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UNITED STATES ARMY AVIATION DIGEST

THE NEW BREED

United States Army

AVIATION DIGEST

MARCH 1962 VOLUME 8 NUMBER 3

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Manuscripts, photographs, and other illustrations pertaining to the above subjects of interest to personnel concerned with Army Aviation are invited. Direct communication is authorized to: Editor-in-Chief U. S. ARMY AVIATION DIGEST, U. S. Army Aviation School, Fort Rucker, Alabama.

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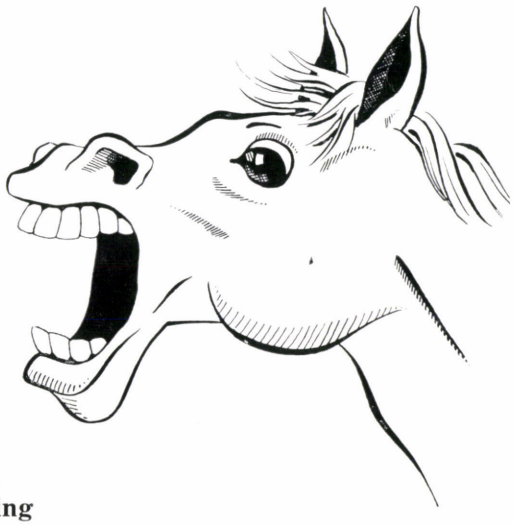

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YOU may be a winner in the Annual Writing Awards Contest! Submit your article today.

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Your Personal Appearance Is Showing

Major General Ernest F. Easterbrook, USA
Commanding General, United States Army Aviation Center

HOW IMPORTANT is my military bearing and personal appearance? Just what does it mean to me as an individual member of the Army? What does it mean to Army Aviation? Most of us have considered some part of these questions somewhere in our military service. We have thought about them, and we have made a conscientious effort to improve our appearance, for we are proud of our Army Aviation program.

PROFESSIONAL PRIDE

The aviator who proudly displays his coveted wings for the first time holds his head high. And well he should! His uniform is neat and pressed for the occasion. He is pleased with his accomplishment and he wants all to see that he is standing straight—a credit to himself and the Army. The mechanic who reports for his first duty assignment also has reason to spark with professional pride, to look and act like the smartest soldier on the post. He has completed an important milestone on the highway of professional advancement. He too has good reason to show obvious satisfaction. Because of this feeling of accomplishment, he makes a special effort to put forth a little more in soldierly bearing and appearance.

Yes, most of us have thought about our military bearing and appearance. We have made special efforts for select occasions, but all too many of us fail to realize the great importance of making **every** day a **select** day for military bearing and appearance. The value is tremendous to each of us as individuals, and the accumulative value will enhance the name of aviation throughout the Army.

SOLDIERLY BEARING

Perhaps you are an aviator flying an L-19 and you might muse to yourself, "I wear a flight suit; I don't need to worry." Or perhaps you say to yourself, "My job is being a good crewchief. I keep my shoes shined; that's enough for me." These and a hundred other half-logical excuses can be made by the aviator, crewchief or mechanic who thinks that he is a "special guy" who only needs to be concerned with his "special skill." If it's excuses you want to cover up mediocre efficiency, then you must look forward to a mediocre future.

This, though, is not characteristic of our Army Aviation program. We have reason to be truly proud of what we are doing and the role that Army Aviation is destined to play for our modern Army of the future.

Let us then be honest with ourselves in what this extra measure of smart appearance can mean to us as individuals. Let's turn to some of the hard facts that we frequently overlook because they are so close at hand. Whether we like it or not, the rating that we achieve in the eyes of our seniors has a very definite influence on efficiency reports and on selection for promotion.

To the officer, military bearing is an invitation to select as-

signments, and select assignments just seem to add up with a better score. To the enlisted man, a sharp appearance gives one an edge on promotion. If you are really interested in high returns on your investment, then think more about your appearance and dream less about the stock market. The little extra effort and a few monthly pennies for neatness will really pay big dividends.

Is it logical that the sharp soldier receives special consideration? You bet it is! Especially so in our aviation program. The soldier who is neat and well turned out indicates that he has personal pride. It indicates that he will work a little more carefully to do a first-class job rather than just a passable job.

The man who has pride is the one who will go about his work in a dependable and professional manner, whether it is preparing and executing a flight or performing a postflight inspection. Pride is a characteristic of the successful individual and a requisite of a superior unit. This esprit within a unit comes in many ways; but one thing is sure, if a unit has esprit the individuals in the unit stand proud and are soldierly in appearance.

RESPONSIBILITY

Whose responsibility is it to develop this pride? Take a good look at yourself. You are responsible to yourself; you share a responsibility to the unit to which you are assigned. First of all, be sure that you are turned out in a topnotch manner. Your uniform can be smart and neat in appearance if you want it to be that way. On the other hand, it can look like a sack holding a couple bushels of potatoes. Incidentally, take a look around tomorrow and count the number of soldiers who have their hands in pockets and observe that sack-of-potatoes posture.

Next, and of greater importance, you have a responsibility to see that others under your command, or under your supervision, are properly turned out. If personal pride is lacking then it is time for you, the officer, for you the noncommissioned officer, for you the specialist, to see that those within your purview are properly instructed. This is positive command supervision—so essential in any military unit!

YOUR APPEARANCE IS SHOWING

As an Army Aviator, your bearing, your military demeanor, is much more in evidence than that of your contemporary. As an aviator you are subject to more careful scrutiny and a more detailed appraisal because you are entrusted with someone's life. This you cannot escape.

Did you ever take a close look at the doctor who soon would be working you over with a knife? Clean, cool, well-shaven, wasn't he? He had a professional appearance that instilled confidence. How different it would have been if he had slouched to your bedside in a grimy sack suit with a days growth of beard and dirty fingernails. So somebody told you that he graduated summa cum laude from medical school. So he's a recognized authority on **disseminated lupus erythematosis!** So what! This Doc is a wreck, you think, he probably couldn't shave himself with two hands, and he's going to perform fifth echelon maintenance on you? God forbid!

Well, I hope such a thing never happens to you, but think about that for a minute! So you have ump de ump hours in L-20s; so you never have scratched an airplane; so you just renewed your instrument card with flying colors. How do you look to the officer who must get to Army headquarters in a hurry—who must fly there with you? Your appearance is showing—and that is all he has to go on! Realizing this characteristic you can properly turn the situation to positive advantage. With just a little extra effort you can gain that confidence and win that admiration that real soldiers enjoy. Never forget: your personal appearance is showing — **all the time.**

SUMMARY

Soldierly bearing is important to you as an individual because it is a big dividend producer; important to your unit because it signifies a topnotch organization.

