Flying Safety

HEADQUARTERS UNITED STATES AIR FORCE • RESTRICTED

FEBRUARY 1948

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THE COVER STORY

On a local test flight, from a Pacific island, the pilot of a P-47 noticed during a dive that the prop was overspeeding. He turned toward the field with the propeller control in MANUAL position. Enroute, the prop continually lost rpm and manifold pressure dropped. Unable to hold his altitude, the pilot ditched the fighter just offshore in smooth water inside a reef. The plane slid along for about 300 feet. Quickly, he jumped out on the wing to abandon the plane, and then noticed that it was not sinking as the water was only a few feet deep. The plane was resting on the bottom. The pilot reported that during the ditching there was no violent jolt of any kind and he was not thrown against his shoulder harness.

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FLYING SAFETY

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CONTENTS

ACCIDENT STORIES

ARTICLES

FEATURES

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NIGHTMARE OF CRAZY CLOCKS

FOR SEVERAL YEARS pilots of military and transport airplanes have viewed with alarm the ever-increasing tendency to pile gadgets on top of gadgets in airplane cockpits. Adding to their consternation is the non-uniformity of switches, controls and gages in various planes. If experienced pilots have difficulty in mastering the complexities of modern planes, the day when the public can view the airplane as a simple and safe means of transportation is a long way off.

A comparative study of total items, including those not covered by the checklist, but all of which require the pilots' attention, was made recently on transport planes. There were 188 such items on an early transport. The cockpit of another contained 343 items, while a new transport has 445 gadgets, levers, gages or other items for the pilots and flight engineer to check.

There remains no doubt that this complexity contributes to "pilot error." Constant repetition of the same errors of forgetting, confusing and using incorrectly the various controls in the cockpit, and of misreading or misinterpreting the various instruments, or failing to read the right ones at the right time, are testimony that present designs of the instrument panel and controls are invitations to the pilot to do something wrong.

While each individual aircraft accident may appear in detail to be different from any other, examination of thousands of different accidents leaves little doubt that the underlying conditions which permit accidents to happen have remained much the same.

For example, the circumstances which lead to mistaking the landing gear for the flap switch may vary widely, in most cases one fact remains constant: encouragement to make this mistake was inherent in the location and design of the switches.

Similarly, repeated collisions with parked or taxiing airplanes, whether as a result of faulty brakes, taxiing too fast or mere failure to look where the airplane is going, suggest re-examination by supervisory personnel of present practice of where and how airplanes are parked. Designers can contribute to lowering the rate of this type of accident by affording the pilot better vision. An automobile would be much more dangerous than it now is if it had to be driven while looking out of a side window or if the windshield afforded the blurred view offered by many airplane windshields.

The safe plane is the only possible starting point in the attempt to achieve safe flying, human nature being what it is. Safety education is always important, but even the most safety-minded pilot cannot overcome backward design. Public enthusiasm for aviation, which is in reality the backbone of air power, will be strictly limited as long as an airplane is regarded as "an infernal machine that must be mastered."

Through the efforts of military aviation, airline pilots, federal agencies and manufacturers, there are signs that simplification of airplane design is on its way. Certainly the knowledge of the ways to make

the airplane safer are attainable from the files of accident experience. What this will mean in the way of an improved accident record is obvious from USAF experience in which the study of repeated errors has resulted in design changes.

Calling it "pilot error" is too often an easy way to overlook accident-producing characteristics of the airplane. More safety "built in" should be aviation's goal for the future.

By LT. HAL J. BASHAM
FLYING SAFETY *Staff*

ON AN ASSEMBLY LINE unparalleled in the Air Force, B-29 Superforts relegated to storage graveyards a year ago are being brought back to life at the rate of one each day to fly again in the 55-group plan.

Maintenance problems never before encountered are being met and surmounted by techniques formulated and perfected on the spot by men of the Maintenance Division of the Oklahoma City Air Material Area. The first group of 70 B-29's ordered recommissioned was finished 48 hours ahead of schedule in a panorama of assembly line overhaul unequalled in the history of the division.

The project started right from scratch. The effects of protracted outdoor storage on the B-29's were unknown since this was the first project of its type. Had personnel assigned to the project known the headaches that lay ahead, they would have been, as one inspector put it, "ready to quit and join the foreign legion" before they ever got started.

It is gross understatement to say the biggest problem was finding and eliminating corrosion. After the third week mechanics, specialists, inspectors alike were seeing visions of corroded wires and stringers in their sleep, combing corrosion out of their hair and stirring it in their coffee. Fuselages were corroded, wings were corroded, flaps were corroded, props were corroded, landing gears were corroded. The entire armament and communications system of every airplane together with all instruments were completely shot and had to be replaced.

One major source of trouble that would have had mechanics still sweating over the first half dozen planes was eliminated by the simple expediency of replacing all engines and sending the old ones for depot overhaul and repair. All propellers were removed, thoroughly inspected and tested, and refinished or replaced as required.

Propeller trouble was found on the very first plane. The balsa wood cuffs on the prop blades near the propeller hubs were removed to disclose excessive rust and intergranular corrosion. These cuffs were covered with doped fabric and instead of protecting the blade shafts from moisture had held it close to the metal where it could get in its damage.

As the B-29's moved along the three-fourth-mile long assembly line, crews at each station carefully inspected and replaced and repaired defective or worn parts. Every inch of each plane was thoroughly

checked for every type of defect from rust to hastily patched battle damage. Because no one knew how the inside of the landing gear was bearing up, the gear was removed from the first plane. A large amount of foreign matter and extensive rust was found inside the strut. There was some question whether this condition was a storage problem or one present in operational aircraft. Research on this problem is being conducted at present by the Strategic Air Command.

As a result of findings on this first airplane, removal and checking of all gear assemblies was made part of the procedure. This condition of rust and accumulated foreign matter was found in greater or lesser degree in every airplane checked. The gears now on the B-29's recommissioned are as good as the day they rolled off the factory line.

Fuel leaks presented another major problem. The leaks were prone to develop after the plane had been through the maintenance line and were up for flight test. As a result, it was made standard practice to fuel the airplanes and let them stand with fuel in the tanks for two weeks before checking the tanks in order for all leaks to show up. The largest single source of trouble was found around the connection part of the main tank. The materiel division found it necessary to install a special type of seal to stop this leak. In one of the shops a manufacturing plant was set up to manufacture special fuel seals on the spot.

One problem that had the division stumped for a time was the matter of plexiglass blisters. The white milky substance sprayed on the plexiglass to protect it had turned out to be an enemy in disguise. On planes that had been in storage only six months, this covering could be blown off like rubber as it was supposed to be. But on B-29's that had been stored longer, which means the majority of planes, it clung to the plexiglass like part of the blister. These domes and blisters had to be discarded, and there were no replacement parts. A contract had to be let for new plexiglass blisters to solve the problem. One official in the maintenance division remarked that the only thing the spray protected was the dials of the instruments which all had to be discarded anyway.

The granddady of all their troubles, the one single item that caused the most headaches and delay, was the electrical system in the Superforts. That

Rows of fighters awaiting the inch-by-inch inspection and overhaul to fit them for duty.

Propeller corrosion is an example of ravage of time.

Seals on fuel tank connection parts deteriorated in storage. Crews soon learned where to look for faults.

meant the communication system, and there was a critical shortage of qualified communications technicians. Almost all the wiring in the planes was defective and had to come out. The entire intricate system had to be re-installed. Finally, however, enough experts, both civilian and military, were obtained and the big difficulty was solved.

There were other problems, such as testing the pressure cabins for leaks and defects and correcting the troubles, and finding hidden corrosion invisible on the surface of parts, corrosion that could be found only by picking at the metal to determine whether it was hard or soft, removing and testing all control cables and replacing those found unsatisfactory.

Inch by inch, the entire plane, inside and out, was covered by inspectors looking for hidden trouble. The shimmy damper in the nose gear provided its share of trouble, as did countless other lesser items. But as the crews grew experienced in the process and learned what to expect and to look for, the project picked up speed to finish 48 hours ahead of the deadline on its first project of 70 planes.

This achievement was made possible only by the closest cooperation between supply and maintenance divisions. In every section a liaison was maintained directly between the two divisions. Bluestreak priority enabled the OCAMA to search out scarce and necessary items of equipment and bring them in by pilot pickup. The job had to be done. It was.

The recommissioning of Superforts to fly in the 55-group plan is not the whole story of the Oklahoma City Air Materiel Area by any means. Aircraft from "L" types to jets are serviced in one way or another at this depot. Special manufacturing shops are set up to provide certain parts for various aircraft, and there are many other activities too numerous to mention here.

As B-29's, P-47's and other planes recommissioned for the Air Force roll out of the former Douglas aircraft factory, aircrews assigned to fly them can know they are top flight, first line airplanes, as good as the day they came from their original factories. All these planes have been checked from tip to tail, checked on the ground and in the air. They are ready for armament installation by using units. They are ready to fly again, to fight if necessary, for the peace they so recently won.

BRUSH IT OFF

By MAJ. GILBERT G. SMITH, JR.
1st Cold Weather Test Det., Alaskan Air Command

Heavy snow was falling and the temperature was just a notch above freezing point when a pilot at Anchorage, Alaska, started the engines of a C-46. He expected no trouble from the settling flakes as he ran up the engines and made routine cockpit checks.

Snow blanketed the tops of the wings, but the plane was taxied out to take-off position. Believing that the fresh snow would blow off during takeoff, the pilot opened his throttles and rolled down the runway. Immediately after takeoff and as the plane climbed into colder air the wet snow, which had accumulated during the warm-up and taxiing period, froze to the wing surfaces.

This made a rough surface on top of the transport's wings. The pilot continued on at high power settings and was able to reach 9,000 feet. There he maintained an indicated airspeed of 130 mph with power settings of 2,400 rpm and 35 inches manifold pressure. These power settings normally should have pulled the plane along at about 210 mph.

The photos on this page were taken of the plane after it landed at Ladd Field. Ice deposits can be plainly seen.

Because of the great length of time between the starting of the engines and the actual takeoff, considerable snow had fallen on the wings. The control tower changed the takeoff direction after the plane taxied out to the runway, further lengthening the time snow accumulated.

What the pilot did in this case could very easily have ended in disaster. A broom briskly applied to snow on wing and tail surfaces immediately before takeoff should be required procedure, particularly whenever the temperature is just above freezing on the ground.

SAFETY BEGINS WITH THE CADET

By Training Department, Randolph Field

SAFE FLYING has been of major concern to the Flying Training Command for many years. Training, of necessity, has tried to keep abreast of the technological advances made in aviation during World War II, and the natural trend has been to introduce students to faster and heavier aircraft earlier in their training period.

