Flying Safety

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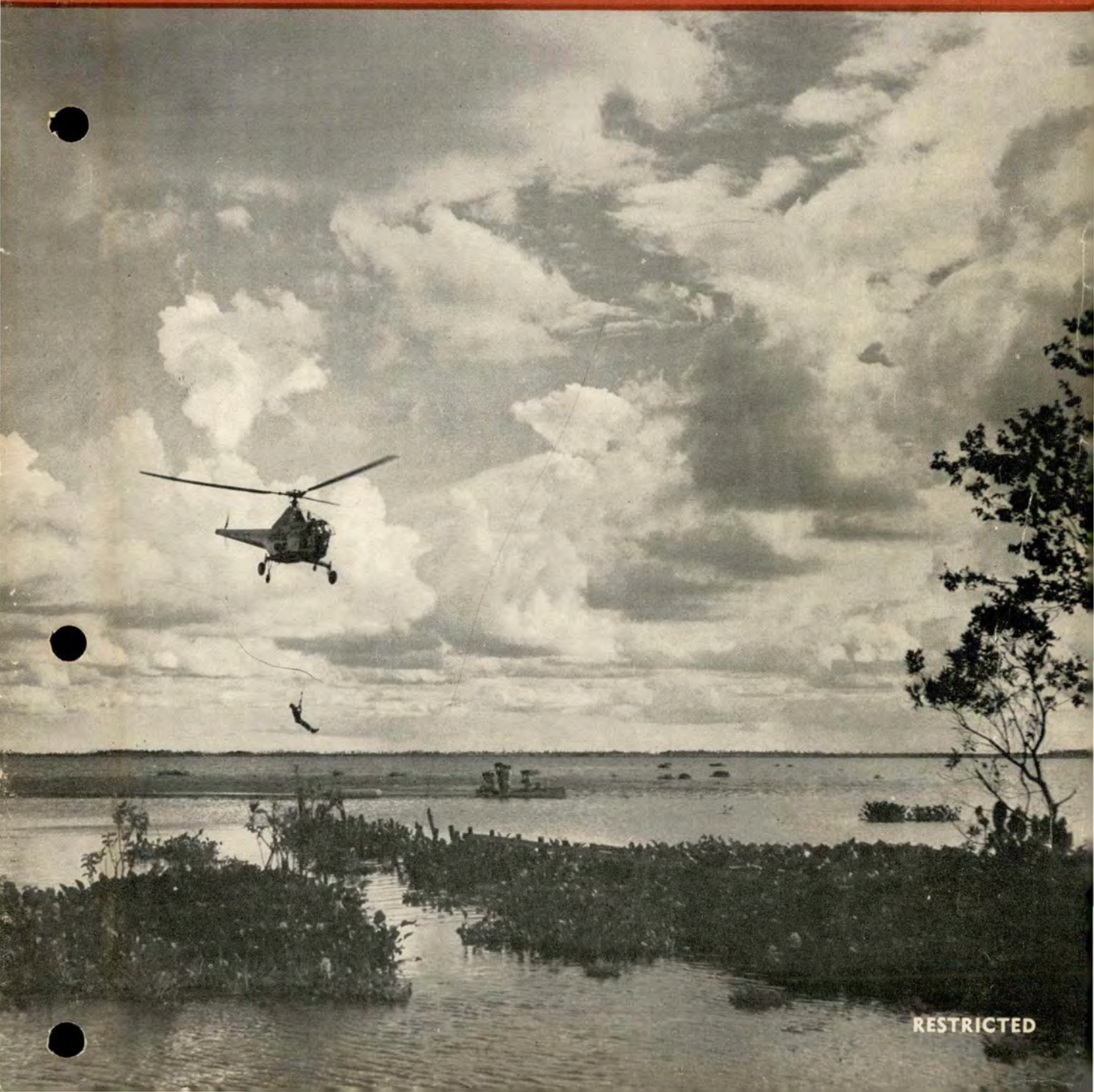

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THE COVER PICTURE

The photograph on the cover was taken at a recent demonstration of rescue from the water at MacDill Air Force Base, Florida. The survivor is hoisted into the helicopter by a cable from his rubber life raft. See story on these men of the Air Rescue Service on page 14.

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SHARE YOUR IDEAS

FLYING SAFETY Magazine welcomes comments, criticisms and editorial contributions from all members of the United States Air Force. Readers can help the magazine promote safe flight by offering information on procedures, equipment or training methods that have been effective in decreasing aircraft accidents. Address your letters direct to the Editor, FLYING SAFETY Magazine, Inspector General, First Region, Langley Field, Virginia.

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OUTSTANDING AIRMEN

Every example of pilot error resulting in an accident is reported in one publication or another. But numerous examples of outstanding feats of airmanship often go unmentioned. Commanders and flying safety officers are invited to tell the editors of FLYING SAFETY about such flights. Whenever superior airmanship, piloting or maintenance saves an airplane or crew from disaster, we want to publish the story to the entire U. S. Air Force. The personnel concerned deserve a "well done" on these pages.

FLYING SAFETY

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FLYING SAFETY is published monthly by the Department of the Air Force, Flying Safety Division, Office of The Air Inspector, % Inspector General, First Region, Langley Air Force Base, Langley Field, Virginia, with the approval of the Bureau of the Budget, Executive Office of the President of the United States.

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WHO'S FLYING BLIND?

PERHAPS it is unfortunate that someone invented the term "blind flying" to describe early flights on instruments. This has remained the popular description for flying on the gages and has caught the fancy of the non-flying public with much the same spirit in which they regard a blindfolded tight-rope walker.

Is the impression that instrument flight is blind flight still lingering on in the Air Force? Numerous accidents have occurred when pilots have displayed a dogged determination to remain contact in marginal and bad weather. For some reason they had shied away from clearing to a safer altitude on instruments.

It is only natural that pilots prefer to fly by visual flight rules with the accompanying convenience of less briefing, no delays in clearing, and ease of navigation. So perhaps it is also natural that when a pilot walks into a weather station with a Form 23, the forecaster assumes he wants to go VFR. "It doesn't look too good, but I think you can stay VFR," may be all the assurance the pilot needs from the forecaster to avoid filing an instrument flight plan.

An all-weather Air Force has long been the goal of the United States. All instrument flight training is to prepare the pilot to proceed safely to any desired destination—provided that the instruments in the airplane and the radio navigation facilities on the ground are in operation. Today the instrument clearance and flight should be accepted as entirely within the capabilities of any Air Force pilot.

Attempting to fly VFR in instrument weather puts a severe strain on any man's luck. During the first six months of 1948, of 12 USAF pilots known to have committed violations in flying into instrument weather on visual flight plans, seven ended in accidents. Of these, three were fatal accidents involving the deaths of 10 persons. Seven airplanes were wrecked.

To go Item Fox Roger when the weather is questionable has been proved to be the only safe way to make such a flight. In the first place, more careful planning is the rule when the flight is to be IFR. The frequent position checks and ETA's over checkpoints en route actually tend to keep the IFR pilot more aware of his track and ground speed than his sightseeing brother flying VFR. An IFR clearance is, and this is most important, designed to clear the airplane of ground obstructions and avoid collisions with other airplanes. It is only too often the man trying to stay VFR, with no one knowing his exact position, who collides with the man following IFR letdown instructions.

A cockpit hood is not a blindfold, neither is an overcast. But trying to stay VFR in instrument weather is blind flying.

THE DECISION WAS MADE

THE FACT that a group leader completes a flight without mishap to his own person does not prove that the other pilots on the mission should have made it successfully. On the contrary, the leader's decisions can place the men following him in dangerous situations that they have little chance of overcoming.

This is the story of the ferrying flight of 16 F-47 fighters to an island in the Pacific we shall call Island Z. That flight terminated with 10 planes delivered intact, four wrecked, one bellied in and one nosed up on a flooded runway. Three pilots were killed and one suffered severe shock.

To give a better understanding of the problems faced by the mission's commander in making the decision to attempt the flight, and as background for our comments, the following three points are presented.

First, the airplanes. Up until about nine months prior to this mission, the majority of these planes had been in storage since the end of hostilities. On group training missions they had been flown only under VFR conditions, because the flight instruments and communications equipment in a large percentage of them were not suitable for flight or navigation under instrument conditions. At least 12 of the 16 airplanes involved did not have operative flight indicators or directional gyros. The VHF radio equipment was troublesome and it had been the experience of this group that radio failure in flight could be expected on about 60 per cent of the flights lasting more than one hour. This was believed due to the considerable quantities of water which got into the equipment during heavy tropical rains.

Second, the mission. The assignment was to ferry the planes to Island Z, about three hours distant. The flight leader had orders to complete the trip only if it could be made by visual flight rules.

Third, the destination. Z is a large island, mountainous and lacking in radio aids to navigation.

A week dragged by between the day the pilots

were first briefed for the flight and the time of their actual takeoff. Weather caused the delay, with the pilots standing by daily waiting for the weather to clear along their route. On the morning finally set for takeoff, the anticipated clearing in the weather at destination had not occurred, and circulation around a typhoon was expected to cause low ceilings and visibilities along the western coast of Z Island. However, the pilot assigned to lead the flight decided to take off and filed an instrument flight plan.

It had been planned to utilize a C-46 airplane for escort and navigation, and it was to make hourly position reports. But when mechanical troubles developed in the transport plane, the leader decided to do without the escort plane and use an Air Rescue SB-17, with which the flight was to rendezvous over an island en route, as a reporting facility.

No radio contact was established with the SB-17 and the ceiling at the rendezvous point was solid and lowering. To avoid entering the overcast, the leader began a gradual letdown, continuing on his course. He led his flight toward the southern tip of Z Island, skirting rain squalls, descending ever lower. As the formation rounded the southern tip of the island, the ceiling had lowered to such an extent that the last flight was about 20 feet above the surface of the water. Turning northward along the west coast, the lead flight was below 500 feet and visibility was diminishing rapidly. Except for the failure of several radio transmitters and receivers, including the radio of one of the flight leaders, the airplanes were still performing okay mechanically. The pilots had not had too much luck radioing each other, but the 16 planes were still in formation, stepped down.

In an effort to keep the coastline in sight, the formation leader inadvertently turned into a small cove. Suddenly the lead flight flew into a heavy rain shower. Directly in the path of the formation a range of hills rose precipitously from the beach. The leader started a sharp turn to the left, but discovered that his wingman, while making a cockpit check, had failed to see him turn. To prevent a collision with him, the leader temporarily discontinued the turn. With visibility almost at zero, the turn was again resumed sharply to the left. Simultaneously, the first flight of four planes was split up.

The second flight leader apparently did not see or could not follow this sudden turn and began an emergency climb straight ahead. All four of these planes were demolished as they crashed into the hill a few feet below the summit of the ridge. Three pilots of this flight were killed instantly while the fourth was knocked unconscious, reviving the next morning to walk down the mountain, a victim of shock and amnesia. The third flight leader, upon losing sight of the second flight, turned sharply to the left, losing his wingmen, who also made a left turn. The fourth and last flight leader, seeing the three flights disappear into the rain squall, rolled into a sharp turn about 20 feet above the water. His number two man lost the flight while three and four turned with him.