Our Army Aviation is dependent upon quality, upon individuals who care, individuals who can be depended upon to do a good job all the time. Aviators who have contributed most to the program and developed the fine reputation we enjoy today have proved their ability, both as leaders and as aviators. They have done much more than many of their contemporaries because they have developed personal and professional pride.

Your appearance is showing. Sharpen your military bearing; grow with Army Aviation.

Put Your Watch to Work

PFC William C. Hogan

HAVE trouble remembering time - distance formulas? Goofed one on your last check-ride? Here's an alternate method that may be easier to remember. Simply use the face of your watch.

TIME

First step is to time a 10° wingtip change on the omni or ADF bearing indicator. Now regardless of airspeed, every 10 seconds on the face of a watch will equal 1 minute from the station on a 10° change. For example, if it takes 40 seconds to get a 10° change of indication, you are 4 minutes from the station. Likewise if it takes 2 minutes or 120 seconds to get the 10° change, then you are 12 minutes from the station.

To use a 20 or 30° change of indication, simply allow 20 seconds on your watch to equal 1 minute from the station for 20°, and 30 seconds to equal 1 minute for a 30° change.

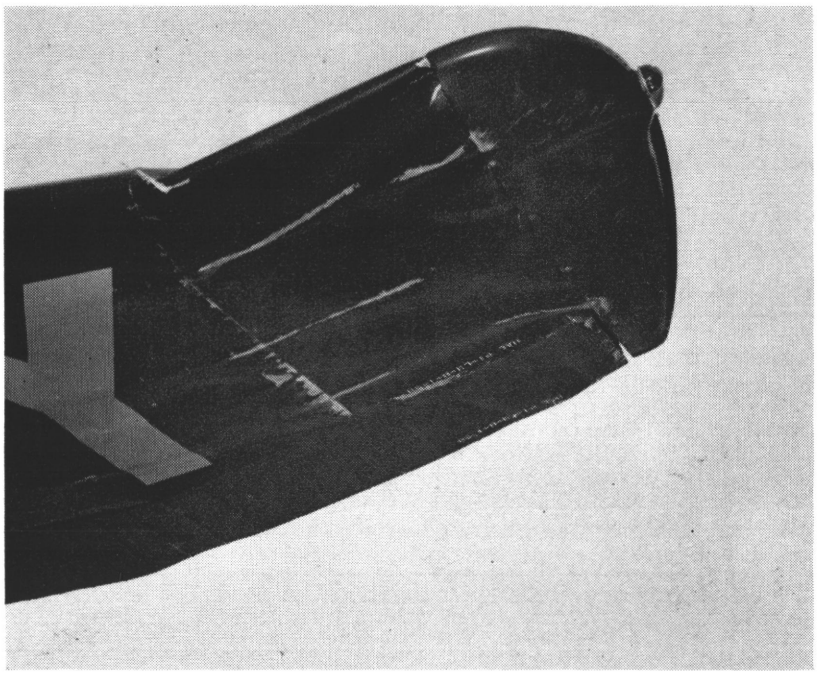
For proof try to recall the formula and check it out.

DISTANCE

Now that we have the time to the station, let's find the distance. Very simple. If you are flying an L-20 or U-1A, multiply the minutes obtained in the previous method by 2, since you are making approximately 2 miles per minute. If you are flying the L-23 or L-26 then multiply the result by 3, since you are making very close to 3 miles per minute.

Now for the slower birds! For most helicopters, the figure 1 or 1½ will come very close to giving you an accurate estimate of mileage from a station. Remember, a distance check is only a little better than a calculated guess anyway.

If formulas faze you, try these methods for computing time and distance on your next flight. Put your watch to work!



Technique Correct

L-19 left wingtip struck gate while aircraft was taxiing from tiedown to taxiway. Fifteen to twenty-two knot winds were a factor.

. . . Just Late In Application

One ton of cargo can be transported 250 NM, at 100 knots, with 30 minutes reserve fuel.

A sling load of 3,500 lbs can be carried for 30 NM, at 60 knots, with 10 minutes reserve fuel.

Signing up

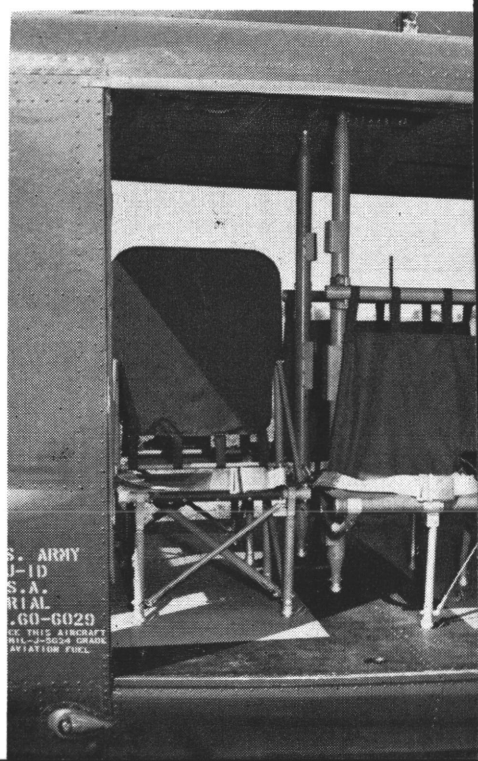
. . . for frontline service

BIG D JO

THE HU-1B's big sister, the HU-1D, will be delivered about the first of April to the U. S. Army Aviation Board, Fort Rucker, Ala., for extensive tests. Tests are programed to be conducted at the climatic laboratory, Eglin AFB, Fla., and at desert (Arizona), high altitude (Colorado), and arctic (Alaska) test facilities.

The HU-1D's major configuration change is an enlarged fuselage, but its most obvious identifying mark will be the double windows in the large, rearward sliding door (which permits rapid loading and unloading). Other noticeable changes include slightly forward tilted rotor head and engine nacelle silhouette.