Ten years ago it would have been considered madness to send a cadet off solo in a 600 mile an hour plane; today it is an accepted part of the training program. Progress has outmoded the PT-13 as a primary trainer in a system that graduates jet pilots, and for that reason the USAF accepted the optimistic reports of an RAF experiment and entered primary students for initial training in the North American AT-6.

This step forward in training placed a heavier burden on flying safety. The AT-6 is a groundlooping airplane in the hands of careless pilots, a fact borne out by accident statistics. Thirty-nine percent of all accidents during the past year occurred in the AT-6, and it is significant that the majority involved other than student personnel. To combat the increased probability of training accidents it was necessary to give added emphasis to safety; to graduate students with the proper respect for hotter aircraft. In that light, while safety education will never reach a final pinnacle at which no better ideas are forthcoming, the Training Command has given much thought to safety, and much has been done to keep accidents down.

Safety in flying training begins when the student meets his instructor. A student in many ways is a lesser image of the man who teaches him, and he carries the impressions he gets forward throughout

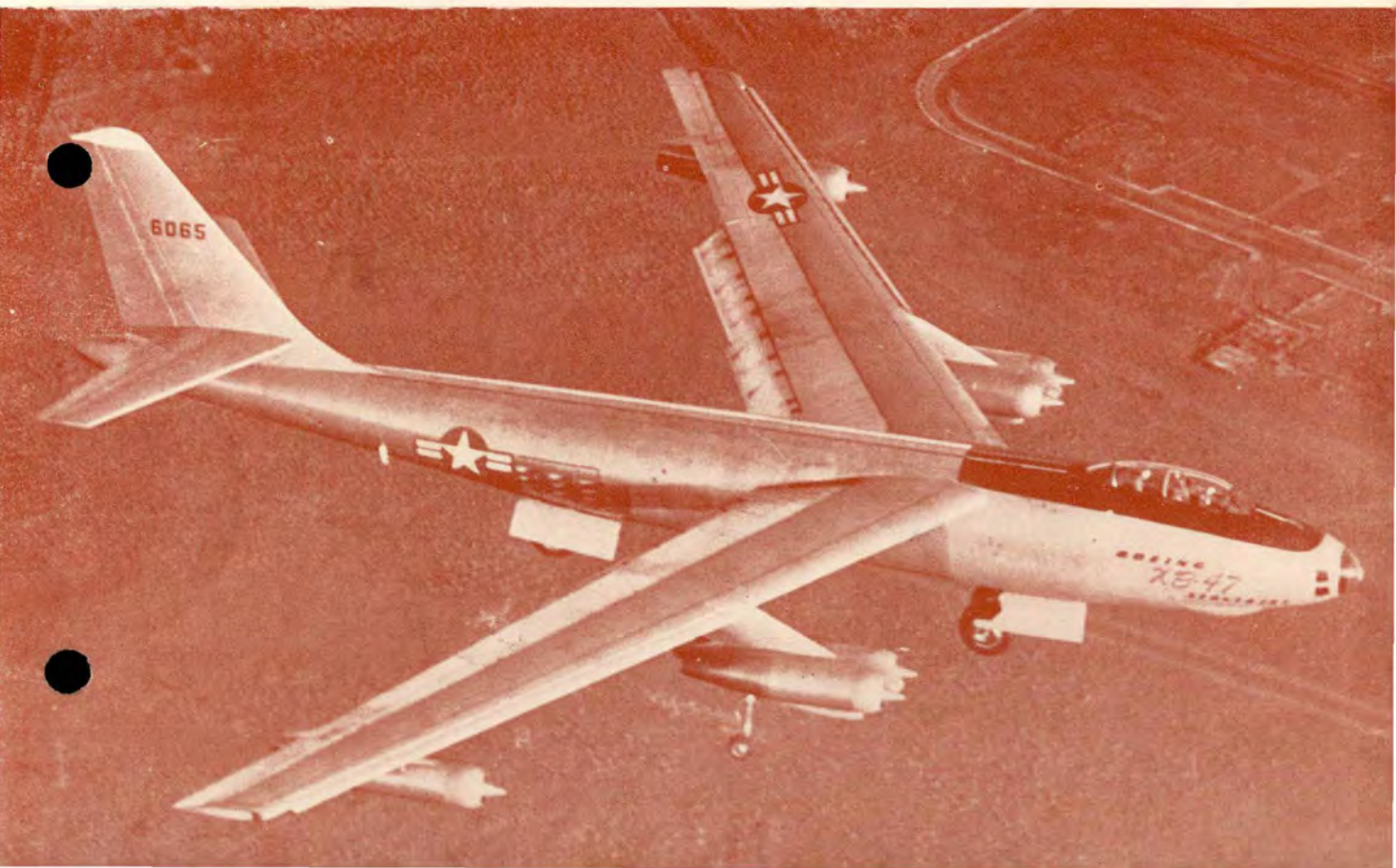
his flying career. During the war years central instructor schools were set up to train pilots along specific standard lines to teach students in the widespread flying schools. When the war ended and flying training was curtailed, instructor training was discontinued.

The loss was felt immediately when the program began again at Randolph Field, and with the advent of the AT-6 in primary training (now known as Basic Phase I), a flight instructors' school was established. The program of that school now is to turn out instructors who can fly the AT-6 safely from the rear cockpit; who understand the flight characteristics of the AT-6; and who can impart safe and sane flying practices to flying cadets. The care with which instructors are schooled in their job will reflect in the accident rate of the USAF.

The instructional method in the AT-6 is called the "slow approach." The average student in the past soloed the PT-13 in approximately eight hours; the average AT-6 student soloes in approximately twenty hours. The twelve extra hours of dual instruction mean a lot to the safety factor. A cadet in the AT-6 must master the more complex procedures of the larger aircraft. He must be able to do more than just get the aircraft on the ground because an AT-6 demands a lot more flying than the old PT-13.

Before he is turned loose for solo, the student of today must be able to identify and manipulate every control blindfolded. Before he is allowed to leave the traffic pattern solo, he is checked through three supervised solo flights, usually from both hard and soft-surface runways. When a man gets the nod to go out and practice in the area he is able to take care of himself.

Along with the slow approach, a new work day was established. In the past it was the custom to instruct for a half-day period. An average primary



instructor with four students flew with them all during any one half-day, and was left little time for ground instruction. The flying curriculum inaugurated at Randolph Field divided the training period into two phases: pre-solo and post-solo. During the pre-solo phase the instructor works through an eight-hour day, and each student is on the line for two hours, receiving an hour of flying instruction in the air and a half-hour critique before and after being airborne. There is no doubt that the student receives more and better instruction under the leisurely system now in operation, and is proportionately safer in the air as a result. In spite of the longer grind for the individual instructor, the results are worth the effort.

Aviation medicine has taken strides forward as training techniques advanced. The medical department's recognition of unsafe physical and mental states of flying personnel has prevented many accidents. Now, when a student or the instructor feels that a man is not performing as he should, the flight surgeon takes over and delves into the possible causes for the lapse. Many students are grounded for a few days and return to the line ready to do their best. In the past they would have probably continued and been eliminated for reasons that a little medical attention correctly applied would have overcome.

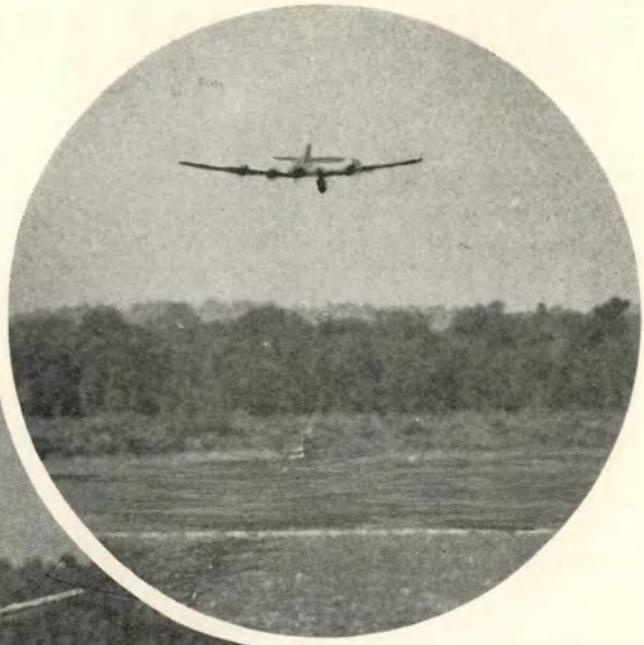
Lessons learned in the past about flying safety are still functioning in the present program. The old requirement for looking around in the air has been redoubled in the AT-6, and one ride in the blind back seat of the AT-6 makes it easy to understand why the instructor insists on swivel-necked students. The "hot pilot," self-styled, is still catching the same old hell, and he gets in more trouble in the AT-6. Rituals concerning gear, and flaps, and mixture controls, and gas are ground into every student time and time again until attention to details is second nature with the ones who graduate.

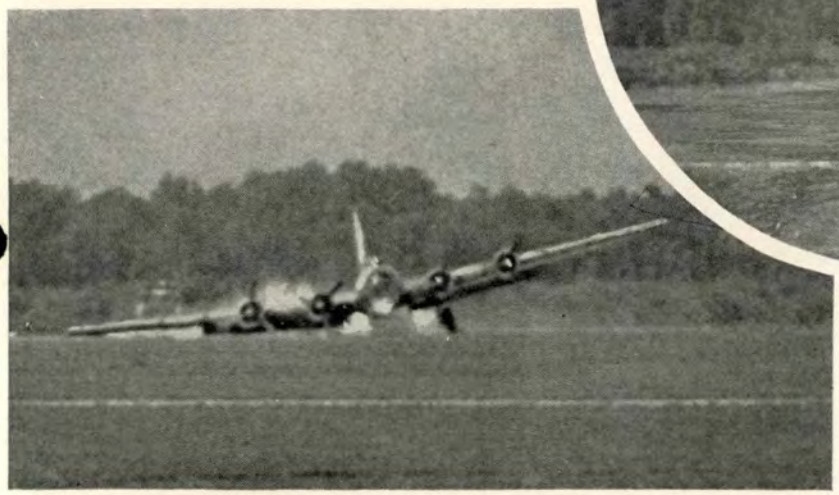
The precision and attention to procedure required in training remain with a man throughout his flying career. Throughout his training every effort is made to place him face to face with safe flying and the reasons therefor. He has ample opportunity to observe the penalty for infractions, and the ground-loops of his fellow students serve warning of the danger of relaxing for even a moment. From the time he hits the line in the morning till he heads for the barracks at night he is bombarded with literature, words, and action . . . and they all preach safety in the air and on the ground.

The Training Command has its share of accidents, but accidents can be expected when embryo pilots are shooting thousands of landings in an airplane like the AT-6. In spite of the added complexity of starting students in the AT-6, since the beginning of the program, Randolph Field has not injured a single primary student.