From here on out it was a matter for elements or for individuals. There were no mid-air collisions during the confused break-up! While 10 planes were landed at various strips undamaged, showing the abilities of the pilots to improvise their own emergency flight plans, the remaining six planes met with disaster. The four on the mountain were complete wrecks, of course, and of the other two, one was bellied in on a beach and the other nosed over on a flooded strip.

After the group leader turned, he flew westward into a relatively clear area over the water. He immediately called his formation on channel B and directed all pilots to take a heading of 270 degrees. His message was not acknowledged and he repeated it on channels A, C and D. When there was no response to these calls, he headed north alone and landed at the destination. Four of the planes reassembled in this "clear area" (ceiling 200 feet, visibility one-half mile).

One of the pilots who was separated from the flight in the break-up had an inoperative compass. The fluid had leaked out en route. When he lost sight of his element leader he rolled into a standard rate turn to the left to what he estimated was a southerly heading and climbed to 14,000 feet. He broke into the clear after 25 minutes' flight at that altitude and let down to 1000 feet. He flew a square search pattern, relying solely on his turn needle for directional control. Talk about doing a good job on

basic instruments! He had flown three 30-minute legs, making 90-degree clock turns to the left at the end of each leg, when he sighted the eastern coast of Z Island. Orienting with a map, he identified a village but its airstrip was overgrown with brush and cut by ditches. He did not have enough gasoline left to fly to the airfield of destination on the other side of the island, so he picked out a smooth stretch of beach near the village and made a skillful wheels-up landing.

It is not climbing out on any limb to say that briefing of the pilots for this mission was inadequate. Here are the major points missed:

There were scanty instructions for alternate radio frequencies. Most pilots believed only channel B was installed. Actually, four channels in each airplane were operative at time of takeoff.

The pilots were not informed how to use Air Rescue facilities. Flight plan coordination with that service was not clear to all the pilots.

There was no standard procedure to replace flight leaders in the event of radio failure in the various leaders' airplanes, no organized plan for wingmen or element leaders to assume leadership of the flight if trouble developed.

While the weather information given to the formation commander was reasonably accurate, considering the limited reports available to the forecasters (the forecast erred slightly, being on the optimistic side), the pilots who flew this mission had a secondhand, minimum knowledge of the weather to be expected.

Although Z Island has many scattered airstrips, only two were brought to the attention of the pilots. Details of runways and approaches were not given. Another outfit at the fighter pilots' home station had some information on the air field situation at Z Island; however, this information was not requested for use in the briefing.

Air Force regulations were violated when the flight was led below 1000 feet above obstructions to flight. The leader violated verbal orders of his commanding officer by leading his flight into instrument conditions, and he failed to complete hourly position reports as required on such over-water flights.

There is no doubt that many missions have been completed under similar adverse circumstances. But in taking chances with the overall factors, a trap can be set which only waits for an incident, such as this mission's sudden entry into a rain squall, to spring its deadly jaws.

There was no "pressure" from higher headquarters to force undue haste in accomplishing this mission. The leader was cautioned to check very carefully and not attempt the flight if there was any cause to question the weather. The decision was made to go ahead with the mission without the accompanying escort plane. The decision was made to proceed over water without establishing communication with Air-Sea Rescue aircraft. The decision was made to continue the flight under obviously adverse weather conditions without adequate equipment rather than turn the flight back.

No decision was made to relinquish leadership to secondary leaders when radio equipment was malfunctioning.

On future missions to destinations where weather reporting facilities are meager, the accident board recommended, all possible action should be taken to establish temporary military facilities to provide these services. Whenever possible, advance weather recon flights should be made along proposed flight routes. Formalized weather briefings should be conducted by a qualified weather officer whenever possible.

Briefings can be improved through the assistance of base operations which should be instructed to accumulate all information regarding airports, communications, and navigational facilities which is not currently available in standard publications. This, the board emphasized, must be maintained in a current status and its contents actively brought to the attention of briefing officers for their use in briefing missions into areas not covered by standard charts and publications. A member of Air-Sea Rescue service should be utilized to perform rescue briefing and a standardized emergency procedure should be prearranged for individuals or flights separated from the formation.

Any routine flight in the Air Force is as important as any air operation which is built up in the public eye. The much-publicized air event, be it an endurance record or a trans-oceanic demonstration, is carefully planned and executed. The lives of men lost because of shoestringing the planning or equipment on a "routine," unheralded flight are far more important than the possibilities of adverse publicity which may influence lavish preparations for a flight the world is watching.

Even though this flight did not attract attention until after the accidents, it should have been given very detailed planning because of the many adverse conditions existing.

WELL DONE

TO

M/Sgt. Eugene R. Shankle
Mr. Jasper P. Howard, Jr.
M/Sgt. Charles M. Oliver

THREE AIR FORCE PERSONNEL were saved from injury and one B-26 was landed undamaged through the perseverance and ingenuity of two Air Force master sergeants and a civilian employee at Tinker Air Force Base.

Captain Norman F. Bush, instructor pilot in the 3075th Air Force Ferrying Squadron at Tinker Air Force Base, took off in the B-26 to give a familiarization ride to Captain Raymond P. Lowman. Crew Chief S/Sgt. Ralph R. Langley was on board.

The training flight went well until Captain Bush moved the landing gear control to the down position prior to landing. Nothing happened.

Captain Bush called the tower and advised of the emergency condition and began attempting all emergency procedures for the lowering of the gear. But the landing gear remained in the up position.

On the ground, Captain Orland W. MacFarland, Assistant Flight Operations Officer, OCMA, established communications with the B-26 through Channel C on the Tinker Airways radio and there began a re-run of all emergency procedures using the instruction manual to be sure no possible method of lowering the gear was overlooked. Still the gear refused to operate.

Two master sergeants, Charles M. Oliver and Eugene R. Shankle, crew chiefs on other Invaders, and Mr. Jasper P. Howard, Jr., civilian employee, joined the group on the ground which was trying to help the disabled aircraft.

After two and one-half hours of vain attempts to lower the gear, Captain MacFarland advised the pilot of the plane to bring it in on the belly. The two sergeants and the civilian then asked permission to make one more attempt. They had gone carefully over the whole gear system of a B-26 on the ground trying to diagnose the trouble and came up with an idea.

They advised the pilot to remove the connecting cable from the drum assembly of the four-way landing gear selector valve, then to turn the drum assembly by hand in the direction for moving the gear down. The pilot was advised to keep turning the assembly in the same direction and to watch the landing gear.

Several turns had been made when one gear began to come down. The drum assembly was turned a little more and the other gear began to come down as well. When the gear had reached the down and locked position, the B-26 was brought in to a safe, normal landing.

As diagnosed by the sergeants and the civilian on the ground, the trouble had been caused by a sticking valve in the four-way landing gear selector valve unit (Part No. 4808-401481, Class O3 I). In the position in which the valve stuck, the pressure in the valve was continuously being applied to keep the gear in the up position. Moving the landing gear control lever to the down position evidently moved the connecting cable enough to turn the valve some, but not enough to release the pressure holding the gear up. Consequently, the other emergency procedures failed to take effect.

By taking off the connecting cable and turning the drum assembly by hand, it was possible to keep turning it in one direction until the valve had moved enough to release this pressure and allow the gear to come down.

Through the use of good judgment, cool thinking, good coordination between ground and air, and initiative on the part of two Air Force sergeants and a civilian employee, an aircraft accident was averted.

M/Sgt. C. M. Oliver, M/Sgt. E. R. Shankle and Mr. J. P. Howard

THEY LEARNT THEIRSELVES

By 1st LT. JOHN H. SEWARD
Ass't. Station Weather Officer
Smoky Hill AFB, Kansas

BEING TIED TO A CHAIR and dunked in cold water is a chilly and undignified experience. In the October issue of FLYING SAFETY an article by Maj. B. F. McCuistion entitled *Publicize the Violator* was illustrated with a picture of just such a dousing. As I read the article the thought kept recurring: "There, but for the law of averages, sit I!"

Every pilot will agree that something must be done to eliminate violations of flying regulations. Major McCuistion's suggestion of pointing out violators publicly is excellent and would be of great help if acted upon. I can't help but feel a little sorry, though, for myself and a terrific number of fellow pilots who would be caught by some regulation that never had been made adequately available to them. Pilots frequently are conscientious, just like people, but all too often they have little or no opportunity to learn the things they are required to know.

Briefly, a pilot should understand thoroughly the following: Engines, airframes, instruments, meteorology, navigation, cruise control, weight and balance, traffic control, flying regulations, tactics, crew management, operations, arctic survival, jungle survival, all Air Force and CAA regulations, and an astounding number of T.O.'s. There probably should be others on the list. Allow me to describe my experience with one of them.

Most of us war-trained pilots were rushed through cadet and transition training, then whisked overseas with a book by Jordanoff in one hand and a rabbit's foot in the other. Our total instruction in traffic control was to the effect that the number of the form was 23. But our ignorance bothered us not at all. What else was there to know? After the war I worked for a year or two in Airways Traffic Control, and during those months I learned to blush with sympathetic shame over the antics of Air Force pilots SNAFUing the airways. Some instances were funny, others pitiable, and a few were downright horrible.

A B-24 at 8000 feet was instructed to climb to 500 on top, which ATC had been told was at about 11,000. Two hours later the pilot requested an emergency descent, 800 miles short of his destination. He had run out of gas and oxygen! Why didn't he advise ATC the tops were now 25,000?

A C-45 went into Lake Erie, killing two crew members, because it ran out of gas while flying a holding procedure. The pilot didn't realize he could always request a different clearance. Another pilot in a similar situation used his head, I guess. He came down through the stack without telling anybody, refueled, and climbed back up to his assigned altitude to continue his holding!

Three B-17's held for 45 minutes on the same leg of the same range at the same altitude, reporting over the cone each time and then switching back to radio compass before the desperate controllers on the ground could relay instructions. Their wingtip angels must be awfully tired.

Another pilot began a six-hour flight but didn't

know he should make position reports. He got in his four hours for pay purposes, then collided with a DC-3 over Kansas City. If you wish to hear more, ask those poor, beat-up skyscrapers in New York.

As I watched this spectacle I began to realize why pilots frequently are accused of not being too bright. But I couldn't criticize. All these mistakes which I now was trained to recognize had been, or could have been, committed very easily by me before I worked with Traffic Control.

Upon returning to active duty I looked around for signs of training in control procedures that perhaps now were being made available to pilots. At a couple of flying safety pilot meetings traffic control was discussed, but the information handed out was inadequate. I kept missing questions on field checkout tests because the official answers were wrong. None of the operations offices and towers that I visited had a current copy of the Army-Navy-CAA Manual for the Control of IFR Traffic. In short, the ignorance at all levels still was appalling. Where could a curious pilot turn for information?

A statement applied in fun to another organization keeps coming to mind: "What we don't understand, we explain to each other!"

Enough about traffic control. I feel fairly confident on that subject. But I'm a babe in the woods about some of those other categories a pilot is supposed to be expert in. Do I hear "Amens" from my fellow pilots?