This increased size will give a boost to the Army's aerial

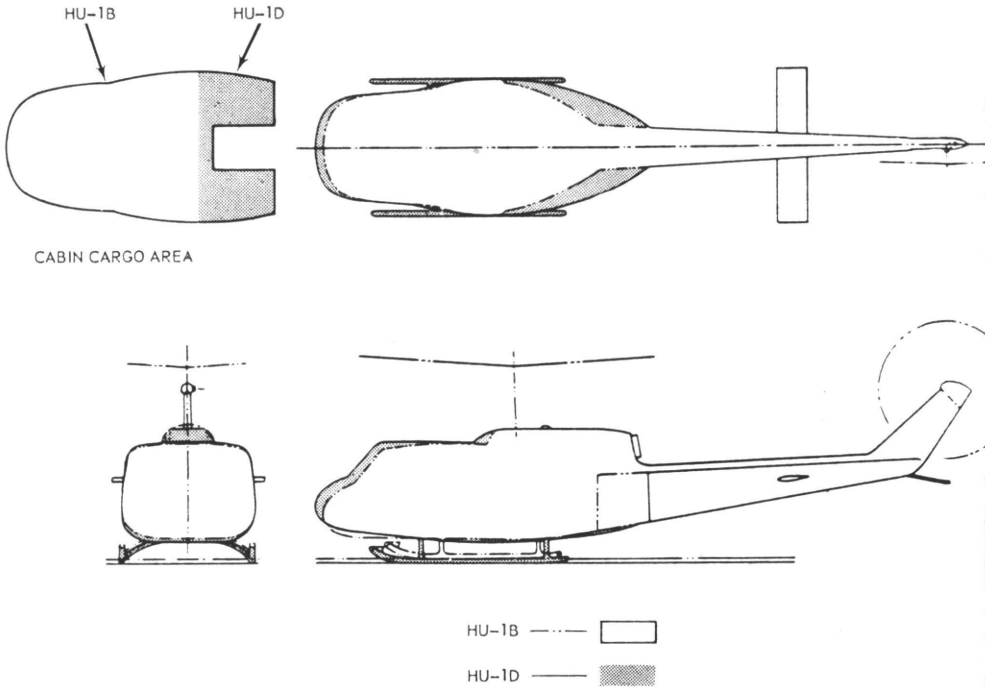


NS BIG B

delivery of cargo and personnel. Cargo capacity is increased by 57 percent, troop seating capacity by 50 percent; while litter carrying capacity is doubled. Correspondingly, there is a 34 percent increase in internal fuel capacity and approximately 33 percent increase in range.

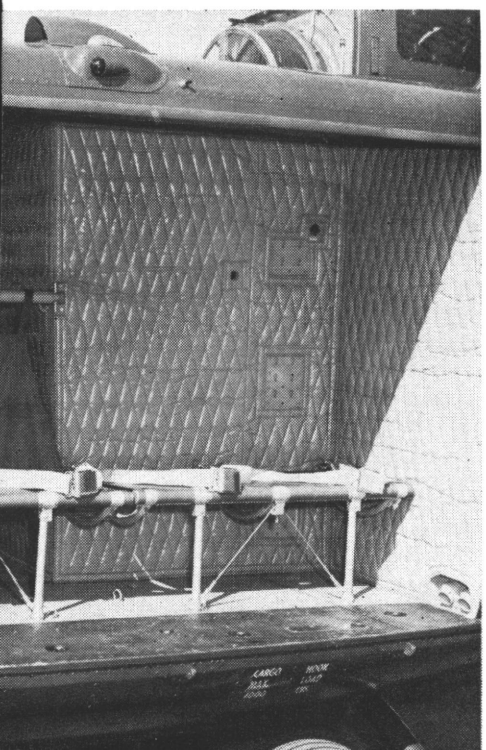
While all dynamic components are the same as those on the HU-1B, the powerplant has been replaced by the 1,100 shp T53-L-9. Other features of the HU-1D include a fuel flow meter, which shows the amount of fuel being used as a given speed, and a self-closing cargo hook which eliminates the need for a crewmember to hook the cargo. The new model will also be equipped with universal hard point fittings for carrying external stores.

HU-1B and HU-1D Size Comparison

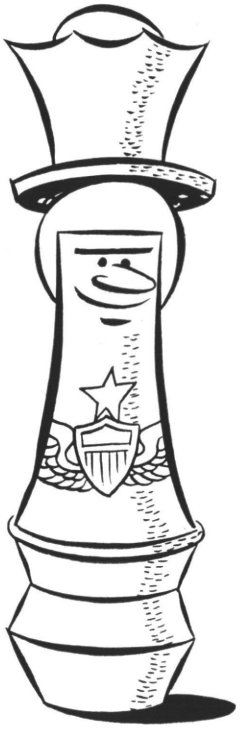


Six litter cases with medical attendant can be picked up at a distance of 150 NM from base and returned, at 100 knots, with 10 percent reserve fuel on the return trip.

An 11-man squad of combat troops (220 lbs each) can be transported 100 NM out and return, at 100 knots, with 30 minutes reserve fuel.



MATE



everyday problems?

Do you worry about his flying . . . and give frequent voice to your wishes that he'd do something else for a living?

Now that you married him, do you keep trying to change him?

tive at home as you are in the cockpit?

Are you a chronic complainer?

Now that you've married her. have you turned off the charm? Remember, it takes two to tango!

Checkmate

Do you really know what your pilot-husband's job consists of?

Do you get his breakfast for him, even if he departs for the airport at 6 A.M.?

Is there an air of calmness about your household?

Do you provide well-balanced high protein meals?

Do you know that your pilot-husband needs 8 hours sleep (10 would be even better) for alertness in the cockpit?

Do you frequently remind your husband of the family's need for more money?

Do you expect your husband to give the new baby his 2 A.M. bottle . . . or whatever else the wee hours of the morning crying suggests?

Do you try to keep from burdening your pilot-husband with

Do you realize your wife's job is frequently as difficult as yours?

Have you ever made any effort to familiarize her with your job?

Do you lend an interested ear to her problems?

Do you work at the fact that the kids are as much your responsibility as hers?

When possible, do you take over so that your wife can have some time to herself?

Do you take her out often enough?

Do you show a genuine interest in talking over the doings of the day, both yours and hers?

Are you as calm and objec-

—Flight Safety Foundation's BPSB 61-204

Your Mission: Survival

Captain William C. Chamberlain, Arty

ALONE—wet, tired, scared! Just 15 minutes ago all was different. The aircraft seemed warm and safe, cruising safely at altitude. Now you are separated from both aircraft and crew, alone in a wilderness with a new mission: SURVIVAL.