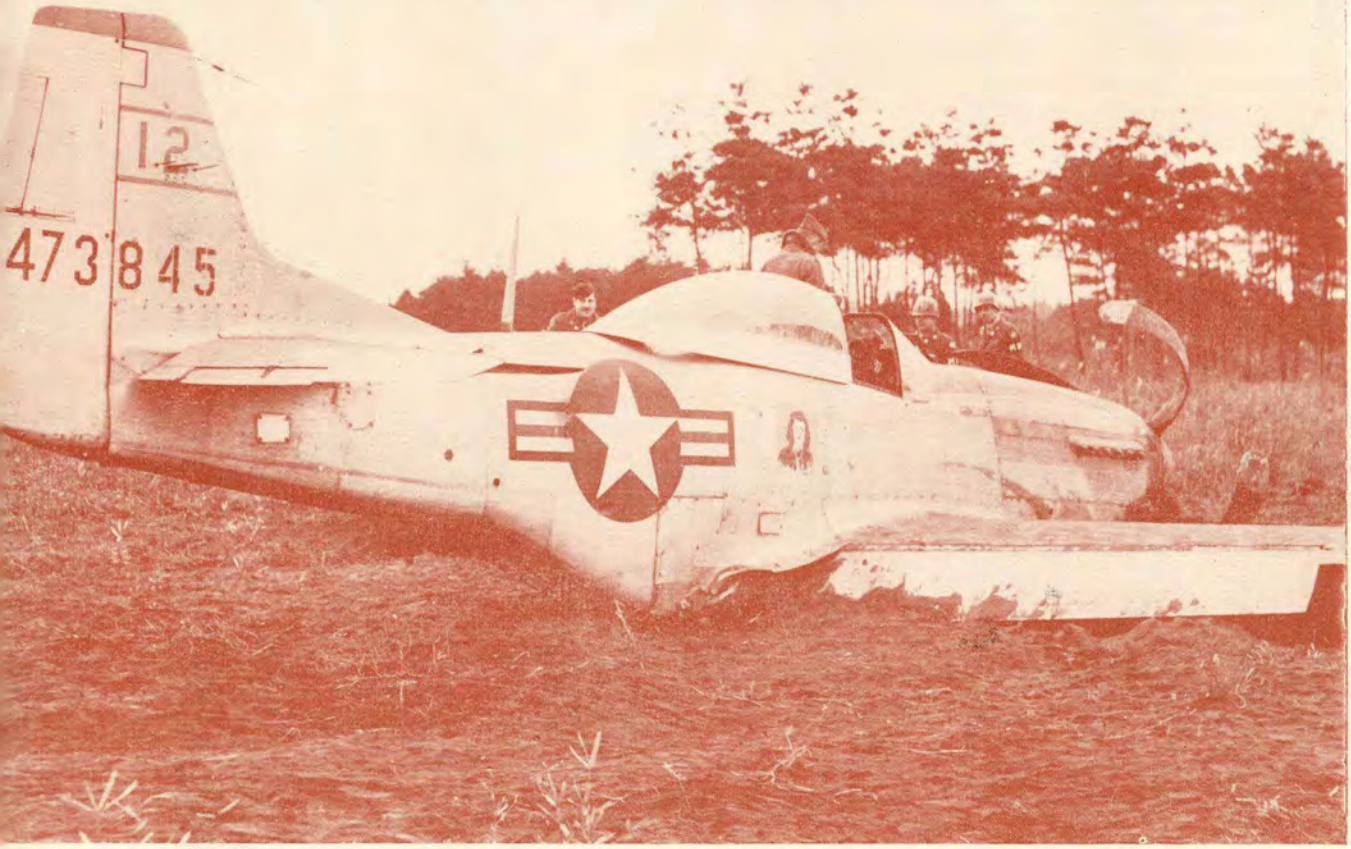
TWO - POINT LANDING

Unable to get the right gear to lock down, the pilot of this B-17 landed on the left gear and tail wheel. After touching down, the right wing was held in level position as long as possible, lowering slowly as speed decreased, until the wing tip scraped the runway. As the right props struck, the bomber groundlooped 180 degrees. No one was injured. Faulty installation of the gear assembly was blamed for the failure.





SUPERVISORS ARE ON THE TEAM



A PILOT RELIES on the men behind the airplane he flies. He is entitled to expect that when a plane is turned over to him it is in as good condition as maintenance personnel can make it. He depends on operations personnel for information which will help him make his flight safely. But how does he know whether these people on the ground are doing their part?

The supervisors should know. They, the commanding officer, the operations officer, the engineering officer, the inspectors, are responsible that personnel who back up the pilot are properly trained and familiar with standard procedures.

Here are three accidents selected from many which can be directly attributed to supervisors who should have detected the dangerous conditions existing under their very noses.

Fifty minutes after takeoff on a routine test hop of a P-51 which had come out of 50-hour inspection, the pilot had reason to lose his faith in the other guy. When he retarded the throttle and again advanced it the engine continued to idle at about 20 inches manifold pressure. The throttle linkage had probably become disconnected, he reasoned, although that part which was visible in the cockpit was not disconnected.

A wheels-up landing was made at an abandoned airstrip. Nevertheless, as such landings are inclined to end, the plane received major damage.

Investigation proved that the linkage forward of the fire wall had become disconnected and fallen free. The nut and safety pin were missing from the connecting bolt. Failure to safety the nut was the primary cause of this accident, and investigators determined that maintenance inspections of the plane had not been thorough.

The second accident came at the end of an uneventful test flight of a P-47. Upon returning to

the field to land, the pilot was unable to lower the left landing gear by either normal or emergency procedures. After attempting to rectify someone else's mistake for an hour, and with little gasoline remaining in the tanks, he retracted the right landing gear and brought the fighter in on its belly on the crash strip. Again a plane received major damage.

The accident investigators went to work. Their findings: the valve assembly, hydraulic timing, had been installed in the left gear in reverse, thus trapping the fluid in the UP chamber and preventing the gear from extending. Tests revealed that the gear would retract but not extend. Now the board descended on the engineering section and found that maintenance records were not filling their designed purpose. On this plane parts had been removed and replaced but no entry had been made on the plane's forms.

Careless supervisors had allowed a pilot to risk his life in a plane which had undergone maintenance repairs wihout being inspected.

While a tower operator contributed to the pilots' mistakes made in the third accident, lack of training and familiarity with existing SOP's tossed the blame in the laps of supervisors.

In this case, a flight of two P-47's was cleared by the tower to land. The pilot in No. 2 position made a normal pattern and landed close behind the flight leader. Near the end of the landing roll he noticed that he was overtaking a plane in a flight that had landed earlier. In an effort to avoid collision he applied brakes abruptly, nosed up, and the plane received major damage.

Just before the two planes landed, two other flights had been cleared to the runway. Because of

improper spacing of the first flight, the leader of the second flight could not land safely on the left side of the runway according to plan. So he landed on the right side, forcing his wingman to land on the left. The last flight was too close behind the second flight to land on the left. Because his leader crossed in front of him, the No. 2 man in the second flight had slowed down almost to a stop. It was then the No. 2 man in the last flight saw him and was forced to brake hard to avoid a collision.

Questioned, the pilots admitted that they were not familiar with the formation landing procedures of their organization. The tower operator indicated that he had not been taught the proper method of handling such traffic.

Failure to instruct as well as inform personnel of an organization's operating procedures is an indictment of those charged with supervision.

SAFE LOADING—SAFE FLYING

By CAPT. THEODORE S. WOOD
Westover Field

SERVICE AIRPLANES are good, stable, reliable machines, built to carry a load—but not if the load is concentrated in the tail! A relatively light load, if distributed haphazardly, can cause a dangerous tail or nose heavy condition. Gas loads must be computed carefully, so that maximum landing gross weights will not be exceeded. Otherwise, a collapsed landing gear and a wrecked airplane may be the result, to say nothing of less critical damage.

Although many pilots can recall accidents that resulted from either an ignorance of weight and balance or the careless signing of the certificate on the clearance form without checking the airplane, no such accident is on the books at Westover Field, or is likely to be. Westover is the western terminus of the Atlantic Division, Air Transport Command's overseas runs to Frankfurt in the American Zone of Occupation. Over forty flights a month leave Westover's broad runways bound for the long over-water hop, through all kinds of weather and turbulence. In addition, Military Air Transport, or MAT, with which all aerial hitch-hikers are familiar, flies many domestic flights, airlifting all kinds of freight from Air Materiel areas to various bases throughout the country.

The weight and balance officer at Westover Field, Lt. Joseph R. Jamison, keeps tabs on over 100 airplanes, most of which are C-54's engaged in the foreign transport mission. Other than these, various commands send their planes in for weighing at intervals. The office is probably one of the most complete in the Air Force, having two officers and nine enlisted specialists assigned. Recently President Truman's airplane, the "Independence," arrived at Westover for a check and was weighed by personnel of that office. The office has personnel on duty 24 hours a day, as airplanes are departing on long trips at all hours. Weight and balance books, slide rules for each type of plane, Charts "A" and "C" are kept in the office and up-to-the-minute records of equipment are filed.

Each airplane is weighed at least once a year, according to AAF Reg. 55-3, which means an average of one every three days. The large hangars at Westover simplify the weighing, as they can be completely closed. Drafts over airfoils cause such inaccuracies that even the air conditioning systems are shut off during weighing.

You may wonder why an airplane must be weighed every year; the few pounds gained or lost probably wouldn't amount to much. Here's an example—C-54D #42-72555 assigned to one of the transport squadrons, weighed in when new in May 1945 at 40,922 pounds, index 80.5. On 20 January, 1947, the weight had dropped to 39,996, index 75.7. On 14 November, 1947, after weighing, the pounds had gone back up to 40,171, index 81.5. That difference of nearly 1,000 pounds could very easily mean the difference between safe loading or overloading, and the five-point index change on the slide rule, if added to a heavy lift, might have meant one C-54 piled up at the end of somebody's airfield.

The C-54 had "plush" seats and equipment in the passenger compartment which were removed for substitute equipment of a different total weight during the year. This decreased the weight.

The loading chiefs of the air freight section supervise the loading of all planes on the MAT or foreign transport missions. These loading chiefs are also weight and balance experts, although not assigned to the weight and balance department. After the airplane is loaded, the load form is sent to the weight and balance office where it is checked against the basic index of the plane. The load is corrected to comply with safe loading practices if necessary. Gas loads, which have been computed by the First Air Transport Group's chief navigator, are phoned to the weight and balance office so that proper coordination between air freight, operations, and weight and balance is always assured.

Personnel of the weight and balance section undergo continuous on-the-job training, and most of them can answer any question asked about weight and balance in theory or practice. Last summer,

T/Sgt. Robert J. Leonard, NCOIC of the weight and balance section, made a junket to many of the division's widespread operating locations, supervising the weighing of various airplanes and assisting operations personnel in the proper operation of a weight and balance section. Early this spring, another trip to the many domestic operating locations is in prospect.

