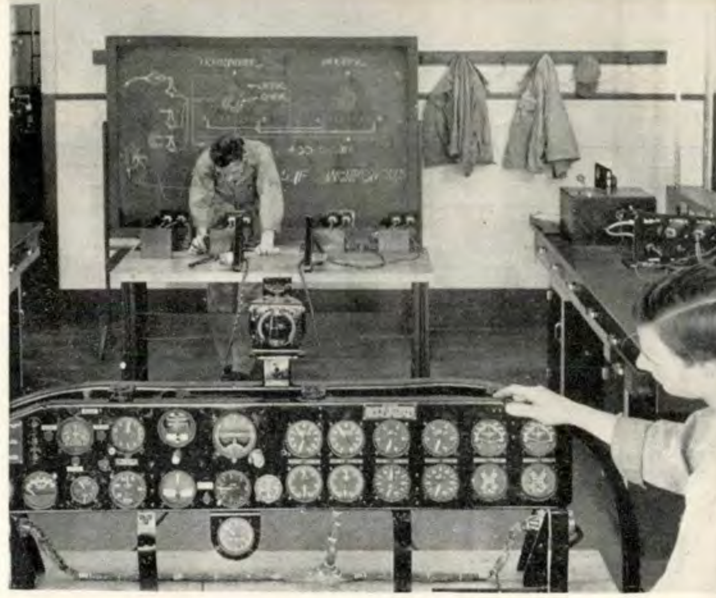
An orientation lecture is given at the start of each course by a qualified instructor who points out the hazards peculiar to the particular type of maintenance under study, outlines any special precautions to be observed, and emphasizes safety rules and regulations. Then, as the student begins to learn by doing, safety posters are displayed prominently in classrooms and shops. Special warning signs are installed on or near equipment which requires extra caution.

Each instructor carries on a personal campaign to emphasize the safety precautions to be observed in his particular phase of the training and strives to set an effective example by demonstrating shop cleanliness, orderly arrangement of tools and equipment, as well as how to handle and dispose of inflammable and explosive materials. Students are shown ground crew safety films as their first assignment in the school. Students of the Air Chemical Department practice constantly the safe procedures for handling and storing their supplies of chemical agents, chemical bombs, and Napalm tanks.

Deteriorated equipment is always a hazard to Air Force personnel, and the instructors of the supply department spend a large portion of their teaching in emphasizing the precautions to be taken in receiving, handling, and storing material. Every student is impressed with the idea that not only his life and the personal safety of his co-workers, but the safety of an aircrew he may never see, depends on his proper identification, inspection, and storage of all Air Force equipment entrusted to his care.

Because of the "learn-by-doing" type of instruction, students get actual practice in safety. It becomes second nature for them to use goggles in any grinding or chipping operation, to stay clear of props when the engine is warm, and to clean stands and floors to prevent slippery surfaces. Only appropriate tools and specified torque wrenches are used.

It is the aim of the Technical Division of Air Training Command to assure that when a man has graduated from one of these schools, he is not only interested in getting an airplane into the air, but he is even more interested in its safe return.



LETTERS TO THE EDITOR

Dear Sir:

Reference Safety Quiz in the May issue of FLYING SAFETY, you state that variation is the difference between true heading and compass heading. This answer is in error in that the difference between true heading and compass heading must be obtained by considering both variation and deviation. The correct answer should be the difference between true north and magnetic north.

We at Barksdale look forward to each new issue of FLYING SAFETY and consider it one of the best publications the Air Force has ever had.

SAMUEL S. WILLIAMSON, JR.
Major, USAF
Barksdale AFB, La.

★

Dear Sir:

I beg to differ with you on one of your answers in the Safety Quiz, May 1948 issue. Variation is the difference between true north and magnetic north. Who's right, you or me?

EDWARD ALPERN
Aviation Cadet, USAF
Randolph AFB, Texas

Readers Williamson and Alpen are right. We were wrong.—ED.

★

Dear Sir:

In the May 1948 issue of FLYING SAFETY Magazine, on page 18, there is an article pertaining to the raising of minimum altitudes by the Civil Aeronautics Board. Does the Air Force anticipate revising the present Air Force Regulation 60-16 to correspond with the changes made by the Civil Aeronautics Board as shown in your publication?

It is the opinion of the pilots at this base that FLYING SAFETY Magazine is a very interesting and helpful publication and think that you should be commended for such a publication.

SYDNEY T. SMITH
Muroc AFB, California

In reply to your query, Air Force Regulation 60-16 is being amended to correspond with the CAA minimum altitude over mountainous terrain.—ED.

SAFETY QUIZ

1. Cold front thunderstorms tend to travel
   a. in the same direction as the front is moving.
   b. in the opposite direction from that in which the front is moving.
   c. parallel to the cold front.
2. A pilot flying on instruments in the vicinity of a front notices an abrupt change in temperature. He can expect
   a. a change in wind direction.
   b. no change in wind direction.
   c. no change in wind velocity.
3. A solid blue line appearing on the surface weather map indicates
   a. a warm front.
   b. an occluded front.
   c. a cold front.
   d. a stationary front.
4. Of the following, the most severe turbulence will usually be found when flying through a
   a. slowly moving cold front.
   b. rapidly roving warm front.
   c. rapidly moving cold front.
   d. stationary front.
5. The following sequence of clouds is observed at an airport; cirrus, altostratus, nimbostratus. The pilot should anticipate
   a. lowering temperatures.
   b. a cold front.
   c. no precipitation.
   d. a warm front.
6. Usually, the latest weather map on display in the weather station is based on observations made at least
   a. 30 minutes before.
   b. 3 hours before.
   c. 8 hours before.
7. In the following winds aloft report: LFI 01345 1550 22150, the "01345" indicates that there is a wind from
   a. 010° at 34.5 miles per hour.
   b. 013° at 45 miles per hour.
   c. 045° at 130 miles per hour.
   d. 130° at 45 miles per hour.
8. If you are flying with a tailwind at the wind gradient level in the northern hemisphere, lower pressure will lie
   a. to the right.
   b. to the left.
   c. ahead.
   d. behind.
9. Both high and low pressure centers in the temperate zone of the northern hemisphere tend to move
   a. northward.
   b. eastward.
   c. westward.
10. The strongest winds will be found in areas where the isobars are
    a. 50 miles apart.
    b. 75 miles apart.
    c. 100 miles apart.
    d. 150 miles apart.