And the solution. Officers' Records sections at every Air Force Base are bursting with 66's which could provide Base Commanders, Operations Officers, and Flying Safety Officers with the names of men excellently qualified to lead discussions on each of these topics listed earlier in this article. Wright-Patterson, according to an earlier issue of FLYING SAFETY, conducts a short ground school each year for its pilots. If every other base did the same, making certain that *the most qualified men available* did the instructing, these violations and cases of head-in-cockpit flying could be reduced sharply.

Or perhaps a mobile detachment could be formed, consisting of experts in each of these subjects, which could go to each Air Force Base and give the boys The Word. During the war, factory representatives did a wonderful job explaining new equipment.

And what about getting a pilots' handbook published, which would include all these regulations and procedures. Place a copy in the hand of each pilot. The airlines do it. The trouble with pilots is not lack of intelligence or juvenile attitude. They just ain't had no instruction; they had to learn theirselves!

Flying Safety BRIEFS . . .

SKILL AND KNOWLEDGE

By PFC ARNOLD J. ANDRES
32nd Composite Wing, Okinawa

KADENA AIR FORCE BASE is continuing its intensive flying safety program which has produced a constant rate of decline for major accidents and fatalities since early 1946. In the past two and one-half years only one fatal accident has occurred at this base. Flying safety here is really a problem due to Kadena's unusual weather conditions, and pilots soon learn to become expert at cross-wind landings.

The 2nd Rescue Squadron, attached to the 32nd Composite Wing at Kadena, was one of the units which recognized that aircraft operating efficiency is directly proportional to the crews' skill and knowledge. This squadron has undertaken a program to train all flying personnel to the highest possible level of Air-Sea Rescue service and efficiency. Crew members, both airmen and officers, are checked out on Air-Sea Rescue operating procedure and proper use of equipment that may some day mean the difference between life or death.

Of the indirect flying safety training measures in progress at this base, one is aircraft and engine mechanics proficiency examinations. This program is designed to show which men are insufficiently trained. The information received from the tests will aid in setting up a priority system to send mechanics to school for further training. The test results are also sent to higher headquarters for further staff study.

HOW GOES IT?

By S/SGT. CHARLES M. PETERS
Fairfield-Suisun AFB

The Positive Flight Control section of the 530th Air Transport Group Operations, Fairfield-Suisun AFB, has hit its stride. Established last May, along with a similar section at Hickam Air Force Base, this section was set up as an additional "Flying Safety" aid for MATS Pacific Division, Trans-Oceanic Aircraft.

The PFC section plots the position and computes the range of all MATS airplanes flying the long over-water hop between California and Hawaii.

Here is how PFC works.

A C-54, engines running smoothly, is poised at the end of the Fairfield-Suisun runway ready for takeoff. Its destination is the island of Oahu, some 2400 miles to the west, all over water. The pilot slowly advances the throttles and the huge plane starts to roll. Soon the wheels leave the ground and as the plane gains altitude for the trip, it disappears slowly from sight.

Out of sight, out of mind? Not in this case.

Prior to loading the plane, the PFC section had assembled and made into a folder all information pertaining to this flight. Among these papers is a range chart commonly called a "Howgoesit" chart. This is a graph on which are plotted three lines. One of these lines represents the normal fuel consumption, as computed from available information. This line is green in color. The second, red, is used as a graphic representation of the maximum range of the airplane as computed from records of the total gasload on takeoff. The third line shows the actual gas consumption during flight, as computed from information the pilot sends every hour and at predetermined check points.

The reports serve a dual purpose. One is a positive check on the gas consumption. The other is a position report, which allows PFC personnel to plot the relative position of all planes at all times. In the event of a change in weather along the plane's line of flight, the pilot is alerted as he approaches the area, and if necessary, he can change his heading, or take other corrective action.

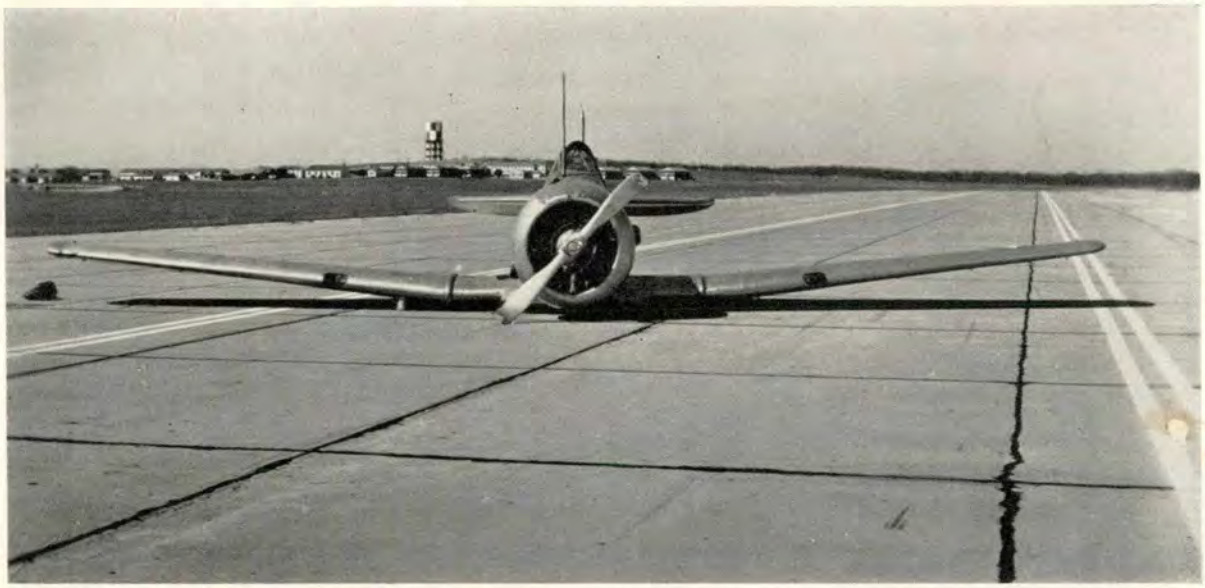
As the plane progresses, the position report and the Howgoesit chart will immediately reflect any unusual conditions. The plot shows if a plane is consuming too much gasoline—if this is the case, several factors must be considered. Is the airplane consuming excess gas because it is flying faster than cruise? A check on the plot board of the last few position reports will answer this one. Have the winds aloft changed so radically as to present an abnormal headwind? A quick check with the base weather station will aid in answering this one. If this is true, then the pilot will be advised immediately and corrective action such as a change in altitude will be recommended.

In extreme cases he may be advised to return to his point of departure. There may be an error in the transmission or receipt of the pilot's report of fuel remaining in the airplane. To check this, a radio message is immediately dispatched to the plane in question and the pilot is asked to confirm or correct his last report.

In the interest of "Flying Safety" nothing is taken for granted. If all reports received from the airplane do not reflect 100% safety, PFC personnel will immediately swing into action, working under the assumption that an "Ounce of prevention is worth a pound of cure."

HOW BRIEF A BRIEFING?

By MAJ. EMIL G. TANASSY



(*This article was written by an operations and training officer at an eastern AF base.*)

"THE TOWER?" "No, I never heard them call me." Thus ended the initial interrogation at the scene of a wheels-up landing of the responsible pilot by myself as accident investigation officer. I felt doubly concerned about this accident for in addition to being accident investigation officer, I am also officer-in-charge of operations and training. During the walk back to the operations office I had time to interrogate myself. Why do accidents such as this happen? Why did this particular accident happen? Why did it happen in my outfit?

The pilot was a reserve officer called to active duty at my home station for two weeks. This, on the first day of flight training for the group, was a bad start. A nine-plane T-6 formation was scheduled and had just returned with number three landing wheels up. A cockpit check revealed the following damaging evidence: radio on Channel "E" for Easy; landing gear handle halfway between "Up" locked and "Down" locked; tailwheel control in "Unlocked" position.

Our tower control is on Channel "B" Baker. The landing gear handle was obviously moved from "Up" position in an effort to indicate faulty landing gear after the aircraft slid to a stop. Eyewitnesses claimed the wheels had never left the wheel wells prior to touching down. If the pilot had made an attempt to extend his landing gear by moving the landing gear handle from the "Up" position, the wheels would have extended to some degree visible to the eyewitness. Subsequent tests on the same aircraft proved this conclusively. As for the tailwheel control in "Unlocked" position, the T.O. requiring tailwheel locks resulted from untold damage by groundlooping. Therefore, locking the tailwheel and keeping it locked is a "must."

Three glaring errors! True the third in no way contributed to this particular accident, but certainly it is indicative of the overall picture. Determining the "why" of this accident was not difficult. The pilot simply forgot to change his radio from Channel "E" Easy, interplane communication, to Channel "B" Baker, tower frequency; forgot to lock his tailwheel prior to takeoff; forgot to extend his landing gear; and forgot to perform a G-U-M-P check prior to turning on final approach.

Simple, yet not so simple!

All of this would seem to indicate either the presence of a "Dilbert" or a pilot rushed too quickly

into more complicated flying in an unfamiliar aircraft. The pilot's form five ruled out the latter. Indications all pointed strongly to the fact that this was not an inexperienced pilot, but an "out-of-practice" pilot. This reservist had taken and passed an examination on this particular aircraft. The examination showed he was familiar with the landing gear mechanism, tower frequencies, etc., and in every way qualified to fly this aircraft. Only it was two years since his last examination!

Why was this? His form five was not checked until after the accident. There is where supervisors dropped the ball in not making sure this pilot was current in the T-6. The pilot fumbled by not asking for a re-check.

This flight was briefed by the operations officer of the reserve squadron, but only on those points considered by him to be pertinent to this flight. Was the tower frequency and channel mentioned? What for? Everyone knows it's on Channel "B." Was anything said about the proposed peeloff prior to landing? What is there to say? Everyone knows how to land a T-6! Were questions asked and encouraged by the briefing officer? Did all pilots know exactly what they were to do and the manner in which it was to be done? This accident proves not!

Briefings have become too brief! It should not be assumed by the briefing officer that everyone knows everything. True, a briefing to be all-inclusive could go on for days. Yet a margin of safety should be allowed for the out-of-practice, the nonchalant, and the indifferent and those generally not in the know. A briefing S.O.P. should be available and adhered to. An "ad-libbed" briefing is a useless briefing.

This accident could have been avoided with a thorough briefing and an insistence on absolute certainty and confidence that, as a group, they knew exactly what they were to do and were proficient in the airplane. Much too often, briefings have been concluded with the assumption that pilots know the many points covered. Too many pilots have hesitated to ask for clarification or additional information . . . why look like a jerk? Yet what can be more ridiculous than the expression on the face of a pilot who has just landed an aircraft wheels up? Pilots should demand a thorough briefing, and briefing officers should make it impossible for pilots to leave the briefing room with questions remaining in their minds.

BASIC ENGINE OPERATION

ENGINE CONDITIONING—CONTINUED

EVER SINCE the first time someone took you out on the line and said, "this is an airplane," you have been learning about the four-cycle internal combustion engine. However, it has been established that flight and maintenance personnel are not as familiar as they should be with some of the more important basic principles involved in the engine's operation.