It is well to remember, when loading any airplane cargo, that tie-down is important. If turbulence is encountered, it may be too late. During the war years, many airplanes were lost because pilots were in a hurry and had no time to secure loads. Tie-down kits are supplied with every airplane built to carry cargo.

ATC planes carry every kind of freight imaginable, but one of the most difficult loads carried was 6,000 pounds of loose paper. The papers were documents pertaining to an international weather conference, and were picked up at Toronto, Canada, to be flown to Washington. Imagine the surprise when a truck backed up to the ATC C-47 and men began carrying in bundles of paper tied loosely together with lengths of twine. None of the bundles were of the same size, and there was little that could be done but stack them, one upon the other, with the high point of the pile as near to the forward bulkhead as possible. The next half-hour was spent using all the rope and rope-tighteners in the airplane manufacturing a taut rope net over the slippery paper. Any pilot can imagine the hopeless struggle to keep the faithful old C-47 in level flight if this had not been done, and 6,000 pounds of loose paper had skidded toward the tail latrine! Happily, most loads can be computed and stowed aboard more scientifically than that.

It pays to compute gross weights carefully. Inaccuracies in estimated gross weight will play havoc with your engineer's cruise control computations. Your range will be appreciably shortened if the error is large, and extremely embarrassing, to say the least, if you should have to land a mile short of your destination.

Flying present-day aircraft entails enough thought during flight to keep your whole crew busy—don't give yourselves something extra to worry about. Get acquainted with your weight and balance expert. Learn at least the fundamentals of weighing, and learn all you can about safe loading! You'll be a better pilot when you do.

Weight and Balance officer uses computer, charts.

Weighing a Skymaster is an intricate, inside job.

ALTIMETERS'S

BY MAJ. R. W. DIVELY,
Langley

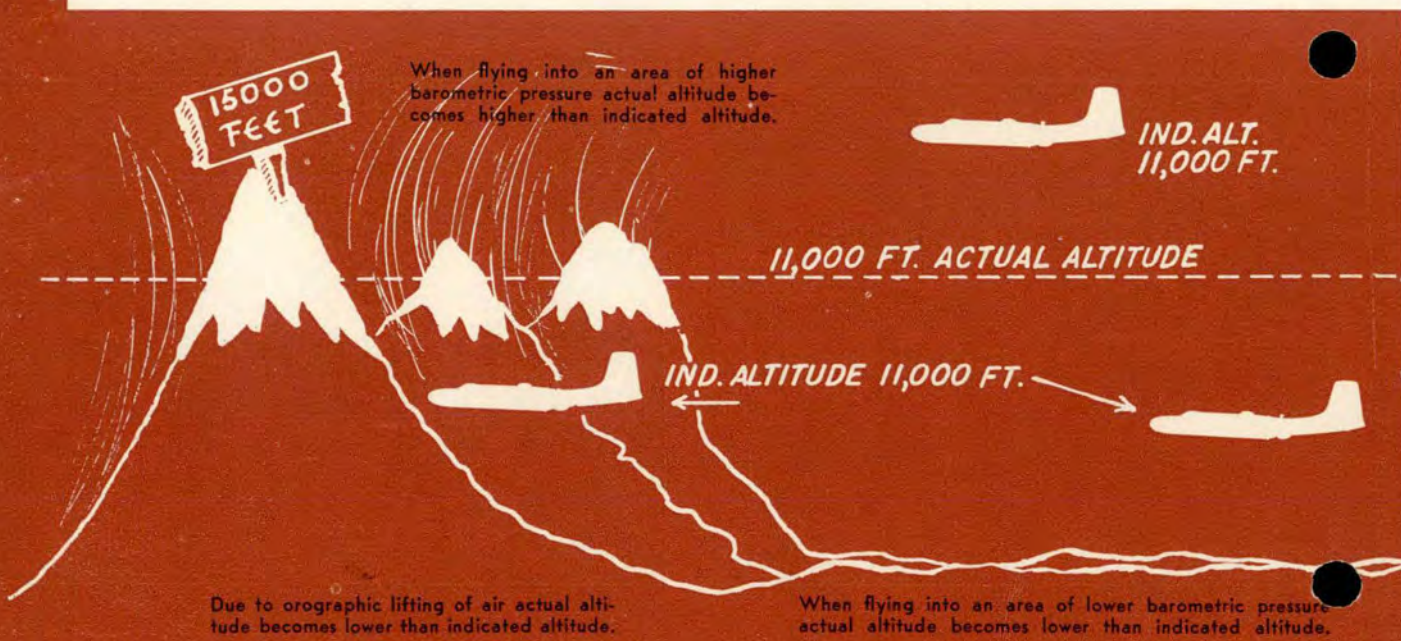
IT IS A LONG STANDING CONTENTION of experienced pilots that enormous errors exist in altimeter readings when flying through mountainous terrain. Test work done by the Aeronautical Ice Research Laboratory indicates the old-timers are right.

An airplane was flown over Mt. Washington, New Hampshire, with altimeter settings based on the latest information received from Concord, the nearest airways radio. As it passed the summit, its altimeter indicated between 8,200 and 8,300 feet. Observers in the plane and on the mountain peak estimated the actual altitude of the plane over the summit as between 200 and 300 feet. The mountain is 6,288 feet above sea level. The true elevation of the airplane was therefore very nearly 6,550 feet! The tests were repeated with comparable altimeter errors.

Corrected for temperature, the elevation indicated by the altimeter was 7,900 feet or about 350 feet lower than the uncorrected reading. The error remaining, that is the difference between 7,900 feet and 6,550 feet, was attributed to orographic lifting of the air. At the time of the flight, the Mt. Washington Observatory was reporting winds of 100 mph and a temperature of —30 degrees F.

Mountainous slopes are especially treacherous because the air tends to be compressed on the low windward slopes and thinned on the lee slopes. High winds over mountain tops react not unlike air passing through a Venturi. Also, weather stations in these mountains may be thousands of feet above sea level. Since altimeter settings are computed assuming a standard atmosphere lapse rate from the sea to station level, desirability of adding a thousand feet or more when flying over such areas is obvious.

Mountains do not form the only scene for faulty altimeter readings. The air over flat country often behaves in strange ways. Standard atmosphere and adiabatic lapse rates can be plotted on a chart, but take and whirl the air around in storms and subject it to sudden temperature changes and it doesn't conform to the standards upon which instruments like the altimeter are based.



OMETIMES LIE

Station Weather Officer
Field

It is important therefore for the pilot to be aware of the areas, seasons and conditions when the pressure altimeter may be grossly incorrect. Consider always that each variation of temperature and pressure from the standard atmosphere induces error in the altimeter. With this knowledge it is possible to be on the alert for changes in the air between the last meteorology report and the position of the plane.

The extreme heating which occurs to the air over desert areas can induce large errors between the actual and indicated altitude. Also during sub-zero cold with clear skies, surface temperature inversions of as much as 20 degrees C. are not uncommon. In warm air a plane usually flies higher than indicated, in cold air lower.

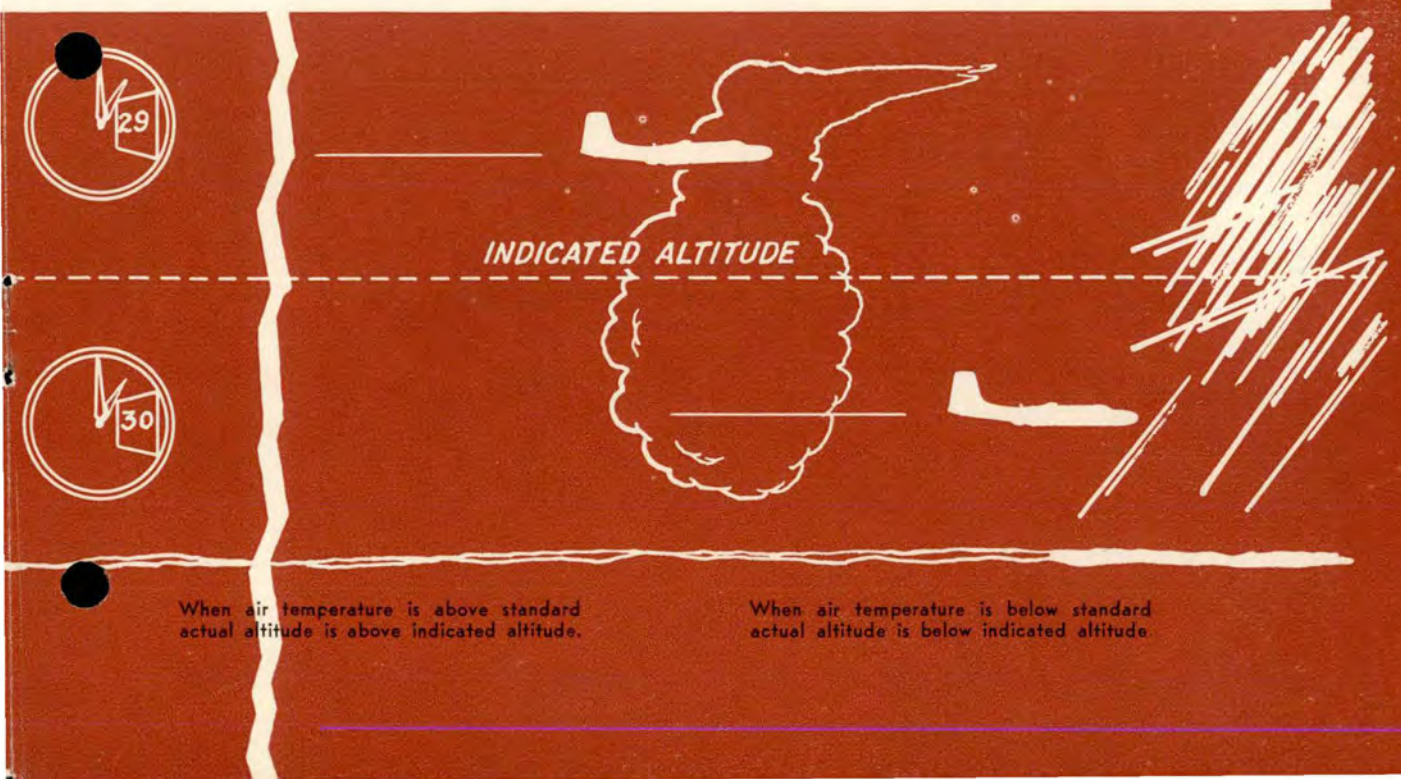
Upon passage from a high pressure area to a low pressure area, or through a frontal system, large differences between the actual altitude and the indicated altitude may be encountered within a relatively short distance. It should be remembered that in flying from a high to a low the actual height of the plane will always be less than the altimeter indicates. Thus, the setting should be constantly renewed if available. A pressure gradient of one inch Hg. within 300 miles is not unusual on most any weather map. At sea level this pressure gradient is equivalent to 1,000 feet.