★

ANSWERS

1—A, 2—A, 3—C, 4—C, 5—D, 6—B, 7—D, 8—B, 9—B, 10—A.

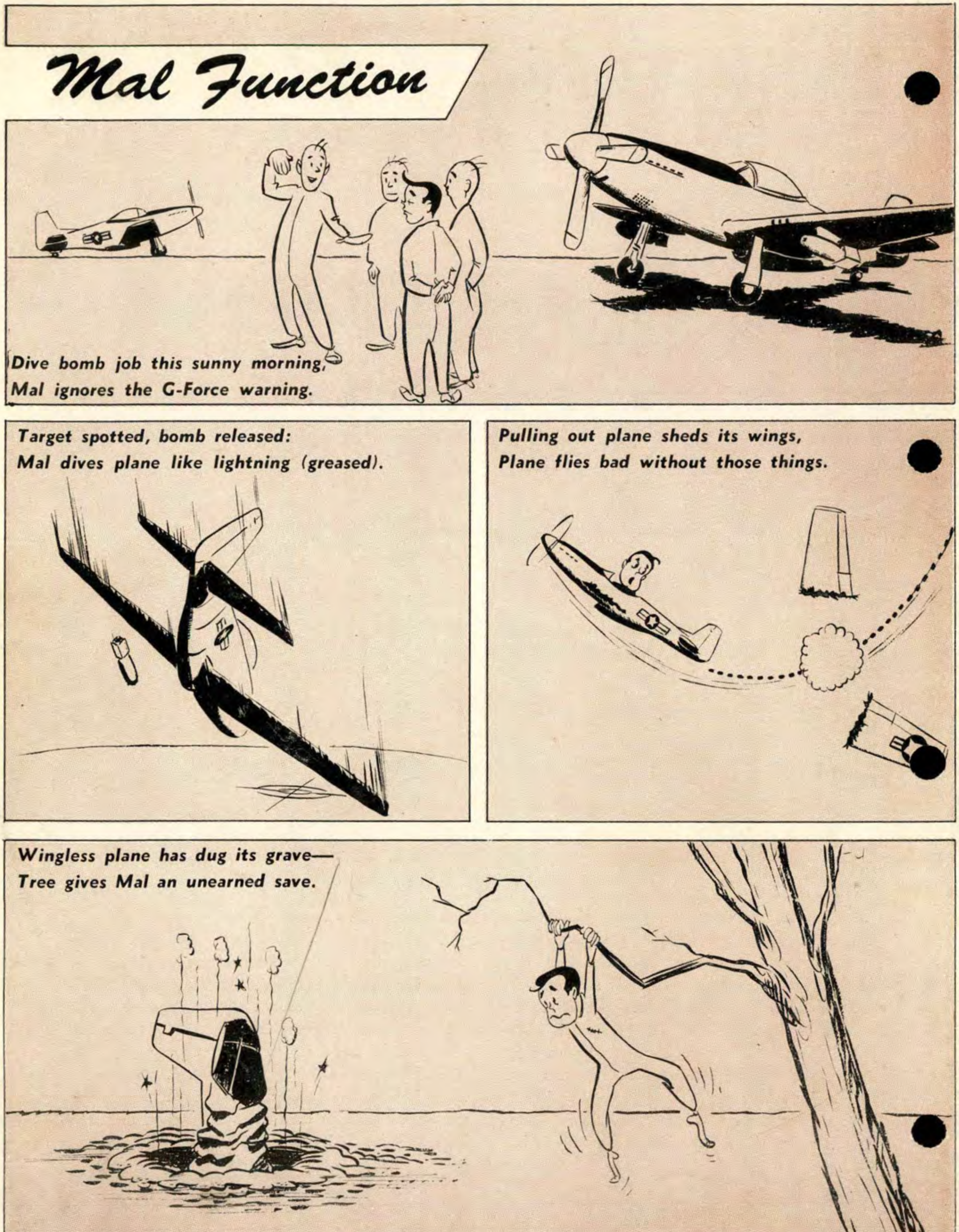
WHY?

A QUALIFIED INSTRUMENT check pilot with a captain as safety pilot was attempting a hooded takeoff in this AT-11. Wind was negligible.

As the pilot under the hood slowly advanced the throttles on takeoff, he noticed that he was veering off course to the left. The AT-11 seemed to require excessive right rudder. He applied more right rudder as the airplane continued its swerve to the left. He finally succeeded in getting the airplane into the air, but in a nose-high, semi-stalled attitude.

At this point, the safety pilot took over too late and attempted recovery.

The safety pilot claimed he was hindered considerably by the cloth hood separating him from the pilot. He said also that his view of the airspeed indicator and left side of the runway was blocked. Aileron control was never regained by the safety pilot and the left wingtip struck the ground. The AT-11 bounced and crashed, sliding sideways to the left. Another costly airplane wrecked because the safety pilot did not take corrective action until too late. Why?



 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1948—751956/3260