Army Aviators and crews are stationed throughout the world —from the frigid arctic to the steaming jungles of South America. Wherever they are, whatever their missions, the problem of survival always exists. During World War II and Korea, survival of downed crews until rescue was a major concern. Equipment was religiously maintained. The search for new and better equipment was continuously pursued. The question is: Are we **now** prepared for such emergencies?

Numerous publications have been prepared on emergency procedures. They include discussions on ditching, forced landings, jumping — various procedures for the different types of aircraft and situations. But what happens after you are down? Can you survive until rescued?

This article is directed toward new areas a safety officer may probe: the problem of survival. What type of survival program does your unit have? Is it adhered to—and enforced? Some units may be classified as Stateside. They exist under the assumption survival is **not** a problem. "With the extensive radio facilities and search-rescue means available, why worry!"

Then ask the question: "When was the last time a news

Capt Chamberlain is assigned to the 937th Engineer Company (Aviation), (Inter-American Geodetic Survey), Fort Kobbe, C. Z. He wrote this article while attending the University of Southern California Safety Course.

broadcast told of a missing aircraft in upstate New York, or West Texas, or the mountains within 100 miles of Los Angeles? The search extended into days—then weeks. Were there any survivors? If not, was the crash itself or lack of survival means the cause?"

Conversely, units stationed in some overseas areas are ever aware of the problems of survival. The physical environment in which they operate tends to enhance the need for an extensive program. Good equipment, endless training, and the will to live are the important factors. To emphasize the point, take the case of such a unit operating in Central and South America, the 937th Eng CO (AVN) (IAGS). The following story is fictitious; yet several instances of successful survival under similar conditions are recorded in this unit.

The day began as many others do before an early mission: rising early in the predawn darkness, a shower, breakfast, and depart for the flight line. The briefing for the mission was held the previous afternoon by the operations officer: a supply run to the various projects in Central America. The aircraft, a U-1A Otter, carried a crew of three. The cargo consisted of 1,100 pounds of various types of equipment. It was loaded and secured. The copilot drew the required survival gear from flight operations, consisting of one 3-man jungle survival kit, one emergency radio, one machette. All was in readiness.

Arriving at the flight line, the aviator filed his flight plan and checked weather. Destination was clear, but en route was forecast to be 3,000-foot ceilings with tops at 8,000. No foreseeable problems. Preflight briefing covering standard emergency procedures was normal.

Engine runup and takeoff were on schedule. Climb was made to flight altitude of 9,500 feet with unrestricted visibility. Thirty minutes after takeoff the forecast weather was encountered and a position report made. The flight continued on schedule, remaining ontop at 9,500.

Approximately 45 minutes later, the pilot noted a sharp rise in cylinder head and oil temperature. Oil pressure began to drop steadily. The two pilots acted as a well-rehearsed team. As the pilot continued with his emergency procedures, the copilot broadcasted a MAYDAY. No good! They were going down. Being ontop, the pilot elected to abandon the aircraft. The copilot and crewchief moved to the rear, strapped on the survival gear and jumped. The pilot jumped a few minutes later.

A new mission now existed: SURVIVAL! And they did!

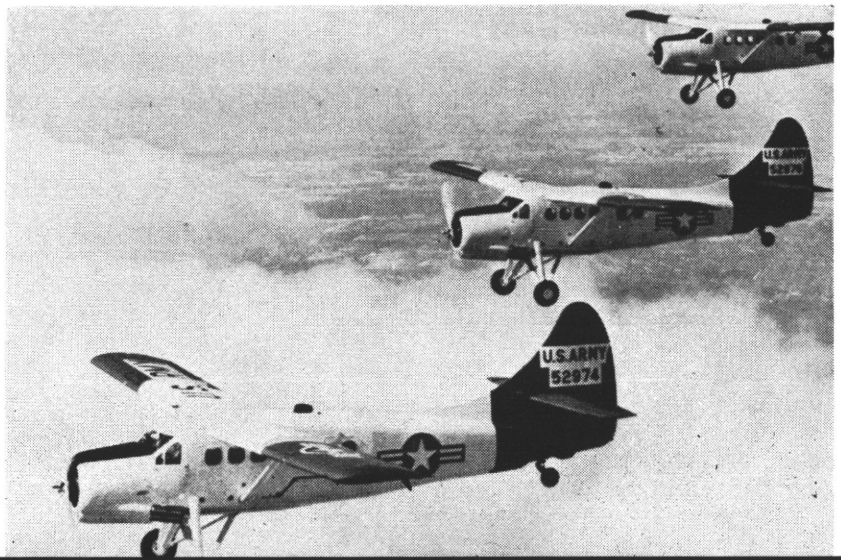
The copilot and crewchief landed close together. With the survival equipment they carried, they had relatively few problems.

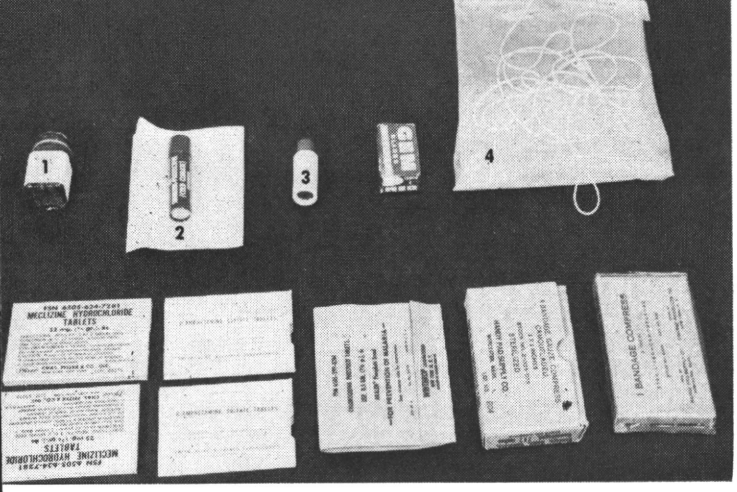
But what of the pilot? The last to leave the aircraft, he landed some distance from the others. Separated — with only his chute, clothes, and what items he carried in his pockets. Prior training and the will to live paid off here. He remembered the training and regretted the few "choice words" he had said in class. He sat down and took stock of the situation. This suppressed the panicky feeling in his stomach while he took inventory of his equipment.