When flying from cold air to warm air, as in passing through squall lines of moderate to severe intensity, a major difference between true and indicated altitude may occur within a very short time, with the plane flying much lower than indicated. Similarly, caution must be utilized in areas of thunderstorm activity since each such storm is a low pressure system. Altimeter errors are roughly proportional to the intensity of the thunderstorm.

A simple thumb-rule to remember about altimeters includes these points:

First: Obtain latest settings as you pass over stations along your flight path.

Second: Altimeter settings are computed with an artificial scale based on sea level normals. The sum of errors mounts with the effect of wind, temperature, terrain, and storms.



STALL DETECTION

PILOTS DON'T STALL when they try, and do stall when they don't try.

This is not contradiction. It is the logical conclusion of research experts.

The Civil Aeronautics Administration and several universities have discovered that few pilots, whether students, instructors or private pilots, can recognize when a stall is imminent. This fundamental fact shows itself in two ways:

1. When pilots are deliberately trying to fly on the edge of the stall, they think the edge has been reached long before it actually has.

2. In "normal" flight, and probably under conditions of distraction, pilots frequently stall inadvertently.

The apparent contradiction merely results from the fact that inadequacies in stall recognition become evident in different ways in different situations.

In a high incidence of private plane accidents a stall, particularly from a turn, was the immediate maneuver preceding the crash. This became a special study for Dr. Dean R. Brimhall and Dr. Raymond Franzen, CAA researchers. Their studies were based on investigations of a large number of accidents, and in most instances engine failure or structural failure was not a factor, giving the logical conclusion that the pilots involved stalled inadvertently.

Because so many pilots did not recognize the signs of an impending stall, or at least the signs did not register, an experiment was conducted by Dr. Phillip J. Rulon of Harvard University. He used an ingenious set-up of five vanes on the leading edge of the wing which actuated red lights for the examiner as the pilot brought the plane to what he thought was the edge of a stall.

Taking the average performance for a series of different maneuvers conducted at Bedford, Nashville, and Westchester airports, Dr. Rulon found that most pilots believe they are at the stall-point when only three of the five lights are on. Actually, a stall occurs only after four or five lights flash, depending on the maneuver. Since the pilots tested were instructed to "come just as close to stalling the airplane as possible without actually stalling," the conclusion was that they couldn't find the stall point when they were trying.

A companion project at Ohio State University, reported by Dr. F. C. Dockeray, is seeking to determine whether accuracy in stall perception can be improved through training and use of stall-warning indicators which flash lights and sound a horn.

Dr. Brimhall comments that only the first step has been taken in stall investigation. Because so many stalls occur inadvertently, researchers are now tackling the problem of how pilots can recognize a stall under conditions of distraction, such as while flying instruments.

Perhaps a new instrument is needed. Maybe pilots need more intensified training in stall characteristics. Whatever the decision, the work of these researchers will result in safer flying.

VIOLATION!

WHEN A PILOT VIOLATES one or several flying regulations he is not always the only person to suffer the consequences.

The flight leader of a P-47 ferry mission chalked up seven violations against his flight. The trip was uneventful until the Mississippi River was crossed at an unknown point and the flight leader became uncertain of his position. Several range orientations were attempted. The three pilots found themselves over a solid overcast shortly after sundown. The flight leader and one wingman let down through the clouds and subsequently found a civilian field.

Meanwhile, the other wingman had lost sight of his flight in the clouds and continued on the heading they had been flying, letting down. By then it was dark and his fuel warning light was blinking. As soon as the engine quit he went over the side.

About 18 hours later he was found in the woods by civilians, his left leg broken after he released himself from his 'chute entangled in a tall tree.

Too much haste before takeoff shared the blame for the violations charged against this flight. The pilots were in such a hurry to file their clearance and reach their destination before sunset that only one set of maps was prepared. The hour of sunset used in computations was that at their point of departure in the southwest, making their ETA actually 30 minutes after sunset. Such late flights are clearly forbidden by regulations governing ferrying of air planes.

The last hour and 40 minutes of their flight was spent in milling around, lost, within a radius of 100 miles of their destination.

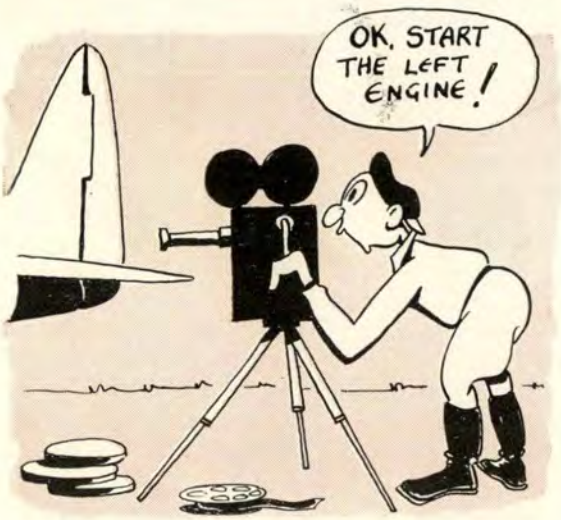
None of the pilots carried flashlights. And the two wingmen, without maps, had no knowledge of their position after the flight left VFR conditions and began to fly IFR. Added to their difficulties, compasses were known to be erratic.

This flight leader was charged with a demonstrated lack of proper leadership, gross negligence and general navigational deficiencies, causing destruction of an airplane and serious injury to another pilot. He forfeited $100 pay, and was reprimanded.

OPERATION ENCYCLOPEDIA

WHILE IT IS POPULAR to think of the flight test of a new plane as glamorous, it is strictly an unheroic engineering venture during which scores of specialists accumulate a mass of data that would dwarf the Encyclopedia Brittanica.

To thoroughly prove the operation of the new Boeing Stratocruiser, for example, flight test personnel collected in addition to two office filing cabinets full of reports, two miles of paper covered with machine-recorded data and two miles of 16-mm. film. One of these airplanes carried three tons of special precision instruments during one period of the flight tests. At first glance it may seem extravagant to collect such a huge pile of statistics. Actually, these painstaking projects are far more economical than rushing a new, untried model off the assembly line and into service only to have trouble develop later.



"G" RINGS

The Navy is initiating on-the-spot studies of "G" forces on the pilot in airplane crashes. A dynamometer containing two metal rings which become elliptical when force is applied is fitted into safety belts and shoulder harnesses. The maximum pressure developed on the body in a crash is calibrated on the rings by the degree to which the rings have been forced out of their original shape.

As a starter the rings are being installed on all F6F's. After a crash the units will be removed and forwarded to the Bureau of Aeronautics for inspection and readings.

TYPE TS-1 DUMMY

He's "Horace" to flight test personnel at the North American Aviation plant, but to researchers he's "Type TS-1 Articulated Anthropomorph."

He's a scientifically designed dummy used to test the company's new pilot ejection seat. His weight and center of gravity of limbs and other body parts are exact duplicates of his human counterpart. He also has room in his chest for instruments which determine his rate of pitch and yaw, as well as acceleration, during test ejections.

For the first test, in which "Horace" was ejected from a plane on the ground, a net was borrowed from a circus to catch him at the end of his trajectory. Type TS-1 was dressed in crash helmet, oxygen mask, headphones, microphone and parachute for his first flight in the new pilot ejection seat.

SNOW AND ICE TIRE

Imbedded in the tread rubber of a new snow-and-ice airplane tire are almost 8,000 spring steel wire coils, each ½ inch long and ¼ of an inch in diameter. These coil springs bite into snow and ice on runways, enabling big planes to brake safely to a stop.

The new tires are expected to increase the safe operation of planes at our far northern bases.

SUDDEN STOPS

Damage to an airplane engine can in no way be judged from the damage suffered by the propeller, according to the latest findings of Air Materiel Command. Meanwhile, accidents continue to be reported with engines damaged by sudden propeller stoppage. These accidents are generally caused by nose-ups, gear failures, belly landings and taxiing over rough terrain where the prop has struck the ground or an object.

Whenever an accident occurs in which the propeller is abruptly stopped or slowed down, all engines with 1,400 cubic inch or more piston displacement are to be removed immediately and forwarded to a depot for overhaul. This is required by Technical Order 02-1-15. All R-680-9 and 13 engines are also included by this rule.

While an engine that has suffered some form of sudden stoppage or slow-down may continue to give excellent performance even if it is not overhauled, the cost of one washed-out airplane which may crash when the engine does fail in flight will pay for a great many overhauls.

MAKE 'EM CARRY LIGHTS

Capt. Lee R. Gulley of Keesler Field is one pilot who knows definitely that birds fly at night.

While cruising over Jackson, Miss., at 3,000 feet, in a B-25, the serene night flight was interrupted by an explosive jolt. Thinking that a cylinder exhaust stack had blown, Captain Gulley and his copilot, Lt. Donald H. Merwin, decided to land immediately. The engineer, S/Sgt. James L. Catt, agreed.

After landing, the engineer walked around the plane and discovered a 5-inch hole in the plexiglass nose. In the hole was the remains of a brown bird, its two legs hanging limp from the opening.

Said Captain Gulley, "The CAA should make 'em carry lights."

ILLUMINATED WING TIPS

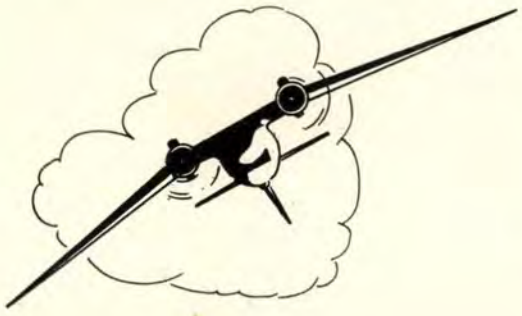
The navy is experimenting in an effort to eliminate confusion of a night-flying plane with ground lights, stars and similar single lights. Bars of illuminated lucite have been installed on an SNJ. The entire outline of wing tips and the trailing edges of rudder and elevators glow with solid lines of light not unlike night advertisements.

Also being tested is a plan of direct illumination of parts of the plane. This is done by small floodlights which are directed at the vertical and horizontal surfaces of the tail. A third experiment involves the use of flashing lights similar to those on airliners.

ONCE IS ENOUGH!

MOST ANY HONEST PILOT will confess flying mistakes that but for luck or guarding powers would have meant sudden death. It only takes one such experience for the ordinary pilot to steer clear of more of the same.

These are experiences of pilots who knew better, but had to undergo a bit of fright to have the lesson sink in. The pilots whose stories follow prefer to remain anonymous. If you have had a "Once Is Enough" experience, share it with other airmen. FLYING SAFETY prefers to print the name of the author, but naturally does not desire to incriminate any pilot who feels that his admissions would get him in trouble.