As a result, many instances have been encountered which have led personnel from the basic pattern of engine operation. This results in such ideas as "this engine or that engine will not idle smoothly, is rough operating, or won't remain stable."

The R-2600-engine got off to an early start being called a rough, unstable engine. It was not long before the service accepted this description as normal. Aircraft cruise control charts and performance charts were derived in some instances with engines in this condition. However, it has been determined that when R-2600 engines in aircraft are "conditioned," an increase in airspeed of as much as 15 mph is obtained at a given power setting, and fuel consumption is reduced considerably.

From the foregoing it may be seen that a review of basic engine operation is in order to refresh memories and to re-emphasize the fact that all four-cycle engines, whether installed in your automobile or in an airplane, are basically alike and will, therefore, respond similarly to the same treatment.

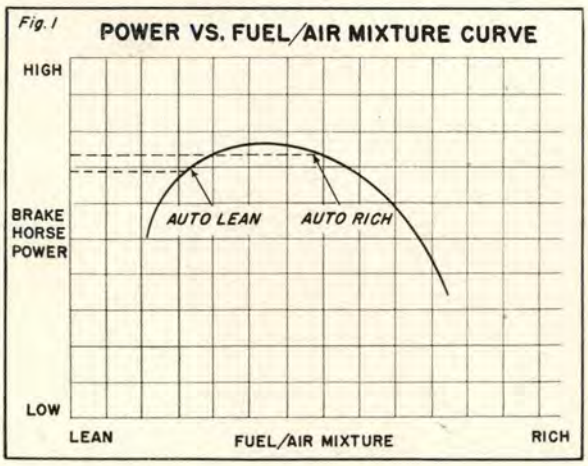
The first item to be considered in basic engine operation is the compression within the cylinder. If we are to obtain maximum performance from the cylinder, it is obvious that all openings to the cylinder must close and seal completely at the proper time.

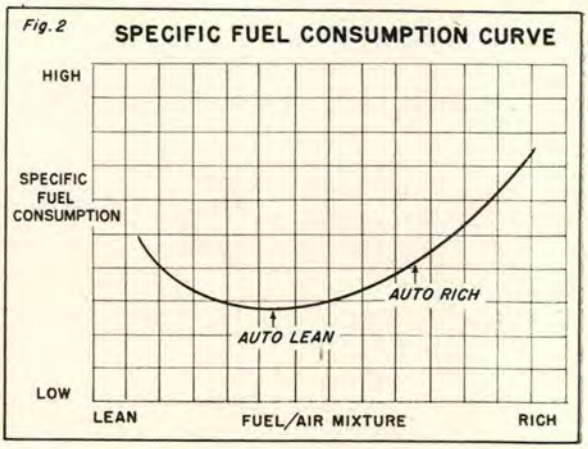
There are actually three phases of cylinder operation involved: namely, proper operation of piston rings, thereby maintaining the maximum seal effect during the stroke of the piston; complete closing of both the intake and exhaust valves since leakage at either of these points during the power stroke will result in generally reduced efficiency; and proper valve timing, which affects the combustion characteristics within the cylinder.

The next item affecting engine operation is the fuel metering part of the engine or the carburetor. In this respect, it is essential that each cylinder of the engine has the proper fuel-air mixture if optimum operation is to be obtained.

Referring to Figure 1, it may be seen that, as the fuel-air mixture is varied from lean to rich, the power output of the engine will increase to a point and then drop off as the mixtures are richened further. In establishing the carburetor setting for aircraft engines, a series of curves as shown in Figure 1 are run at each 100 rpm increment from extreme idle to takeoff power. Then by selecting the fuel-air mixture at which maximum power is obtained for each engine speed, and by plotting a curve of these points, we establish the requirements for the best power or automatic rich fuel-air mixture curve.

By taking the data obtained while running the





referenced curves (Figure 1) and dividing the fuel flow in pounds per hour by the HP output of the engine for each of the various mixture settings, we can then establish a series of curves, as illustrated in Figure 2, which indicate the specific fuel consumption of the engine under various fuel-air mixtures. Then by finding the spot in the curve where the specific fuel consumption is the lowest, we can establish another curve which will show the best economy curve, or as it is known to you, the "auto-lean" setting.

In establishing the detailed requirements of the engine with regard to carburetor setting, it is well to note that through the cruise range the normal cooling ability is such that added fuel flow is *not* required to obtain cooling (see Figure 3). This indicates that under the best economy setting (auto-lean) the cylinder head temperature will normally be lower than is obtained with best power mixtures for a given rpm and Hg setting. However, the power output of the engine at the same rpm will be less as illustrated in Figure 1. It must be borne in mind that these conditions are true *only* through the normal cruise range.

Another phase of engine operation which should be taken into consideration is the engine valve operation and its effect on engine operation.

First of all, we have certain valve clearances specified. Let us consider these valve clearances in two phases: the mechanical reason for clearances, and, secondly, the operational effect of valve clearances.

With regard to the mechanical reasons for valve adjustment, it will be noted in Figure 4 that the lobe of the cam has a step or ramp at both the beginning and the end of the lobe. This step or ramp is of sufficient height to remove all slack from the valve lifting mechanism and open the valve a slight amount prior to the complete opening of the valve as a result of the main lobe action. As the centerline of the main cam lobe passes the centerline of the cam roller, the valve starts to close rapidly. However, complete closing of the valve does not occur since the step or ramp holds the valve from closing and then eases the valve onto the valve seat from the step or ramp.

Cam arrangements of this type generally safeguard the life of the valve by maintaining valve seating velocity at a minimum since excessive valve seating velocity will result in valve bounce with subsequent failures of the valves, stretching of the valve stems and hammering of the valve seat.

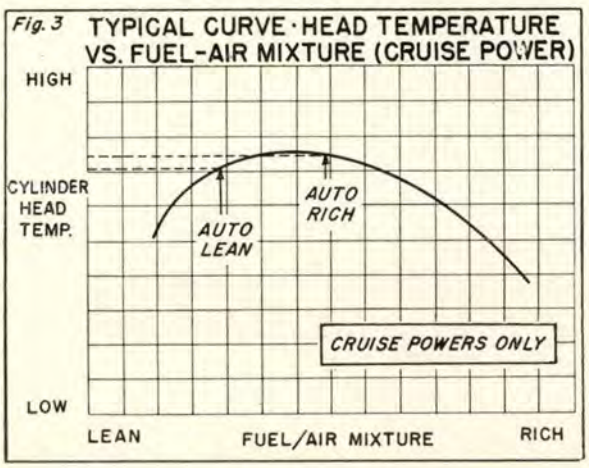
Since the step or ramp is very shallow with relation to the basic cam diameter, valve clearance must be very close to that specified.

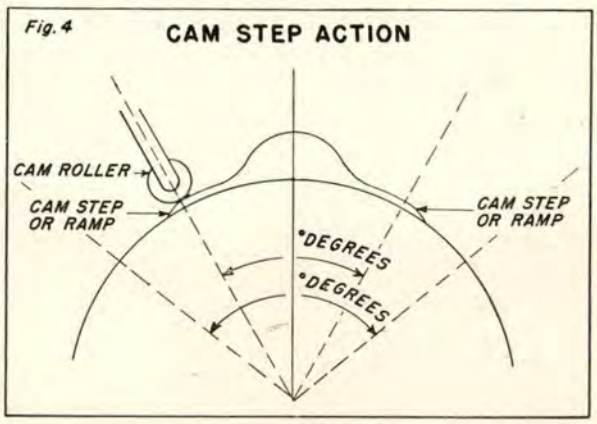
Negative or too small a valve clearance will cause hard engine starting and may cause valve burning, particularly after engine start before engine is up to temperature.

Excessive valve clearance results in a more severe condition due to the increased valve seating velocity as mentioned above.

Valve overlap, a period during the intake stroke when both the intake and exhaust valves are open, is built into engines to improve scavenging of the cylinder under full power operation. This results in increased horsepower output. This is another important reason for proper valve clearances since a variation of as much as .005 inch has a definite effect on fuel distribution between cylinders.

With a working knowledge of what is going on in an engine, a pilot is able to take better care of the engine in flight and the ground crewman has less trouble keeping it ready to fly.





RESCUE IS THEIR BUSINESS

THEY'RE TOUGH, they're trained, they're efficient, and rescue is their business. Whether it's a parachute jump into the ocean to aid survivors of a ditching or a 60-mile ski trip into the Rockies to bring out a lost private pilot, men of the Air Rescue Service take it in stride.

Experience during the war defined clearly the necessity for a specially trained and equipped organization designed specifically for search and rescue operations covering every area of the world where Air Force planes fly. Today, scarcely three years after its inception, that organization is not only established but has already justified its existence a hundredfold in wrecks found and lives saved.

Today no Air Force plane flying in the United States is more than 750 miles from one of the nine Air Rescue units established at strategic locations around the country. These units are equipped with SB-29's, SB-17's equipped with droppable life boats, SA-10 Catalinas, C-47's, C-82 Packets, H-5 Helicopters, L-5 and L-13 Liaison search planes, and such ground vehicles as Caterpillar "weasels," jeeps, trucks and trailers. Wherever a plane may be forced down, Air Rescue is equipped to find it and bring out survivors.

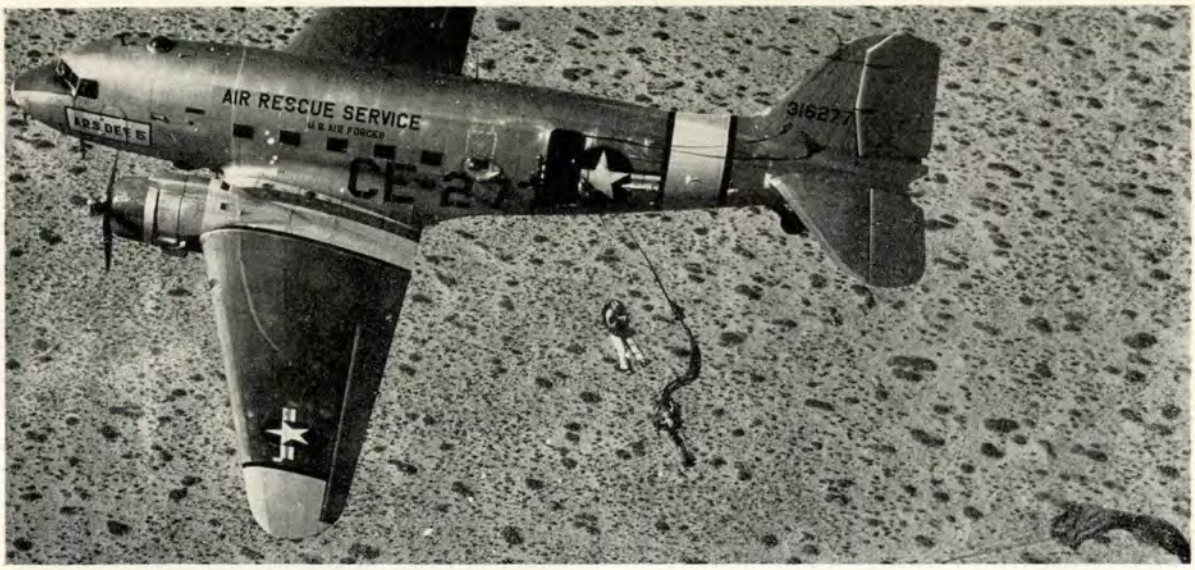
But the strength and efficiency of the Air Rescue lies in the men who man its individual units. Nowhere else in the Air Force is there a closer knit organization of rawhide tough, clear-thinking, ready-for-anything specialists than in an air rescue squadron. And it's no accident.