Among the articles was a homemade pocket-sized survival kit similar to those carried by many aviators. This item is not issued; nor is it a part of the mandatory flying equipment. Waterproof and unbreakable, it contained basic equipment needed in most survival conditions: a candle, fish line and hooks, waterproof matches, malaria pills, small first aid kit, nails, safety pins, heat tablets, etc. Small items, but worth their weight in gold in a situation like this.

In survival school, he had learned about the plants and animals of the region, some

Numbers alone are insufficient to assure survival. Good equipment, endless training, and the will to live are the most important survival factors.





This first aid kit is packed in the plastic bag, 4. Items include: 1. water purification tablets, 2. chapstick, 3. benzalkonium chloride tincture (for shallow cuts). Also included are razor blades, meclizine hydrochloride tablets (for motion sickness or nausea), D-amphetamine sulfate tablets (to relieve fatigue and enable a man to stay awake), chloroquine phosphate tablets (for prevention of malaria), and two packages of gauze compresses.

The personal kit includes: 1. roll of adhesive tape, 2. beef bouillon cubes, 3. aluminum foil, 4. matches in plastic cover, 5. terramycin (for infection and diarrhea), 6. APC tablets, 7. chloroquine phosphate (to prevent malaria), and 8. tetracaine ophthalmic ointment (for emergency relief of severe eye pain). Also included are knife, fishing kit, dextro amphetamine sulfate (for fatigue), sewing kit, soaped tissues, compress, chocolate bar, and plastic strip bandage. A candle is highly recommended for this kit.

This overwater kit includes: 1. liferaft, 2. poncho, 3. mosquito net (for head), 4. water container, 5. Mae West, 6. pyrotechnic flares, 7. plastic water bags, 8. reflector board, 9. liferaft repair kit, 10. sponge, 11. signaling mirror, 12. insect repellent, 13. paraffined roll of matches, and 14. sun protective ointment. Other items are a spoon, reversible hat, compass, goggles, fishing kit, hand-generator flashlight, food packet, gloves, radio (AN/URC 4) with battery, pliers-wrench-scewdriver combination, knife, and FM 21-76, SURVIVAL.

This hot climate kit contains: 1. poncho, 2. mosquito net (for head), 3. message drop and pickup bag, 4. paraffined matches, 5. insect repellent, 6. fire starters (5), 7. pyrotechnic flares, 8. sun protective ointment, 9. reflector board, 10. signaling mirror, and 11. snake bite kit. Other items are drinking water, food packets, goggles, fishing kit, reversible hat, machete, file, knife, pliers-wrench-screwdriver combination; compass, hand-generator flashlight, socks, gloves, radio(AN/URC 4) with battery, and FM 21-76, SURVIVAL. (The four kits shown are used for demonstration purposes only in the survival course taught by the Department of Tactics, USAAVNS.)

edible and others deadly poisonous. With just this equipment and knowledge he was able to exist. Not as comfortable as his buddies, but he was ready the day the chopper flew overhead.

The above case is purely hypothetical. But it could happen wherever Army Aviators are stationed—from New York to California, Alaska to South America. The situation may vary with terrain and climate, yet the job is the same: SURVIVAL.

Training, a key word in all commands, played a large part in this crew's survival. The type of training will vary with the unit's location and mission. In addition to standard survival lectures and classes, coordination with other services for Army flying personnel to attend formal survival schools can be accomplished.

As an example of this, the 937th Eng Co (AVN) (IAGS), with the cooperation of the United States Air Force, requires all flying personnel to attend the one-week Jungle Survival Course at Albrook AFB, Canal Zone. This course consists of lectures, demonstrations, and a 3-day field trip into the jungle under survival conditions. It is a short but complete course.

Another area for assistance might be the local populace in particular areas. They know the country.

Proper clothing and equipment is another factor. A thin flight suit on a snow swept plain is as effective as a parka in the jungle. An analysis of the proper flight clothing for the type of mission and climatic conditions should be made—and enforced! Always prepare for the worst. In the above case, hunting knives, high boots and gloves are mandatory on all flights.

Survival equipment is available through normal supply channels. Tests have been conducted to improve survival kits for various conditions. They will be readily available to the crew whether they jump, ditch, or crashland. But let's not overlook the care and maintenance our present equipment needs. When needed in an emergency, it is too late to turn it in for repair. Check the seals on the kits. Check your life vest, raft, the inflation cylinders as part of your preflight. You may need it!

A part of a unit's safety program should include survival. Knowledge and knowhow will instill confidence and security. Results: a safer mission and assured survival. How?

By Training—

Good Equipment—

AND THE WILL TO SURVIVE.

[User tests have been completed on overwater and hot climate survival kits by the U. S. Army Aviation Board, and recommendations have been forwarded to USCONARC.]

Profits from Overnight in Swamp: Designs New Survival Kit

TWO YEARS ago, SSgt Stephen H. Sanderson of HMR-262 was flying as a crewman in a Marine helicopter when the machine was forced down in a North Carolina swamp because of a snowstorm.

He spent the entire night suffering in the damp cold while waiting for a motor convoy.

Remembering the unpleasant and unscheduled RON, he decided to do something. He designed a survival kit which now is approved by the Commandant as standard issue for helicopters.

The proposal Sanderson submitted to Col K. B. McCutchen, his squadron commander, was for a kit to include:

A carrying kit, a pilot's survival kit, half a parachute canopy, a 5″-blade knife, a pocket knife, four cans of rations, two day-night distress signal flares, a reversible red and black poncho to be used for protection against the elements and signaling, a can of heat, a bottle of insect repellent, 50 feet of nylon shroud line, a two-cell flashlight and four batteries, a water storage bag, an axe, a saw, a packet of water-repellent matches, a road map of local areas, a bottle of sunburn lotion, an instruction packet, and a list of code forms used for ground-air signaling.

The kit was approved for squadron use, then submitted to the Commandant, who accepted it for the Marines.

Excerpt from: NAVAL AVIATION NEWS, December 1960.