But for the Safety Belt . . . .

We were cruising along one clear summer night recently in our C-47 at 155 mph, en route from Oklahoma to Michigan, reasonably oblivious to the trials and tribulations of the world beneath us. Our auto pilot was doing our work for us and our twelve passengers were dozing comfortably in the passenger compartment.

Suddenly, we hit our safety belts . . . we were at 8,000 feet approximately 30 miles northwest of St. Louis. The flight indicator on our auto pilot had tumbled and the plane went into a half roll and then into almost a vertical dive. We were losing altitude and gaining airspeed steadily. A minute later, although it seemed an eternity, we recovered from the dive. We had lost a thousand feet and the airspeed had neared 200. The aircraft was undamaged and the passengers were luckily unhurt, although they had been thrown almost to the top of the compartment.

Our slow recovery was due to the extreme difficulty which we encountered in reaching the auto pilot cut-off valve. This trouble was caused by the violent action of our aircraft during which we were raised against our safety belts by negative gravity as we went into the dive.

Inasmuch as the auto pilot had functioned correctly for about 15 hours on our trip, we endeavored to put it into use again, but the flight indicator failed to assume normal position.

As a result of this narrow escape, it is our specific recommendation that pilots wear their safety belts at all times while on the auto pilot . . . . the tighter the better.—TWO C-47 SKIPPERS.

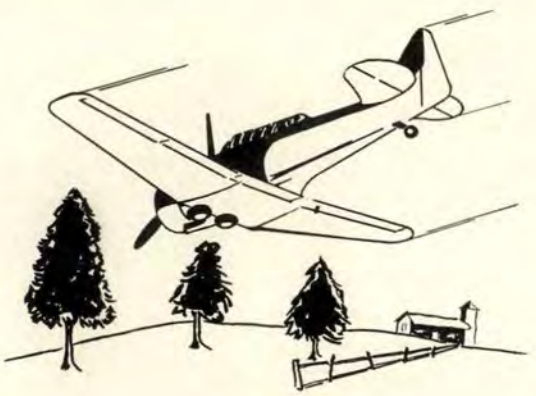
Use That Alternate Field

The weather at Memphis had been forecast as ceiling 600 to 800 feet, visibility two to three miles, *temperature 38, dewpoint 36,* light rain and light fog. This didn't seem to bother me at the time, however, nor did it seem to matter much to the man who signed my clearance. So with only 4 hours of instrument (under the hood) in the last 6 months I took off in "Uncle's" AT-6 at 1854 and headed for

Memphis which was one hour and forty minutes away. At 2015, over 3 hours later, I landed "wheels, flaps, and head up" in a plowed field 20 miles west of Memphis.

Here's what happened. At 1730 I started the engine, received taxi instructions and taxied out for takeoff. I checked the engine and asked for my ATC clearance. The tower told me there would be a delay so I shut off the engine to save gas. At 1835 the clearance came through and takeoff was made at 1854. I was cleared to climb and maintain 8,000 feet until further instructions from Memphis radio. At 2000 I gave Memphis radio a position report of "25 minutes out of Memphis at 8,000 feet." Memphis radio came back with instructions to descend to 2,000 feet and let them know upon reaching that altitude.

During this letdown I encountered severe tur-



bulence (that put the AT-6 into some 60-degree banks), hard rain, and some snow. After reaching the vicinity of Memphis, I circled for an hour and thirty minutes trying to contact Memphis radio to get permission to make a letdown. But "old man static" thwarted every attempt. I did manage to pick up a Memphis weather report giving a ceiling of 800 feet, so thinking it safe, I let down.

I became contact at 1,100 feet, and found a town which I circled. I tried, with no luck, to get Memphis radio. After a few minutes Memphis tower was contacted and I asked for a heading to Memphis. After I described the town which I was circling, Memphis tower gave me a heading of 90 degrees! I flew this heading about 5 minutes, whereupon the weather became so bad that I returned to the small town which I had been circling. Again I contacted Memphis tower and they told me to try a heading of 40 degrees. I did this for a few minutes, but because of the weather and low gas I returned to the town. At 2215 my engine ran out of gas and with the aid of "several angels," a sucessful belly landing was made in a rye field 20 miles west of Memphis.

Next time I hit bad weather I was ready for it. I had made it a point to practice instruments and practice more instruments. I flew to my alternate field, rather than find out how damn good I was on instruments.—A Guy Named Joe.

Forgotten Reserve

I knew what I had neglected to do right as soon as I found myself walking about the wreckage of my plane in the desert. I was dazed, but I knew what I had forgotten.

While letting down preparatory to landing at an airfield, the right engine of my P-38 cut out. I called the tower for an emergency landing on one engine and switched both fuel selector valves to the auxiliary tanks. The left engine then failed.

Frantically, I turned the selector valves back to the main tanks which cut in the left engine for only a second or two. By then I had to tell the tower I was too low to make it to the field and would crash in the desert.

I had forgotten about the P-38 fuel system. So I ran "dry" with gas still aboard. I had not used the proper sequence of drawing fuel from the tanks—

should have drawn off at least 15 minutes of the reserves to allow room for the fuel returned unmetered from the carburetors. As P-38 jockeys remember, failure to follow this course caused the fuel to siphon overboard. Because air had entered the fuel lines after the main tanks ran dry, the auxiliary tanks, though full, were of no use to me. — Another Joe.

HUCKSTER, USAF

AND HE SELLS SAFETY . . .

(EDITOR'S NOTE: A veteran pilot, master of the sarcastic word, finds the Air Force a huckster and expresses his "admiration" in choice language in the following clever article on the Flying Safety educational program. Inadvertently, he proved the point and "bought the soap," for only the ending to this piece is fiction. You see, he landed safely and remembered that "the successful flight is never finished until the engines are cut and the Form 1 is filled out." He now lives happily with no more serious worries than a few flying safety reminders before his eyes. Sheepishly, he has just learned that FLYING SAFETY'S counterparts of "love that soap" have saved the Air Force and the nation an estimated $12,000,000 in the past year, as well as averted the loss of 216 lives and 144 serious injuries.)

* * * * *

"A RECENT FLYING TRIP to Muroc Lake afforded me the privilege of landing at several Air Force fields en route for the purpose of (1) re-fueling a C-45 airplane, (2) obtaining something to eat, and (3) stopping overnight for a rest and a contemplation of those diversionary pursuits which become more plausible with each added mile from home base.

"This was the first extended flight I had made since returning from overseas and it was a revelation to note the improved trend of thought toward the FLYING PROBLEM. It was evident that someone had devoted considerable effort, plus a lot of public expression, to the fact that (1) airplanes are dangerous, (2) all pilots are dopes, except when serving on accident committees, (3) airplanes will not withstand impacts against mountains, (4) a pilot, cleared 'contact,' had better damned sight stay 'contact,' and (5) if an airplane dives into the ground it was because 'all the altitude in the world is no good if it is above you.'

"Upon all of the walls in every operations office, adorning the mirrors above the bars in the Officers' Clubs, plastered on all bulletin boards, and obscuring such vital informatives as O.D. rosters, Woman's Club agenda and 'pro' station locations, there

were pictures of airplane accidents and descriptions of aircraft accidents. Very interesting they were too —some of them—and I missed two buses, a train connection and one possible blonde, because I became so absorbed in reading about what happened to 'Captain G——, who took off in a B-25 for a routine night cross-country training flight.'

"It seemed that Captain G—— had had three thousand hours in B-25's, but on this occasion he neglected the vital point of crawling back into the aft tail section to check for foreign objects before taking off. Two hours east of Albuquerque, and after properly and legally changing his flight plan from 'contact' to IFR through the CAA, the Army Flight Service, the St. Louis Control and the W.C.T.U., Captain G—— noticed that the B-25 had become unreasonably tail-heavy. Within a few moments the backward force on the control column was so great that he had to put his feet against it and push with all his strength. The copilot finally realized that something was amiss so he too put his feet on the wheel and began to push. Their combined pushing was in vain, and the B-25 crashed and burned.

"The only survivor was a Roumanian stowaway in the extreme aft tail section, and he confessed later that he had only taken out 'first papers.' The accident committee concluded that a diminishing fuel supply caused the weight of the stowaway to affect adversely the balance of the airplane, and recommended that in the future all Roumanians carry evidence of citizenship. (Note: There has been a noticeable decrease in the number of B-25 crashes in the vicinity of Cincinnati.)

"Gruesome reminders of pilot frailties dogged me at every stop—and at every seat. I was happily visiting that boon to all travelers when my eyes rested momentarily on a cubicle partition. There, thumbtacked on the plywood, was depicted the smoking ruins of a C-47, with a two-inch caption stating: 'This pilot forgot to raise his flaps on the go-around!' Hastily pulling up my own flaps, I got the hell out.

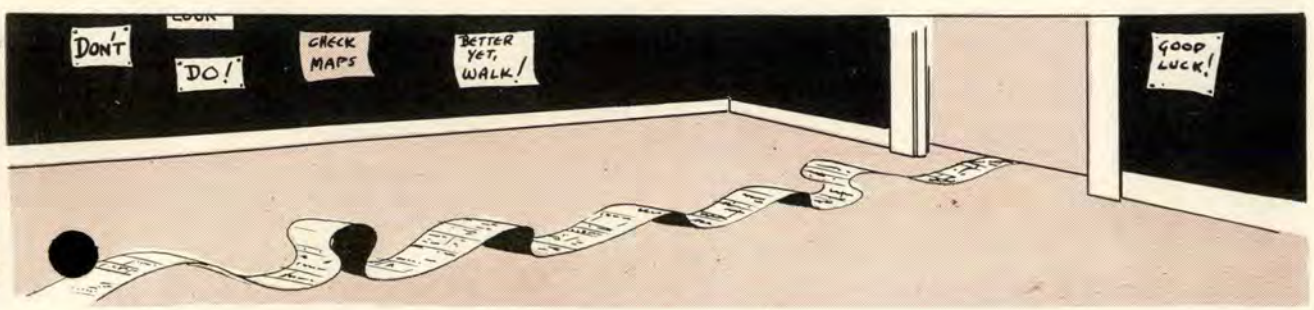
"I wandered, somewhat feebly, to the clearance desk, trying to dismiss the dismal thought that, no matter how good a pilot thinks he is there is always something he does that could end in a crack-up if certain circumstances follow certain action. This was to be the last lap of the trip. Six hundred miles to go, and the weather was marginal. 'Marginal' means that nobody, including the weatherman, knows just what the hell is going to happen to the weather. I began to fill out the clearance form—which is a test of sobriety, patience and mental agility. There is no continuity to the thing; the first blank spaces are devoted to the names and religious affiliations of the passengers, then there is an incontinent skip, 'Do you have a flashlight?' 'Is everyone equipped with a pro-kit?' 'Is any communistic tendency evident?' and 'Do you solemnly swear that every light in the airplane is working?' In an inconspicuous lower corner there is a space to indicate where the pilot is going and how he intends to get there.