The men in Air Rescue are volunteers, known for their stamina, initiative and special abilities. In

a single team of a dozen men may be three ex-paratroopers on jump status as para-rescue men, a former North-woods guide, a doctor trained as a parachutist, a veteran jungle or swamp explorer, a ski expert, a helicopter pilot and several other pilots who are also trained land-rescue men. All will be graduates of the Air Rescue's Survival school and skilled in survival techniques for jungle, desert or arctic wilderness.

To get into an Air Rescue unit you have to be good. To stay in it you have to be tough. If a plane goes down in a remote section of the Rockies during a blizzard, a land-rescue team will be on the way to the scene of the crash within an hour after its discovery. They will go by truck as far as possible, then continue by Caterpillar weasel as far as it will go, and then proceed on skis or snowshoes to the scene of the wreck. If a crash is situated where a parachute team or a helicopter can get in quicker and do a more efficient job, they will be on the scene as quickly as they can fly there.

On their own initiative, officers and airmen in various Air Rescue units around the country have worked out techniques and special clothing and equipment for parachuting into trees or into the ocean to rescue crash survivors. Soon Air Rescue units will be equipped with radio-controlled life-boats that will be dropped to water survivors. An S (Search) B-29 will drop the boat and start its motor by remote control. A para-rescue man will then parachute into the ocean, climb aboard the boat, which has been steered to him by remote control, and pick up survivors. These boats will be provi-



sioned and equipped to travel hundreds of miles to safety.

Another development initiated by Air Rescue will be a crash-marker beacon now under development at Wright Patterson AFB which will eventually be placed in all Air Force planes in the least crash-vulnerable location. This beacon, a glorified "Gibson Girl," will eject itself upon a crash landing and automatically start sending a signal which can be picked up by any listening station and homed on by search planes. This new device will not only aid Air Rescue in finding a wreck but will make known the fact that a plane has crashed as soon as it is down.

While its primary mission is to find and rescue military personnel lost from whatever cause, the Air Rescue Service also cooperates with all civilian agencies and other services wherever its men and equipment may be of assistance. Of its 1570 alerts called last year, more than 500 were for lost civilian planes. Six overseas units are now under Air Rescue Service supervision and direction, and details for bringing all Air Force search and rescue operations throughout the world under Air Rescue control are now being worked out.

Wherever you fly in Air Force planes you can know that day or night, whatever the weather, this highly trained, specially equipped organization stands ready to come to your assistance if you are forced down over water, jungle, mountains, or desert. Air Rescue will find you and get you out. It's their job, and they can handle it.—*1st Lt. Hal J. Basham*

THE RISING COST OF WRENCHES

ONE DAY LAST SPRING an F-51 was towed into a hangar at a depot for major landing gear repairs. The landing gear pivot bushings were worn excessively and were to be replaced. Upon completion of the repairs, retraction tests proved that the gear was in A-1 working order.

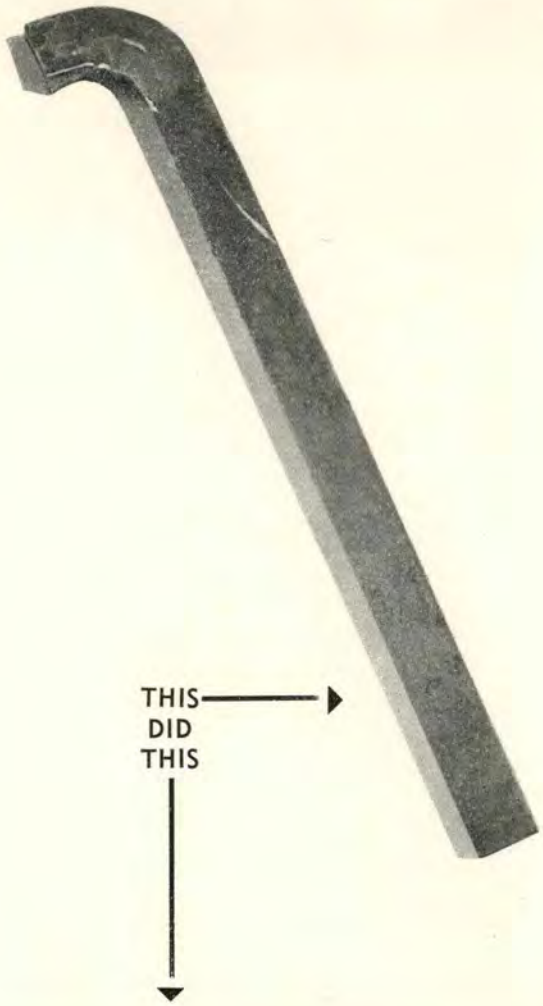
When the job was completed one of the maintenance people had, unknown to himself, lost a wrench handle. No one missed the handle and if they had they probably would have given up after a few minutes' search. It was nothing more than a ¾" bar about 10 inches long bent 90 degrees about two inches from one end. Cost just a few cents. Another one could be made in a few minutes. Why spend valuable time looking for a homemade wrench handle?

At the time the handle was lost, it had cost but a few pennies but by the time the wrench handle was found its cost had gone up to about two thousand bucks—an inch.

Don't get the idea that your future lies in manufacturing homemade wrench handles for a handsome profit. This particular handle cost Uncle Whiskers "beaucoup pesos" because it was left in the wing of the F-51 when the gear was overhauled. About five months of loops, slow rolls and landings finally worked the wrench handle into a position where it interfered with the proper function of the landing gear down lock.

A student pilot was flying local transition when the handle finally found a home. He entered traffic to land and after lowering the gear the red warning light came on with the warning horn blowing taps for one each F-51. The pilot pulled up the gear and went around. He tried everything in the books to get the gear down. Tower personnel took a look at the gear as the F-51 went by. They observed the gear to be down, the flipper doors were up and the pilot, when queried, stated that the pressure was normal. The pilot was cleared to land. He landed main wheels first, ballooned, then landed three points—then landed two points as the right gear folded. The engine, prop, right wing, right flap and aileron as well as the right gear and wheel were due for another trip to the depot.

Let's hope that all the tools are accounted for when this F-51 is rolled out of the hangar for its next test hop.



UNAUTHORI

"How about letting me make the next take-off, Captain?" was the way Sgt. Williams got us started on the subject. We were having coffee at a base where we'd stopped to refuel and were about ready to go back out to the C-45 and take off on the next leg of our cross country.

I might have passed it off with "Can't. It's against regs," if I hadn't just then noticed a headline in the paper I was reading. So I said, "You know, sergeant, I believe there is a pretty good reason for the Air Force being careful about who flies what and when. Look at this story. Here's an aviation cadet who stole a T-6 and proceeded to buzz a town, then crashed into an apartment building."

"Did it kill him?" the sergeant asked me.

"I'll say it did," I said, "and an old lady that was living in the building he hit."

"I can't understand why guys do such things," Sergeant Williams said. "They know they can't get away with it. Even if they live through it they may be court-martialed and thrown out of the Air Force or into prison. A guy must be nuts when he does such things."

"Not always," I said. "You were perfectly sane when you asked me if you could take the C-45 off. And if I had given permission, that would have been against the rules almost as much as taking that T-6 without permission. I know a perfectly sane pilot who took it upon himself to take a couple of civilian girls, one at a time, up in an L-5. One of them was killed when he buzzed the field."

"I don't quite follow you," Williams said.

"Well, it was like this," I began. "This pilot and another guy were out on a party with these girls, who asked to be taken for a ride in an airplane. They took these girls out to the airfield and he and one of the girls went for a spin in the L-5. Then he came down and picked up the other girl who had been waiting at the end of the runway with the other fellow. While he was flying with the second girl, he told her to hold on, that he was going to buzz the other couple who were standing beside a jeep. Well, you can guess the rest. He got too low and his prop sliced the head off the girl who was waiting beside the jeep."

"I'll bet he is no longer with the Air Force," Williams said.

"You're right," I went on. "He was thrown out. That wasn't all, either; he received a heavy court-martial, but I never did hear what all they did to him—plenty, though."

"You know," Williams said, "it is always amazing to me that a supposedly sane person can let himself be talked into such stunts."

"That was nothing," I told him. "You should work down in the Form 14 section with me. Boy, I see some reports of mighty funny accidents."

"Like what?" Williams asked.

ZED FLIGHTS

"Well, a report just came in about a sergeant who stole a B-17 and took it off," I said.

"Did he get it back on the ground?"

"He got it back on the ground all right. The force of gravity took care of that, but they had to pick him up with a blotter."

"How did he get the airplane?" Williams asked.

"No one knows," I said. "He had been bragging to some of his buddies that he was going to take off some day and prove to them he could fly a plane. They laughed and kidded him about making certain he had his insurance paid up. But, sure enough, early one morning the guy climbs into the plane he had been crewing, taxied out and took off. A fireman watched the takeoff and didn't see anything wrong with it. The guy flew around for about 20 minutes before he crashed into a wooded area. The airplane was demolished and the sergeant was killed."

"Wonder what made the guy think that he could fly," Williams asked. "Had he ever taken any flying lessons?"

"He had never had a flying lesson in his life. However, he had been at the controls of B-17's several times when pilots would let him take over for a few minutes. Aside from that he had never actually handled the controls. He did have several thousand hours in B-17's as crew chief and had observed thousands of takeoffs and landings. I guess he had flown so many hours as a crew chief that he thought he would have no trouble flying the plane."

Sergeant Williams called it overconfidence. "That's what it is," he said. "I've had that feeling a few times, then along comes a guy with several thousand hours of pilot time and he has difficulty landing my plane, and right there a hammer hits me in the back of the head. I realize that if a pilot with that many hours has trouble, the things that would happen to me if I were trying to land that crate shouldn't happen to a dog."

"I don't know what the B-17 crew chief expected to accomplish. If he had gotten the plane back on the ground in one piece, he would have faced a court-martial and probably no less than a dishonorable discharge," I commented.

"I'd hate to get a dishonorable discharge, period," Williams told me. "Brother, you're a man without a country then."

"The sad part about this deal was the fact that the guy had a wife and two small kids. They are the ones that are going to suffer."

"Did the guy have any money saved up?" Sergeant Williams, being a family man, asked.

"Not a cent," I had heard. "And to top that, he had just been paid the day before he got killed and had lost his pay check in a crap game."

"Well, captain," my crew chief said, "it seems that the innocent are the ones that always suffer for such tricks. If guys would just stop and think be-

fore they get into such predicaments, they would never harbor any ideas about flying an airplane until they have been through a flying school."