Comments on

Copter Flying on Tierra del Fuego

Captain Vernon T. Judkins

TIERRA DEL FUEGO, an island far down on the southern tip of Chile, offers helicopter flying conditions unlike any other locale where Army Aviators are stationed. Winds that shift from a dead calm to 40, 50, or 60 mph in 15 to 20 minutes are not uncommon. While operating aircraft under such conditions Army Aviators are called upon to exhibit a degree of professionalism that weeds the men from the boys. This area is commonly known as the "roaring forties," the name coming from the fact that more than half the time the wind is more than 40 miles an hour and the other half keeps you worrying about it. What do you think about when the word "wind" is mentioned? Do you think of gentle breezes or of howling gales? I will forever picture what we have come to call "the leaning rest wind." You must walk at about a 45 degree angle against it. This should be a falling down angle, but you not only aren't falling down, you aren't even moving unless you push real hard against the ground, as if trying to push it away from you.

Then there is the falling down wind, which is a favorite kind in some areas around here. In this wind you walk leaning forward like in the leaning rest wind; only when you do manage to get started in one direction, the wind either stops or changes direction so fast that you cannot stop yourself and—bam—you are on your face. It's not nearly as embarrassing as it sounds, because about half of all the people you see are also picking themselves up off the ground.

You can fly in the leaning rest wind, even though it is 60 or 70 miles an hour. All it does is try to make you seasick, not airsick. The helicopter rides along like a small boat in a big ocean with a strong ground swell. The falling down wind is just as mean in flying as it is in walking. It will manage to bounce you off the ground a dozen times or more while trying to get close enough to land. It's hard on the nerves and even harder on helicopters.

In an H-13H I have managed to keep in one piece I have attained groundspeeds of 160 nautical mph. The waves aren't too bad and the sudden jolts and letdowns can be handled, but did you ever see a sled trying to make a turn on clear slick ice? That's the way you make a turn. Going like mad you pass over the place you want to land, and you start leaning into the turn. Pretty soon you are sliding sideways so fast you wonder who's flying the thing. After this moment of sheer fright (you know, the belly sucking kind) you lean a little more and —bang—you are going backwards like a runaway T-bird in reverse. In your desire to stop the sliding you have slowed down your indicated airspeed and by the time you are headed into the wind it's blowing faster than you are flying. Now, if you don't panic for more than a moment or so, you can crank in full throttle and come to a hover. Have you ever tried hovering at 80 indicated? It's a thrill to say the least.

The wind doesn't do anything slowly. It starts fast and within 15 or 20 minutes goes from a dead calm, or rather what passes for a dead calm, to 40, 50, 60 or more miles an hour. Your first question is, Why fly in high winds? Man, how do you get home? You try early mornings, late evenings, and all other combinations and you still get caught.

All kidding aside, the H-13 is not meant to fly in wind like this, but if you do get caught in a high wind there is no reason to press ye olde panic button too firmly. If you can just grab hold of your vivid imagination long enough to live through the first time, you find it's not nearly as bad as it seems. Like the boogerman, it's mostly in your head.

Flying in a high gusty wind is rough on the helicopter because it is always hitting the stops — and, boy, that's not what they are there for. Shutting the helicoper down in a high wind is almost cause for a

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visit with the head shrinker. By the time you have stopped the blades your arms are a little loose in the sockets. Every time the stabilizer bar comes around you grab it because you know that one more turn and, flap bang, no more tail rotor—or main rotor as far as that goes because that's what is going to cut off that tail rotor.

Just remember, never stop the engine while facing directly into the wind. You say you can't even remember which way to turn? You will, after you make the wrong turn once and the helicopter tries to take off just by its gyrations. Now don't ask me how you turn a helicopter 135° to the left when you haven't even got enough pedal left to hover with. Just work at it; it can be done.

Flying in this part of the world gives you the impression of boating the nice gentle roll of a hurricane inbred with a typhoon. While flying down the valleys on a calm day you can imagine you are in a fast sleek motor boat. This impression is created by the thousands and thousands of geese that fly up along your course. They start out directly in front of you as the bow wave on a boat and spread back in a perfect 45, just like the waves falling away from a fast boat. I always thought geese went south for the winter; here they go north. There are millions of them.

When not flying you can lean into the wind and go fishing for the biggest rainbow trout imaginable outside of a fish hatchery. Oh well, who likes to catch 5-pound trout as fast as you can get the lure back into the water. See, you knew all along this was a fish story, but it's not. All you have to do to prove it is come to Tierra del Fuego, south of Punta Arenas, Chile. On this isle you find the world's southernmost town. You can call a place with seven houses and an abandoned cannon a town, can't you? Here you live side by side with the beautiful flamingo, the black necked swan, the ostrich, goose, duck, parrot, walrus, seal, hummingbird and seemingly every other form of opposites to include thousands of penguins in their best bib and tuck.

Exploring New Techniques

RAPPELLING down twin strands of nylon rope from an HU-1A helicopter, a 101st Airborne Division soldier demonstrates new aerial delivery techniques for commanders of major units in the U. S. Strategic Army Corps. In a combat situation he could reach the ground safely to clear a landing pad for the helicopter with tools also lowered on the rope.

This technique provides an excellent means for individuals and equipment to enter areas of heavy brush or timber when no airfields or helicopter landing areas are suitable.

THE BRITISH ARMY AIR CORPS

Lieutenant Colonel Maurice W. Sutcliffe

THE BRITISH Army Air Corps came into existence officially in September 1957. There is, however, a considerable history before that, dating back to the early days of flying before World War I. Between the wars Army cooperation squadrons were formed and Army pilots were assigned for a 4-year tour of duty to these squadrons, which were operated by the Royal Air Force. At the start of World War II in 1939 these squadrons went to France but their old fashioned Lysander aircraft were no match for the Luftwaff's modern aircraft. The Army cooperation squadrons as such came to an end and with it the system of Army pilots flying with the Royal Air Force.

At this time, however, some Royal Artillery officers, the leader of whom was Lt Col Charles Bazley, were experimenting with the adjustment of artillery fire from light aircraft. From this early start in 1939 and 1940 the well known Air Observation Post (AOP) flights were formed. During World War II every theatre came to know these light aircraft flights and squadrons and much extremely valuable work was performed by Royal Artillery pilots, often under the most hazardous conditions. A total of 12 squardons of Air OP were formed during the war, and though they were flying aircraft owned and supplied by the Royal Air Force they worked entirely integrated with the Army.

In the early days of World War II the Glider Pilot Regiment was formed. These pilots, Army Officers and NCOs, had the dual role of flying gliders into the battle and then taking part in the battle themselves as ordinary infantrymen. This was a tough job and the regiment suffered heavy casualties, especially at Arnhem and the Rhine crossing.