"I signed this clearance form in approximately 20 places. The 19th signature put me on record as claiming that this C-45 had been weighed and physicked at 1315 hours on 3 September 1946, and had not gained an ounce since that time. Then the A.O. presented himself with a smiling frown:

" 'Sir, do you have an instrument card?'

"I proudly pointed to the command wreath on my wings and stated that Mr. Truman had advised me I could sign a clearance if I put my mind to it without the instrument card. I gave the A.O. a stony glance, but I did not, I positively did not, tell him that I had been flying bank and turns since he had worn three-cornered pants. Then came the vital question. 'Sir,' said he, 'we haven't gassed your airplane yet because you didn't tell us last night exactly how much fuel you had left in your tanks.'

"Two hours later I was ready to go. My pulse



was still strong and heart action good. I soon found that the weatherman was all wrong, because I had to climb to fifty thousand feet, where I dallied around for an hour or so without oxygen—proving something or other. Then I came down lower to see what the rest of the world looked like. It didn't look so good. I went up again. It didn't look so good up there. Everywhere I looked it didn't look so good, so I quit looking.

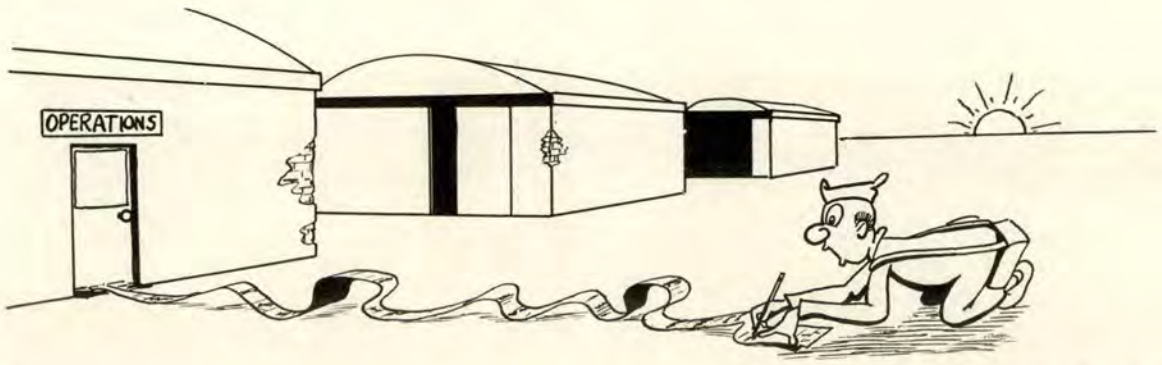
"Four hours later the destination hove into sight. I reminded myself that airplanes seldom crack up in the air; 'it is usually a violent contact with the ground which results disastrously.' But nothing could happen to me! I had faithfully memorized all the accident pictures on the bars, on the mirrors, the bulletin boards and in the latrines, and I could recite all the pilot errors from 1924 to 1947. I discarded, as unpatriotic, the sneaky thought that accident committees like to blame everything they can on pilots in order to give themselves a false feeling of security when they fly. I concentrated all my effort upon the problem of landing.

"That landing is a matter of history. It was going to be perfect; I remembered the picture of the burning B-25 on the mountain peak, and pulled back on the stick—although I was still two thousand feet above the runway. I recalled that to prevent a fire a good pilot always cuts his switches—so I cut all the switches I could find, and noted with deep satisfaction that both engines quit promptly. In order to avoid possible collision with any other airplane which might be under me on the final approach, I pulled back further on the stick, and immediately went into a spin.

"Another rule flashed into my memory, 'Turn to the full tank before landing.' Since all of the tanks were practically empty I turned the selector to the OFF position and hoped for the best. I had, by this time, definitely committed myself to the landing. I concentrated hurriedly upon some more accident rules. 'A Good Pilot Knows the Condition of his Airplane at all Times.' So I left the cockpit and clambered back through the cabin, pausing now and then to test the structure with a thumping experimental finger, nodding politely to the passengers en route. Then I noticed a strong smell of gasoline fumes in the cabin, so I immediately warned everyone against lighting anything except properly certified lighters. Rules were rules! I realized that the copilot was probably having a rough time all by himself so I hurried back to the cockpit, put on my parachute, buckled the shoulder harness, studied the "G" file for a few minutes and strapped a bail-out oxygen bottle to my leg, making certain of course that no leaking oil lines were anywhere near the oxygen.

"I was thirty seconds ahead of my E.T.A., so I picked up the microphone and advised A.A.C.S. of the fact. This time the answer was reassuring and to the point, 'Los Angeles Air Traffic Control advises that you are in a spin and are aproaching the east end of the north-south runway. What are your intentions?'

"The last thing which was absolutely clear to me was the memory of a vivid picture on the wall at Tinker, which showed a bedraggled looking pilot crawling away from an upside-down AT-6. His goggles hung over the nape of his neck, his collar and tie were askew, and his expression reminiscent of a college boy caught by an irate farmer—after molesting the 18-year-old daughter. There was something altogether pleasing about that expression, and it was with the happy picture that I departed the earth. The C-45 I was flying crashed, and all of us were killed, and this story was written by an amiable 'ghost writer' whom I subsequently encountered while he was 'holding' over the Hickory fan marker, just west of Pittsburgh."



Pennant Competition is on!

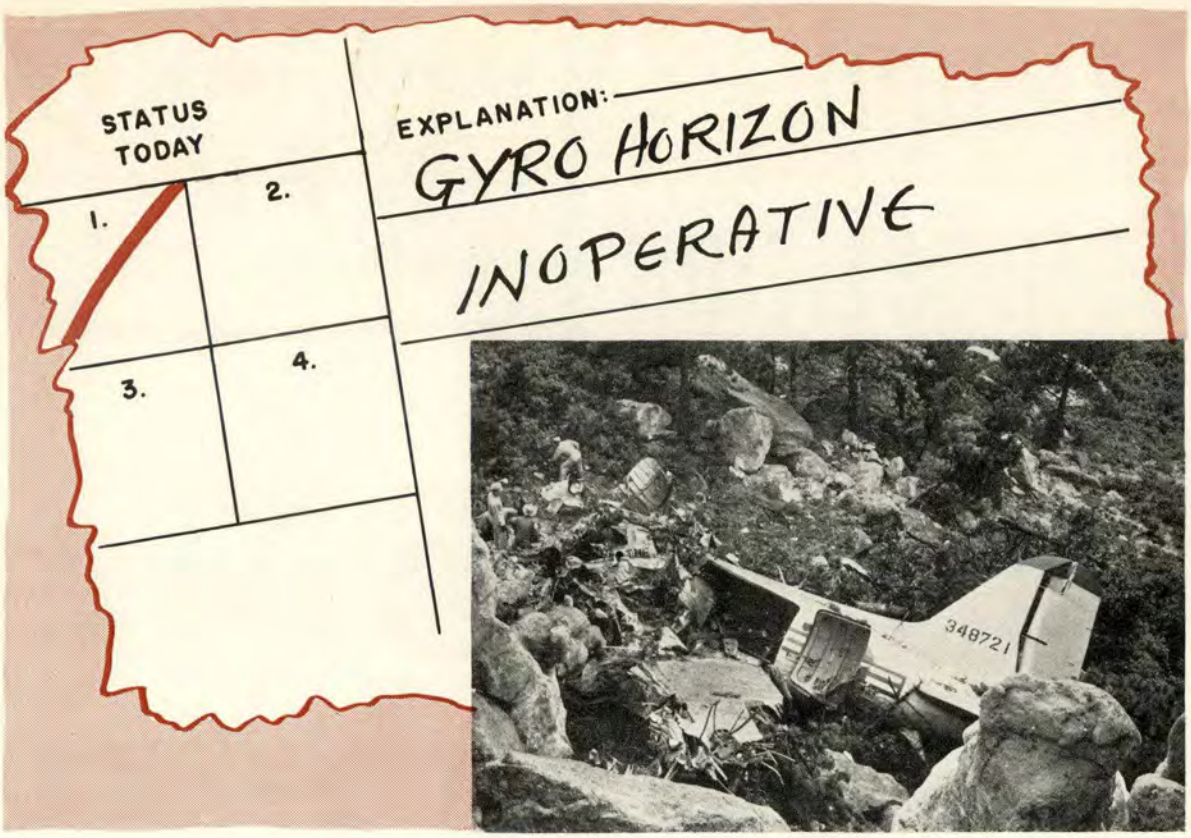
CAN THE SPIRIT OF COMPETITION reduce the Air Force accident rate?

In an effort to eliminate accidents, Headquarters United States Air Force has provided for pennant awards in recognition of safety goals achieved. Recognition will be given for the best safety rates of stations throughout the continental U.S., thereby arousing team spirit. The awards are based on type of aircraft flown and on the amount of flying time being done in a particular model. For example, a station operating C-54's is in competition with other stations operating the Skymasters but not in contest with B-29 outfits.

Three classes of pennants are available, depending on the amount of flying being done on a station in a particular model. As in the case of stations logging up to 999 hours quarterly in B-25's, competition is for the Class I pennant. Stations flying B-25's 1,000 to 3,999 hours quarterly are bracketed in Class II, while Class III is open to units flying over 4,000 hours.

Reserve base units are included in the competition. Those with no fatal accidents for a three-month period will be awarded a pennant to be displayed until its record is marred by a fatality.

In endeavoring to qualify for the pennants, tactical missions, night operations and instrument flying are not to be curtailed. For further details see AF letter 62-3, dated 1 July '47.



THIS IS A STORY OF A ROUTINE FLIGHT which ended in tragedy.

A C-47, loaded with airplane parts, crashed when an attempt was made by the pilot to maintain Visual Flight Rules under actual instrument conditions while flying in a western mountainous region.

Prior to the takeoff the pilot had released the aircraft for night and Instrument Flight Rules flight with the Gyro Horizon inoperative in violation of AF Reg. 60-16 paragraph 55 sub A-2-F. This statement is borne out by the fact that the pilot signed the exceptional release on the Form 1A. The flight plan indicated that the trip would be conducted at night under VFR for several hundred miles along an airway, then IFR to the point of destination.

The takeoff was at 1800 hours. The climb to altitude was without incident. At 2017 a position report was made by the pilot. No change of flight plan was requested at this time, indicating that the flight was progressing as planned according to Visual Flight Rules.