That reminded me of the 4-F'er who managed to get possession of an officer's AGO card and presented his credentials to an operations office at a local Air Force unit. He said he was with the Ferry Division of ATC and on detached service locally. He claimed he needed flying time for pay purposes. The guy was given a flight check and allowed to fly several times. On the day the accident occurred, this guy requested and received a T-6 for a local flight. The sad part of this story is the fact that a flight surgeon who needed flying time was in operations when the guy was getting his clearance and requested that he be allowed to fly with the bogus officer. The guy took off and flew around for a while, but as he was coming in to land, witnesses said that he was in a nose-high attitude at low airspeed. As he turned onto the final, the plane stalled and spun in. Both of them were killed. But as Sergeant Williams said, "It is the innocent who suffer most from such capers."

"Boy! That flight surgeon was really unlucky," William said. "So was the Air Force," I added.

"Why the Air Force?" he asked.

"Think of the unfavorable publicity such stuff heaps upon the Air Force," is the way I explained it. "Think of the relatives of that flight surgeon and the woman who was killed when the T-6 crashed into her apartment. How do you think they feel? How do you think the public feels when they read about such cases?"

Sergeant Williams answered, "Well, if I were related to either of them I'd probably feel like murdering someone."

Then he asked, "What's being done to stop all this wrong use of airplanes?" I told him how our C.O. felt about it. He says it should be easy to stop non-Air Force pilots from getting Air Force planes. Strict compliance with regulations will prevent AGO cards from getting into the hands of civilians. However, he isn't sure how we can stop crew chiefs from taking off when they feel like it. As long as they are allowed to taxi planes, he thinks that the possibility of one of them taking off now and then will still exist. He feels that our best means of solving that problem will be thorough education of the men involved. Once they are made to realize the dangers of such actions, he thinks the problem will be solved. If the guys don't get killed, their careers with the Air Force are ended by courts-martial. Either way, it just doesn't pay. And all accidents from such actions cost the taxpayers plenty. Also, the reputation of the Air Force is at stake. That's about the way I told Sergeant Williams.

"You know what," he said as we were getting into the plane, "it would be a good thing if more people heard about those accidents."

That's why I've told you.—*Capt. J. L. Dumas.*

THE MIKE TAKES OVER

ACCORDING TO ACCIDENT STATISTICS, landing a T-6 with full use of the controls is sometimes a tricky job not to mention doing it without left aileron control.

1st Lt. Sumner M. Alpert of Lackland Air Force Base found himself in this awkward position one day.

He had made a visual inspection of his T-6 prior to takeoff. Everything was secure in the rear cockpit including the safety belt and microphone.

About 15 minutes after takeoff while practicing coordination turns at 3000 feet, Lt. Alpert rolled into a turn to the right. He intended to roll back to a turn to the left but by that time the T-6 had taken things into its own hands and had finished a beautiful roll to the right despite the pilot's efforts to stop it.

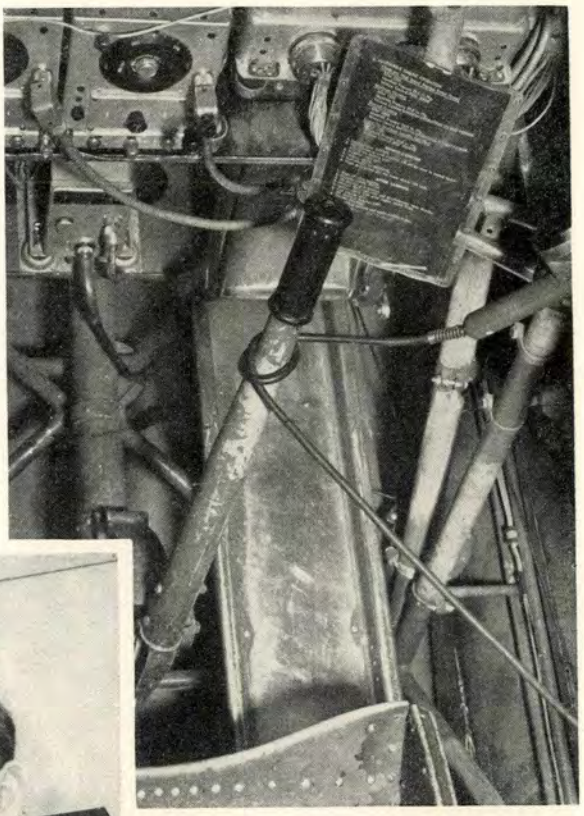
The pilot remained cool during the antics of the T-6 and really put pressure on the stick. He finally managed to hold the T-6 in straight and level flight.

Then to his dismay he found that it was impossible to apply left aileron.

After a little orientation with this type of "uncoordination" the pilot attempted a landing and made it without mishap.

While wiping the perspiration from his brow after the landing, he looked into the rear cockpit. The microphone cord had a half hitch and a strangle hold around the stick.

How the microphone cord managed to lasso the stick is a good feat in itself, but the pilot's knowledge of acrobatics and ability to keep his head during an inadvertent acrobatic maneuver, plus his landing skill, was an even greater feat.



CRACK THE DOME

OFTEN DURING A CRASH LANDING exits are jammed, requiring that emergency rescues be made by cutting or chopping out portions of the fuselage marked for such entries. A suggested method for quick entry into the B-29 and B-50 is to discharge the contents of a CO_2 fire extinguisher at the astrodome. This will cool the dome and cause it to become brittle and the extinguisher can then be used to break it. The same technique can be used from inside the plane.

SNOW ON RUNWAYS

The Royal Air Force has experimented in flying from snow-covered fields in depths of snow varying from three to 12 inches. Their suggestion: the safe maximum depth of soft snow is nine to 12 inches for four-engined airplanes, four inches for twin-engined airplanes, three inches for light airplanes.

The takeoff run was increased on airfields where soft snow had been left by approximately 100 to 200 yards for heavy planes, 200 yards for twin-engined planes, and was approximately trebled for light planes. Where the snow had been packed hard, the increase in takeoff run was negligible.

The landing run was increased only where ice had formed on the surface of the snow or where the snow had been packed hard and re-frozen.

No increase in tendency of airplanes to ground-loop on landing or takeoff was experienced in either soft or hard snow, except where a shallow drift had formed on one side of the runway, thus causing more resistance to one wheel.

Greater care is required when flying off compacted snow, due to the slippery nature of the surface. In conditions of crosswind it is difficult to maintain directional control of the airplane when taxiing, and also there is a tendency for the plane to "weather-vane" during takeoff. Landing requires far more care, for the same obvious reasons.

The covering of snow on a runway apparently does not affect a pilot's judgment of height on landing by night, but a tendency to level off too high was experienced by day unless the runway was very clearly marked. Bush pilots have found that the temporary positioning of small shrubs or pine twigs along the snow covered runway greatly assists a pilot to focus and hence to form an accurate judgment of his height.

THERMAL ANTI-ICING

The basic principle of thermal anti-icing such as is installed in the Boeing B-50A is that it maintains the leading edge of wings, stabilizers and dorsal fins

at a temperature above freezing. When supercooled droplets of water strike the warm airfoil they absorb enough heat to prevent their changing to ice. Air heated by gasoline combustion heaters is passed through the leading edges. Contrary to expectations, "ice run-back" or refreezing farther back along the wing or tail surface has proven to be no hazard to safe flying, in preliminary tests. Airplanes equipped with such heaters have been observed to lose all traces of "run-back" within a few minutes after returning to dry-air flight conditions prior to landing.

360° OVERHEAD APPROACHES

In order to provide for uniformity in technique of 360° overhead approaches at both civilian and military airfields, AF Regulations 55-13 states that such approaches will be made only when authorized by the control tower operator at the airport being utilized.

Radio contact will be maintained with the control tower throughout the approach. And the initial approach will be established at a minimum distance of two miles from the end of the active runway and maintained at not less than 1000 feet altitude above the ground.

The peel-off or break-away will be executed *without* gain in altitude.

Also, the last turn onto final approach will be completed at a safe altitude and not less than 1000 feet horizontally from the approach end of the runway.

ANC REQUIREMENTS FOR BEACON LIGHTS

In the interest of safety to air navigation, the Army-Navy-Civil Committee on Aviation Ground and Seadrome Visual Aids Equipment and Installations formulated the following requirements for beacon lights which are to be used as visual aids to air navigation.

A beacon light shall be visible through 360° of azimuth and produce a distinctive signal that will unmistakably define the service for which it is installed.

The following are the basic beacon identifying signals:

a. Alternate white and green flashes—a lighted land airport.

b. Alternate white and yellow flashes—a lighted water airport (seadrome).

c. Alternate white and red flashes—a landmark.

d. White flashes with auxiliary directional red coded flashes—a Federal airway.

e. Red flashes—a hazard.

For detailed information on the above see AFR 91-16 and accompanying ANC-R-6.

YOUR RADIO FACILITY CHARTS

THE RADIO FACILITY CHART is chuck full of information which is invaluable in flight planning and which may help you to bypass a very embarrassing situation in the future.

The legend below is the latest in our new, joint USAF-Navy radio facility charts.

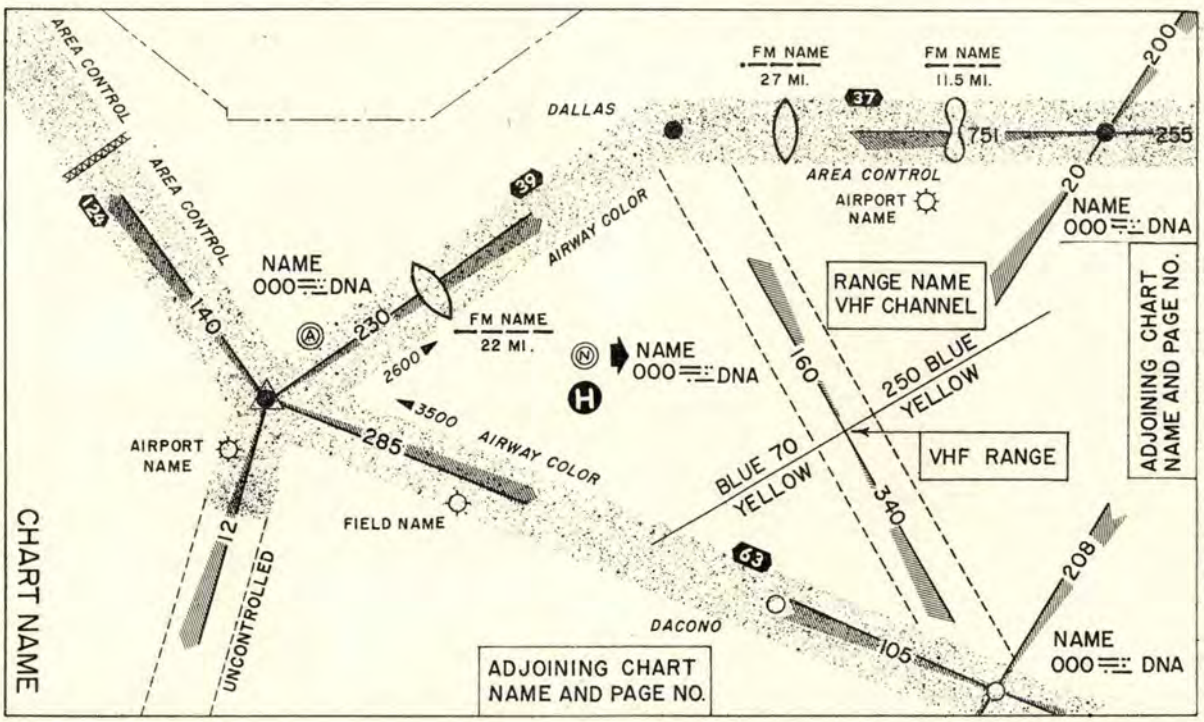
A page of the radio ranges for a certain area in the radio facility chart conforms to a World Aeronautical Chart of that area. The name and number of the corresponding W.A.C. is noted on each page of the facility chart.