In postwar years, when the British Army has been concerned with internal security problems throughout the world, the Air OP flights and squadrons have once again played an invaluable part with their small aircraft in reconnaissance, liaison, medical evacuation, supply and leaflet dropping, and a host of other jobs that the light military aircraft has come to be associated with. In 1950 the Glider Pilot Regiment ceased to fly gliders, and liaison flights with light aircraft were formed to work with the gunner officers of the Air OP flights. The Army Air Corps on its formation took over all the Air OP and liaison units as well as RAF station Middle Wallop, which became the Army Air Corps Center, or the Home of British Army Aviation.

The servicing of aircraft has gradually been taken over from the Royal Air Force by personnel of the Royal Electrical and Mechanics Engineers (REME). During the interim period the Royal Navy helped out with ground personnel. For the period of a year or so it was not an uncommon sight to see a British Army Air Corps unit going out on an exercise with naval personnel, some with beards, some with sea kit, but all thoroughly enjoying their days ashore with the

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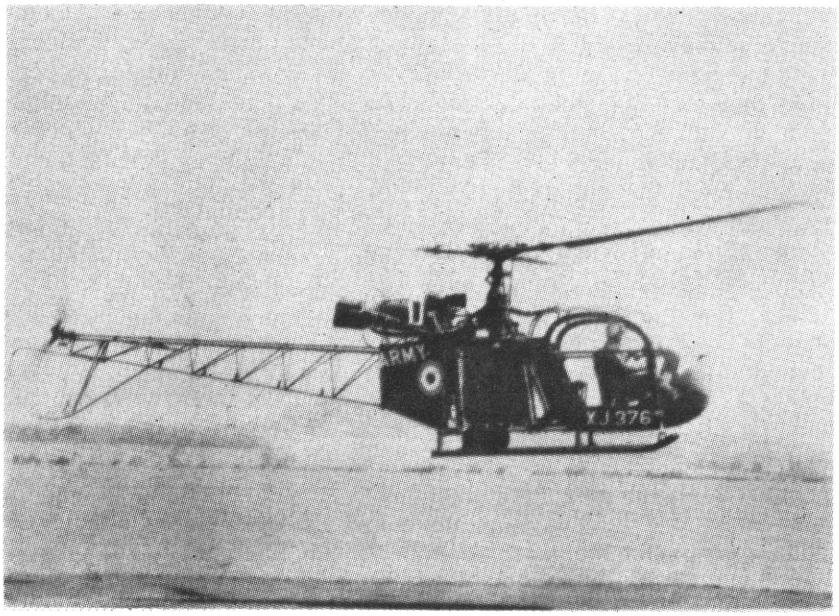
Col Sutcliffe is the British Liaison Officer with the U. S. Army Aviation Board and the Aviation Center at Fort Rucker.



Top: The D. H. Beaver is already well known to the U. S. Army. Except for different radios, this is an identical machine, and is used in the liaison flights.

Center: The Skeeter Mk 12 is limited to service in Europe. It is used both as a basic trainer and as a reconnaissance helicopter. It has an AUW of 2,350 lbs, endurance of 2 hours, and cruises at 80 knots. The powerplant is a DH Gipsy Major of 215 hp.

Below: The French Alouette Mk II has been adopted as an interim helicopter by the Army Air Corps, pending the Westland Scout's delivery. This helicopter is used both in the reconnaissance and liaison role. Maximum AUW is 3,300 lbs, endurance 3 hours, cruising speed 90 knots, engine Artouste IIC giving 409 shp. The rotor disc width is 33'8" and there is seating for five.

Army. This was a really combined operation period, and one which the good will of the Royal Air Force and Royal Navy made possible for us.

THE ARMY AIR CORPS CENTER — MIDDLE WALLOP

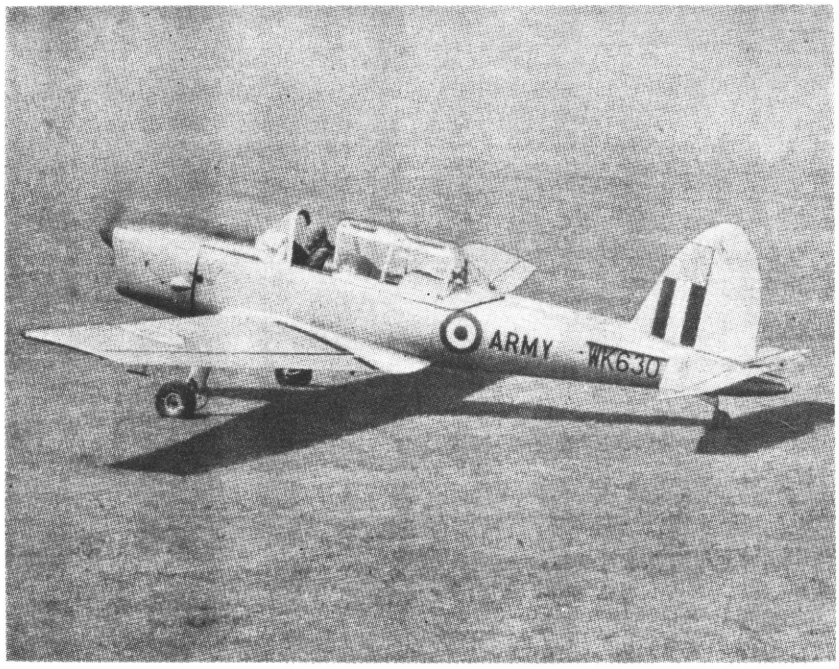
Middle Wallop is the first true home of British Army Aviation and not surprisingly is located on Salisbury Plain, the well known training area for the British Army. To this day the airfield still has the scars of the German attacks of 1940. Since that time it has been owned successively by the Royal Air Force, the 67th Tactical Reconnaissance Group of the 9th USAAF, then the Royal Navy, back to the Royal Air Force, and now the Army.

The Center is responsible for the basic training of all Army pilots and of all REME aircraft servicing personnel. It is also the depot and headquarters of the Army Air Corps. Its world-

Top: The Westland Scout has been produced as a standard all purpose Army helicopter, and will start coming into service with the Army Air Corps during 1962. The maximum AUW is 5,000 lbs, endurance of 3 hours, cruising speed 100 knots, engine Blackburn A129 giving 1,050 shp. The dimensions of this helicopter are rotor disc 32′3″, maximum length 39′8″, height 10′5″. There is seating for five.

Center: The Auster Mk IX flying over the typical Malayan Jungle.