Exactly 17 minutes after the position report was made, with zero ceiling and visibility, the C-47 plowed into a 7,600-foot mountain at a point 200 feet from the summit. The airplane crashed in a level flight atttiude. The tachometer recovered from the wreckage indicated both props were set at 2,000 rpm at the time of the crash, discounting the possibility of materiel failure. It is felt that the pilot, in flying the light line, ran into a scattered shower while attempting to remain contact below the overcast. The temptation to remain contact was probably further prompted by the fact that the Gyro Horizon was inoperative.

It is not beyond the realm of possibility that the pilot merely signed the exceptional release as a matter of routine without checking into the reason for the red diagonal. He may have discovered that the Gyro Horizon was out of order after becoming airborne and decided to continue the flight anyway.

Either way, when he released that C-47 for night and instruments, he signed his own ticket too.

THE WEAK FRONT

THE WEATHERMAN gave the two fighter pilots a forecast of CAVU all along their route, except for a weak front lying across their path. This was "high broken" and at 10,000 feet they would have plenty of room to go between these clouds and remain VFR.

Together with the forecaster they checked the hourly sequences all along their proposed route. A clearance was filed for a two-plane flight and the pilots took off. Flying a loose formation, they approached the line of clouds and climbed to 12,000 to pass through a break. As they passed between the towering clouds, the flight leader noticed that those ahead seemed to be closer together and visibility between them not too good. So he called his wingman and told him to make a 180-degree turn.

His wingman did not answer and did not turn. The flight leader called again, telling the pilot of the other Mustang that he was making a 180 turn to the left. This call was acknowledged. He rolled into the turn slowly, because his fuselage tank was still about two-thirds full and he was indicating 250 mph. In making the turn he was in a cloud briefly and upon emerging could not see his wingman. He circled and tried to call his companion on all possible channels without a reply. Unable to locate his wingman, the leader turned south and flew around the end of the front where the weather was better and continued his cross country flight in the clear.

That morning a rancher was feeding his cattle, and watching the progress of a thunderstorm. He heard the sound of an engine, assumed it to be a truck on a distant highway and went on with his work, but only for a moment. Then he realized it was an airplane. He looked up and saw a plane flying low under the clouds amid lightning and rain, the pilot apparently trying to get out of the storm area.

When the plane came to within one mile of the rancher he saw a wing come off. Suddenly the plane nosed over and went into a dive, striking the ground with a tremendous crash. The pilot was instantly killed.

A severe gust load in a thunderstorm or excessive load while recovering from a rapid descent were believed responsible for the wing failure. Investigators also considered the possibility of reversing of controls due to excessive fuel in the fuselage tank of the P-51 at the time of the accident which was only 25 minutes after takeoff.

This fatal accident could also be added to the list of flying safety violations in that the pilot entered IFR conditions on a VFR flight plan.

Flying turbulent storm areas even in a "weak front" is not encouraged. It should never be done with excessive wing loading and at high speed.

LETTERS TO THE EDITOR

Gentlemen:

The November issue of the magazine FLYING SAFETY is the first copy which I have been privileged to receive. I believe that this magazine has more to offer of interest to the pilot than any magazine which I have ever read. Every article is well written and interesting to read.

Although flying safety should always be foremost in a pilot's mind, a story which tells what happened to some other pilot, who did not keep this thought foremost, always "sticks" a little better.

I am enclosing a letter, and pictures, concerning a recent incident which happened at this station. In my few years of experience, I had not seen a similar situation. I feel that what the pilot did in this case could very easily have ended in disaster. . . .

MAJOR GILBERT G. SMITH, JR.
Alaskan Air Command

We'll accept your bouquet, Major Smith. and are publishing your account of the snow incident on page 5, under the title "Brush It Off."—ED.

★

Dear Editor:

Praemonitus, Praemunitus — that's Latin. We are no longer exactly sure about the pronunciation but those two words contain a lot of good sense—forewarned, forearmed.

This truth was strongly impressed upon us at an early age. To wit—anyone who had been advised or warned of an approaching event would be prepared to properly cope with this event when confronted by it.

But less than a month ago!

We had been on duty at the March Flight Service Center for three hours. All the officers on duty had just checked the 1830 weather sequence noting the following: a line of cumulus clouds were to the east of the March Flight Service area. Severe thunderstorms and turbulence had been reported in and near these clouds with ceilings to the deck. All other weather in the area was good.

A few minutes later a flight plan was received, indicating a B-25 had just departed an active Air Force base in the March Flight Service area and was flying direct to Fort Worth, Texas. The route of flight was directly through this foul weather.

It was immediately apparent that this aircraft must be warned of the weather condition and a safe alternate procedure suggested. Prompt action was necessary lest disastrous results occur.

The pilot was advised to change his flight plan.

But forewarned of severe storms at Fort Worth, the pilot stated he would continue on course as he originally planned. You can well imagine the mental anguish of all concerned at March Flight Service Center. Flight Service is an advisory agency and may only suggest—this pilot could not be told to alter his route.

Hours later. No further word had been received from the pilot; by now his ETA was long passed. A communications search had proved futile. His last known position was somewhere near San Angelo. San Angelo radio could hear him calling. The pilot stated he was unsure of his position and he would land at the first field he saw.

Flight Service sent an alert notice to all fields requesting them to attempt contact. Flight Service also requested all civil and military fields to turn on all runway lights in an effort to attract the pilot's attention.

When the aircraft departed it was carrying five and one half hours of fuel. It had now been airborne for over that time and was still not reported down.

A few moments later we were notified that the pilot, seeing runway lights, had made a safe landing. The landing was made in the victinity of San Antonio where Flight Service originally suggested he go.

Permit us to caution all pilots: Tune in to AACS airways stations while in flight. They may have good news for you. Flight Service Centers have a very good picture of any hazard along your route of flight, and highly trained officers on twenty-four hour duty are present to assist you. Complete information on how to contact your favorite Flight Service Center while in flight will be found in TO 08-15-1, the Radio Facility Chart.

YOU, as a pilot, are vitally interested in the safe completion of your flight. SO IS FLIGHT SERVICE.

CAPTAIN J. C. BAIRD
1ST. LT. R. E. BOYLE
March Flight Service Center

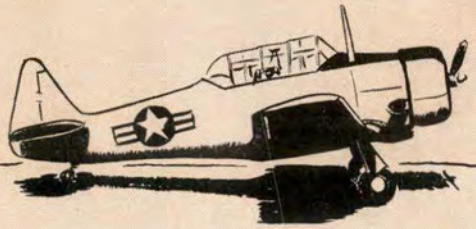
WHILE TAXIING THIS P-51 to takeoff position with a student in the piggyback seat, an instructor was demonstrating how the plane could be taxied without putting the tailwheel in full swivel.

As they neared the takeoff end of the runway, a C-47 was on the taxi strip in position about ready to roll onto the runway. The instructor tried to put the tailwheel in full swivel to swing around the parked plane but the tailwheel would not release. He then gunned the engine and tried to groundloop away, but the fighter turned only slightly. The prop of the P-51 dug into a wing of the transport and sliced it off near the landing light.

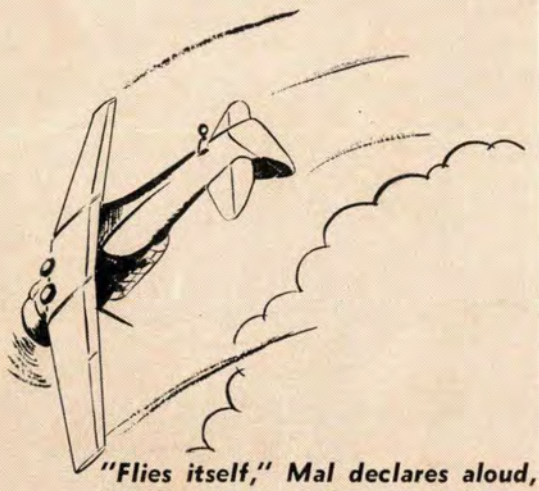
The instructor knew the brakes were weak on the fighter and he also knew it was difficult to place this particular tailwheel in full swivel. He did not allow enough space to clear the waiting plane. Both planes suffered major damage.

WHY?

Mal Function



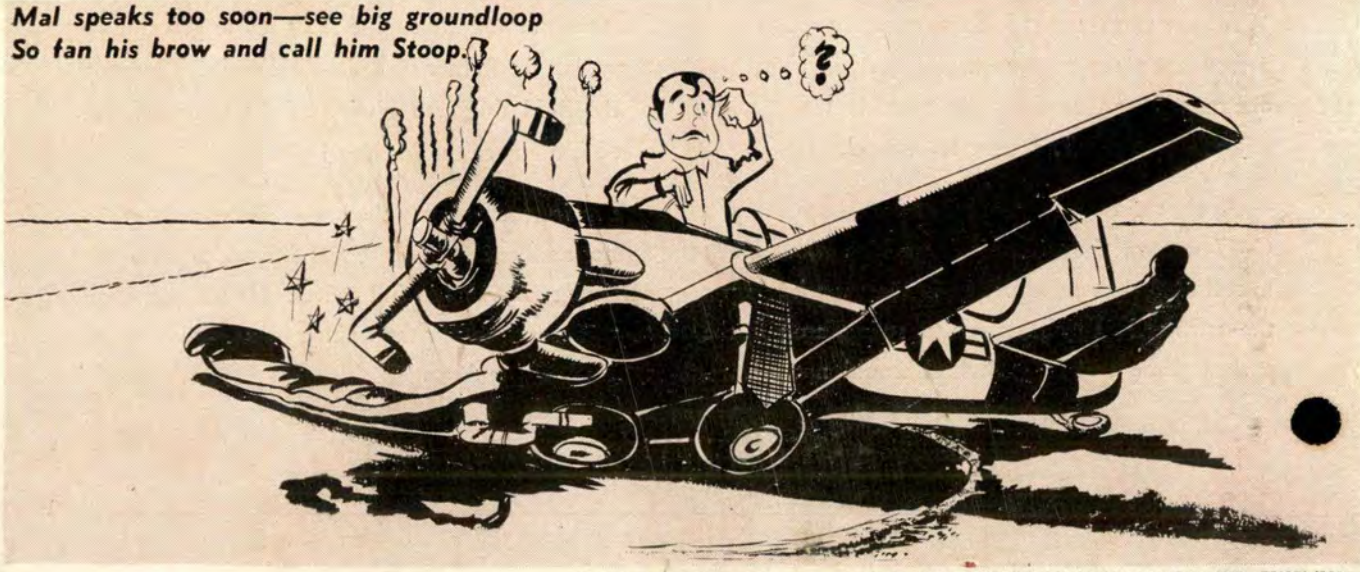
"Stamp mah foot and call me Sly—
Little old AT-6 to fly."



"Flies itself," Mal declares aloud,
"Easy as falling off a cloud."

"Crosswind landing—nothing to it;
Man with holes in head could do it."

Mal speaks too soon—see big groundloop
So fan his brow and call him Stoop.



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