On the page preceding each area of radio ranges is the information on range and tower frequencies. The order in which this information has been changed to is: airport or facility, radio range station, military airways, and towers in that order with the last column for remarks as usual.

The elliptical-shaped designation of a fan marker means that the fan marker is to be normally used where no intersections are available. The bone-shaped fan marker is used primarily for holding within 15 miles of the range station. Fan markers sometimes have a low frequency for homing with the radio compass (see T.O. 08-15-3).

Special Notices are listed in the latter part of the radio facility chart. They contain such pertinent information as: IFR Traffic Control and Approach Procedure—Washington Area, Radar Navigational Aid—Washington, D. C., Area, Air Force-Navy-Coast Guard VHF Channels, Direct Pilot to Weather Forecast Communications Service, and Radar Storm Detection Units.

Keep up with your radio facility charts—there is new information every two weeks.



Fan marker denoted by name, identification and distance from range station.

Civil airfield.

USAF airfield.

US Naval airfield.

Non-compulsory reporting point.

Compulsory reporting point.

Non-directional homing facility.

Non-controlled airway.

5800 — Controlled airway mileage to be white on black, distance in nautical mi. between compulsory reporting points. — 6800

International boundaries.

Control boundaries on airways.

Triangle at range station indicates "Z" marker.

Denotes military airway stations.

RANGES: The heavy black line on one side of leg range indicates the "N" quadrant in all cases HF & VHF ( ). Power of station is indicated by ends of legs as follows:

0 to 50 KC - notched end
50 to 150 KC - slanted
Over 150 KC - pointed
All legs to be same length.

VHF Ranges: Visual leg is straight line. A & N sectors indicated normally.

All range leg readings are magnetic inbound to station.

PRESSURIZED—B-29

SUDDEN DECOMPRESSION in a pressurized airplane such as the B-29 can cause damage and possibly loss of life if safety precautions are not heeded.

If you are blocking the opening of the plexiglass blister when it fails, a terrific force hits your body which is likely to sweep you and loose objects through the opening. Also there can be a 140-M.P.H. gale through the tunnel of the B-29 when sudden decompression occurs.

Restraining straps are provided in all crew positions near the blisters and astrodome so that you can work throughout the B-29 under pressure and not worry about being blown out.

Before you get your safety belts fastened, keep clear of the opening so you don't make like the man on the flying trapeze.

Keep your restraining strap fastened.

Always keep one tunnel door closed.

Don't expose your body to blisters and hatches.

Navigator's restraining strap fastened securely.


Five Bail Out Of C-47 Plane
Westover Air Force Base, Mass., March 20. — (AP) — Five crewmen escaped uninjured today when their two-engine transport made a forced landing on a dirt road in a desolate area near
A rescue plane
unhurt and
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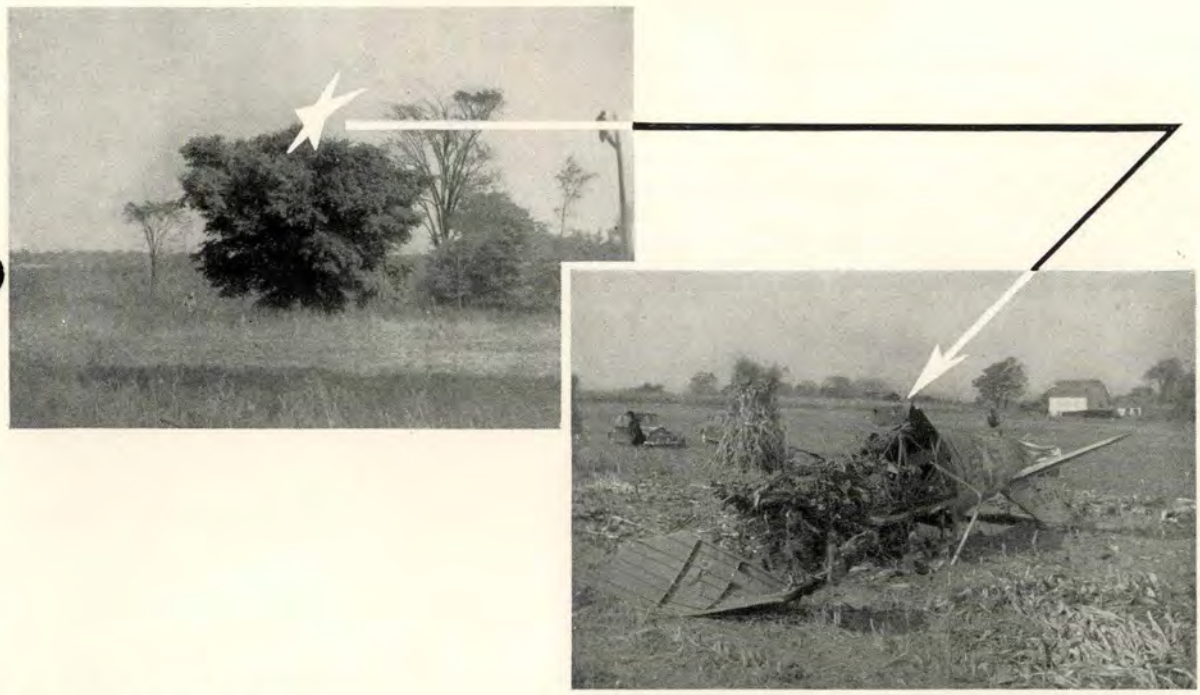
the ATC add
Six Men Killed In Plane Crash
New Orleans, Sept. 13.—(AP)—Six men were killed yesterday when
Army
Find 2 Bodies, Plane Wreckage
bodies of
of an A
missi
Only 6 Of 29 Survive Crash
B-29 CRASH
Plane Wreck Sighted; No Sign Of Life
Anchorage, Alaska, March
(AP)—A search plane reported
that
5 Die As Plane Crashes, Burns
1 Killed, 2 Hurt In B-29 Crash
Fear Missing Plane Fell Into
AIN'T THIS A PRETTY PICTURE ?
General, Wife Hurt In Bailing Out Of C-47
March 18—(AP)—Brig. Gen.
and his wife were
injured today when they and seven
other Americans bailed out of a
C-47 plane and landed in Russian-
9 Die As Plane Explodes Over
C-47 Transport Plane Missing Over North Atlantic
Shannon Airport, Eire, May 6.—(AP)—Planes began a search of the North Atlantic today for a missing transport plane more than 24
4 U. S. Fliers Die As 2 C47s Collide Near Ra
planes on the supply run
tributary of the Ganges.
Plane Crashes House; 4 Dead
New York, Sept. 4.—(AP)—Four persons were killed today when a small Naval fighter plane crashed into a four-family dwelling in
a residential suburb of
York City.
10 Killed, 4 Injured In B-29 Crash
Tampa, Fla., March 18—(AP)—Ten
injured
21 Dead In Crashes Of Two Planes
France, Jan. 31.—(AP)—The only survivor among 22 Americans in two U. S. plane crashes in Alps today credited
prisoner of war with
Sgt.

Violation!

An Air Reserve pilot and an unauthorized passenger were killed when the T-6 in which they were flying crashed after the pilot had buzzed a freight train and flew so low that he caught his left wing in a tree.

Before takeoff the pilot had filed a local clearance and placed it on the desk of the officer-in-charge. The name used by the pilot on the local clearance was not the name of the unauthorized passenger but was that of an authorized passenger. As far as could be determined, the passenger who made the flight was not authorized to fly in an Air Force aircraft. The pilot violated Air Force Regulation 60-16, paragraph 27, in that the aircraft was operated in a careless manner. In flying at an altitude of less than 500 feet while engaged in buzzing the freight train, the pilot violated paragraph 36B of AF Regulation 60-16.

Statements of eye witnesses at the scene of the crash revealed that the pilot was engaged in low flying. All indications were that immediately prior to crashing, the airplane was buzzing a freight train which was passing a slag pile averaging 40 feet in height extending for several hundred yards along the side of the railroad tracks. One witness stated that the plane was flying below the top of the level of the slag pile, and as the plane passed the end of the slag, the pilot executed a steep turn to the left, then shallowed his turn and struck a 40-foot tree approximately 15 feet from the top. The T-6 rolled over on its back and crashed into the ground in an inverted position. Both occupants were killed instantly.



LETTERS TO THE EDITOR

Dear Editor:

Instead of, or in addition to base operations offices maintaining master clocks (which can be wrong) why not get out an eight push-button HF radio set in every operations office. This radio would have its push-buttons pretuned to the eight frequencies of radio station WWV, National Bureau of Standards, Washington, D. C. Accurate time can be read every minute, five minutes or on the hour and half-hour. The signals on at least one frequency can be heard all over the world.

JOHN MILLER, *Sergeant, USAF.*

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Dear Editor:

Inclosed is an article submitted for publication in FLYING SAFETY Magazine. I am not certain whether the ideas it contains would be better in an article or in a letter to the editor. If you wish to change its form to the latter, or edit it in any manner, you have my hearty permission.

It is of no concern to me whether or not I break into print, and if the style or form is not up to your standards you, of course, know what to do. I am concerned, however, with this question of thorough and accurate training in all subjects of importance to pilots, and feel that very little is being done in that direction at present.

In the absence of such training I would like to suggest that your magazine print occasional articles more specific and technical in nature. Subjects like traffic control, meteorology, navigation for pilots, engine procedures, and aerodynamics would, I believe, find a wide and appreciative audience.

If I could be of any help to you in the future I would welcome the opportunity.

JOHN H. SEWARD, *1st Lt., USAF,*
Smoky Hill AFB, Kansas.

You break into print. See page 6, this issue.—Ed.

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Dear Editor:

The following is a story which I think should be called to the attention of all flying personnel:

The other day a T-6 landed, groundlooped at the end of its roll. At first inspection there was no visible damage. Before the plane was moved, the Base photographer was called to take a few shots. A cursory inspection was made and oddly enough the pitot-tube was found bent toward the engine, along a horizontal plane, enough to have made a crack in it. On the outside of the tube were found a few yellow paint smudges. The path of the plane was closely checked and it was found that no runway lights had been touched.

Now we come to the moral of the story. If circumstantial evidence may be used, it is safe to assume that somewhere along the parking line, someone was not too careful with a yellow painted vehicle, and it is also obvious that the pilots, "air instructor and student," did not closely check their plane before taking off.

We were once told to look inside the cowling to see if a monkey wrench were there. Let us remember to look for all possible "monkey wrenches" that might be found on a preflight inspection.

LOUIS C. RENAUD, *Captain, USAF,*
AF Reserve Training Center, Bedford, Massachusetts.

SAFETY QUIZ

1. An "aural null" exists
   A. only when homing on a station.
   B. when the plane of the loop is in line with the radio station.
   C. when the plane of the loop is perpendicular to a line to the radio station.
   D. only when the audio knob is turned to MAXIMUM position.

2. In solving the "180° ambiguity," if the relative bearing of the radio compass has decreased, the radio station is
   A. to the right.
   B. to the left.
   C. directly ahead.
   D. directly behind.

3. A pilot tracking outbound drifts off 6° to the right and makes a 20° correction. He will intercept the track when the radio compass needle indicates
   A. 6°.
   B. 160°.
   C. 200°.
   D. 340°.

4. A pilot is due east of a station and is flying northwest. The relative bearing to the station as read on the radio compass needle is
   A. 90°.
   B. 180°.
   C. 225°.
   D. 315°.

5. A pilot is flying at groundspeed of 160 mph at a right angle to the inbound bearing to the station. If his null heading changes 10° in 5 minutes the distance to the station is
   A. 30 miles.
   B. 45 miles.
   C. 60 miles.
   D. 80 miles.

6. A pilot tracking inbound, drifts off 10° to the left and makes a 30° correction. He will intercept the track when the compass needle indicates
   A. 10°.
   B. 30°.
   C. 330°.
   D. 350°.

7. In solving the "180° ambiguity" of the aural null, if the relative bearing has increased, the radio station is
   A. directly behind.
   B. directly ahead.
   C. to the right.
   D. to the left.

8. A "wing-tip null" exists
   A. only when homing on a station.
   B. when the bearing to the station is 90 or 270 degrees and the needle is at zero.
   C. when the bearing to the station is 90 or 270 degrees and the needle is at 180 degrees.
   D. when passing the station with the needle at 90 degrees or 270 degrees.

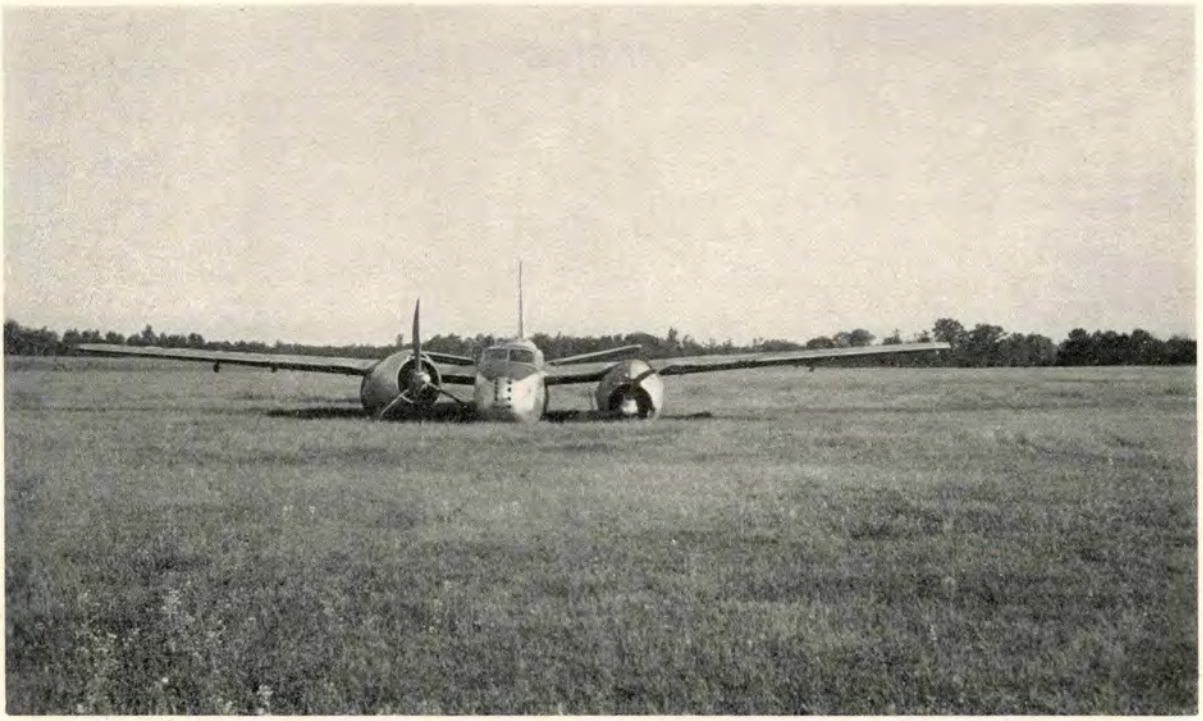
9. The width of the "null" when using the LOOP position may be varied by
   A. changing frequency.
   B. varying angle of bank.
   C. switching to COMP.
   D. changing volume.

10. A pilot is flying at a groundspeed of 180 mph at a right angle to the inbound bearing to the station. If his null heading changes 5 degrees in 5 minutes, the time to the station is
    A. 30 minutes.
    B. 45 minutes.
    C. 60 minutes.
    D. 80 minutes.

★

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

WHY?



SIMPLY BECAUSE A PILOT was unfamiliar with the B-26 fuel system, the Douglas Invader pictured above was written off. Why? The answer is simple enough. With only one hour of dual instruction under his belt, the alleged B-26 pilot amassed a total of some 50 hours first pilot time before something went wrong. Each takeoff, flight and landing had been normal during the 50 hours but when the right fuel selector got stuck in the auxiliary position and the tank started to dry up, the panic was on.

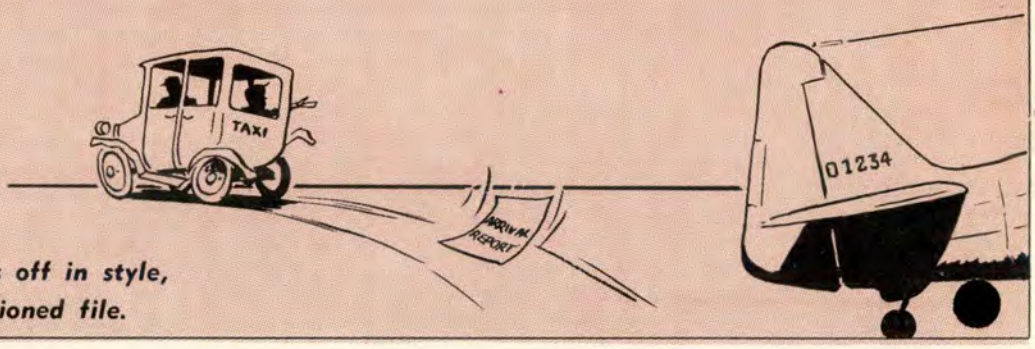
The pilot and crew chief tried several times unsuccessfully to switch the selector to another tank. The crew chief consulted the G file carried in the airplane but he and the pilot were unable to determine the correct procedure for using the crossfeed. In the pattern, with little gas remaining in the auxiliary tank, the engine was feathered. The pilot stated that his action was taken to preclude the possibility of an engine failure during the approach.

The pilot notified the tower of his emergency. According to a statement of the pilot, the gear and 12 degrees of flaps were lowered on the downwind leg. The drag induced by the wheels and flaps caused the airplane to lose altitude rapidly. A turn was made on the base leg with a still further loss in altitude. On command of the pilot the landing lights were lowered. The lights flashed momentarily and then went out. Airspeed by this time had dropped to 125 MPH. The pilot started to milk the flaps up and pull up the gear for a go-around. Full power applied to the left engine resulted in a loss of directional control on final approach. Seeing the handwriting on the runway, the pilot bellied the airplane in.

This pilot used poor judgment in executing the attempted single-engine landing. However, if the pilot had known his airplane and had turned the bombbay selector to the "on crossfeed" position and switched the booster pump on the tank supplying fuel to the good engine to the "on" position there would have been no necessity for the attempted single-engine landing. He could have flown on to his destination.

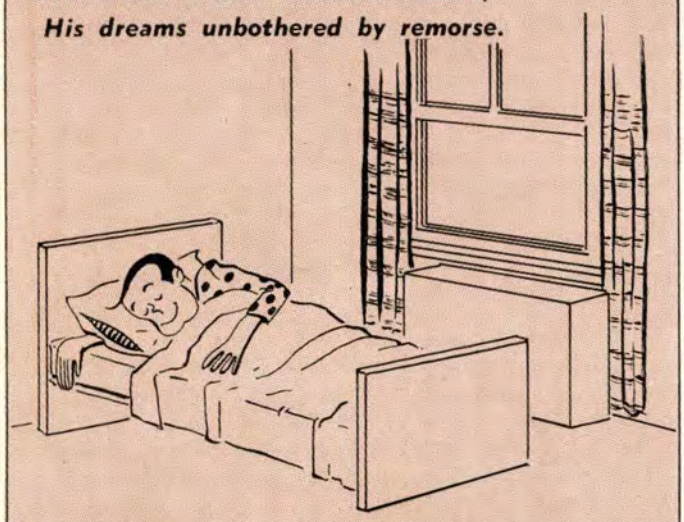
Why had this emergency procedure been overlooked in this pilot's checkout?

Mal Function



Mal lands plane—takes off in style,
Puts form in air-conditioned file.

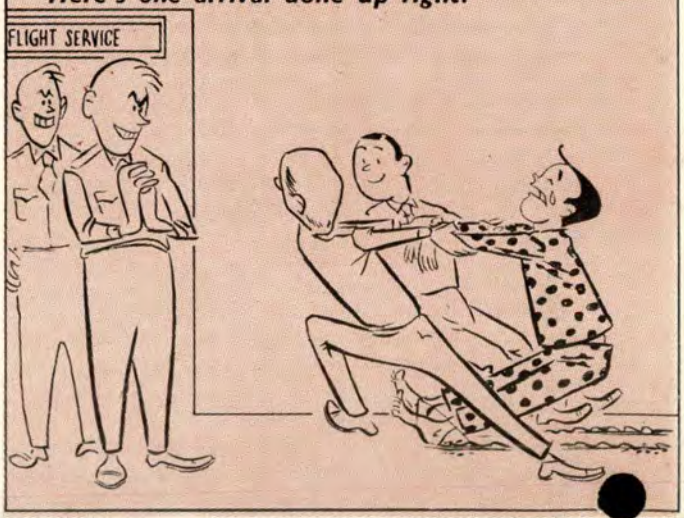
Mal takes a sack refresher course,
His dreams unbothered by remorse.



Flight Service works at fever pitch.
Is missing plane in tree, in ditch?

Much money shot in Mal's behalf,
A welcoming is planned by staff.

Too late Mal sees his dismal plight—
Here's one arrival done up right!



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