Below: The Chipmunk is the basic trainer for the Army Air Corps. It is fully aerobatic, has an endurance of 2½ hours, cruising speed of 90 knots, and is equipped for instrument flying.



wide responsibilities include the supervision of flying standards and the well being and career management of officers and men of the Army Air Corps.

The Center is also responsible for the tactical doctrine, both for units of the Army Air Corps and the rest of the field army. Evaluation trials of new aircraft and ancillary equipment are undertaken at Middle Wallop. All pilots returning to flying appointments do their refresher flying at the Center. Conversion courses are also run for pilots going onto new types of aircraft. Like all other regimental centers in the British Army, Middle Wallop is rapidly getting the atmosphere of a home which is a tradition of the regimental spirit of the British Army.

PILOT SELECTION AND TRAINING

All applicants for the Army Air Corps attend a 3-day selection at the RAF Air Crew Selection Board at Horn Church,

just outside London. The Selection Board covers all forms of aptitude testing as well as the medical examination. Horn Church has been in existence as an air crew selection center for all the services for many years, and the Board's experience has enabled them to grade potential pilots with amazing accuracy.

Students come from all arms of the Army and may be officers or NCOs, the latter filling approximately 30 percent of all pilot vacancies. Before an officer can apply for pilot training he must have a basic knowledge of his own arm of the service, which in fact normally means he will be about 24 to 26 years old when he arrives at Middle Wallop. NCOs must have reached a suitable standard of education and general military knowledge, and must show the qualities required to become an Army pilot. The upper age limit for student pilots in all cases is 30.

Pilot training is divided into three phases. The elementary phase, consisting of approximately 60 hours is carried out in the de Havilland Chipmunk, a low wing fully aerobatic trainer. During this phase the student pilot is taught airmanship and basic flying. He will acquire a fair proficiency in the basic aerobatic maneuvers, he will do a limited amount of instrument flying, he will also do all the ground school subjects associated with this phase of flying training.

Next the student pilot goes to intermediate flight where he will do a further 80 hours in an Auster aircraft. This machine is comparable to the L-19 but can carry two passengers. Here the student pilot learns the art of Army flying, contour flying, low-level navigation, operating out of small fields and strips, and does a certain amount of night flying. The ground school associated with this phase of training covers military subjects such as artillery fire adjustment, signals, and tactics as applicable to the Army aviator.

On completion of this phase pilots are then selected to do either a further period in an exercise flight on fixed wing aircraft or they are transferred to the helicopter flight for rotary wing training. At present there is no helicopter training for pilots without limited experience on fixed wings. All pilots must first complete the elementary and intermediate stages of fixed wing flying, though the present period of 120 hours of fixed wing flying may shortly be reduced for pilots who will fly only helicopters.

Students who are to continue with fixed wing do a further 50 to 60 hours of field exercise and tactical flying in the Auster aircraft and then are posted to squadrons. The rotary wing student does his basic helicopter flying in the Saunders Roe Skeeter helicopter. Helicopter training consists of a basic 30 hours followed by a more advanced 50-60 hours which includes tactical exercises. Upon completion of the helicopter training the student is posted to a squadron. A student's first few months in squadron service is devoted to further training in the conditions applicable in the theatre in which he is to operate.

The majority of pilots flying in the Army only do so for a 3-4 year tour and then return to their parent arm. Though some may return to fly at a later stage, pilots in the British Army do not retain flight status as with the U. S. Army. A small cadre of officers and NCO pilots are permanently on flight status and cut off all association with their parent arm or regiment. This cadre exists to give continuity and form a basis for greater knowledge of aircraft and the many related problems. However, the great majority of pilots are only assigned to the Army Air Corps, and on completion of the 3-4 years may never return to flying again. This point is often not clear to pilots in the U. S. Army, and is no doubt due to the name Army Air Corps giving a wrong impression.

SERVICING AND MAINTENANCE

Maintenance personnel for the Army Air Corps all belong to the Aircraft Servicing Regiment of the Royal Electrical and Mechanical Engineers. A soldier who belongs to this regiment will have about one year's training before he finally passes out of the technical training wing at Middle Wallop and joins a unit of the Aircraft Servicing Regiment. More advanced courses are set up for qualified technical personnel, at which time they become artificers, aircraft. With a constant shortage of qualified technical manpower, the aircraft technicians and artificers in the Aircraft Servicing Regiment are valuable men.

ORGANIZATION AND EQUIPMENT

The British Army Air Corps has one severe limitation, and one that is not new to the older members of the U. S. Army Aviation — restriction on the size of aircraft that may be

flown. Our limit was set at 4,000 pounds all up weight (gross weight). Unfortunately, this arbitrary limit was agreed on without consideration of the types of aircraft available or required for our roles. However, since then good sense has prevailed and the Army now flies the L-20 Beaver and the P-531 Scout (a turbine helicopter which compares in many ways to the HU-1, though not quite so large in dimensions). Both these aircraft are over the original limit of 4,000 pounds A.U.W. With such severe limitations, any form of logistic support is virtually ruled out, and the Army Air Corps is limited in its task to reconnaissance and liaison work.

All flights at present consist of six aircraft, a fixed wing section and a rotary wing section of three aircraft each. The reconnaissance flights are presently equipped with the Skeeter helicopter and the Auster Mk IX fixed wing aircraft. The liaison flights at present have the Alouette II in the rotary wing section and the Beaver in the fixed wing section. The Alouette II is gradually being replaced by the P-531 Scout. Reconnaissance flights work under a squadron headquarters at divisional level, but the flights are normally permanently affiliated to brigades. The liaison flights work at corps and Army level.

As mentioned earlier, manpower is a constant problem and various "arrangements" exist within our regimental systems to overcome the problem of who will provide the pilots and ground crews. The basic organization is, however, as stated. In some theatres, such as Malaya and Kenya, where the density altitude has proved such a limiting factor for helicopter operations, the Skeeter helicopter cannot be used and only the more powerful Alouette or Scout are being deployed for use in all flights.

THE TASK

Today our Army aircraft are spread across the world, from Hong Kong and Malaya to Kenya, Aden, and Germany. Their task varies considerably, dependent on the theatre they are in.

No mention of Army aviation would be complete without mention of the many thousands of hours flown by Army pilots over the jungles of Malaya during the past 10 years of the emergency. There the task varied from supply dropping to marking for air strikes, and from VIP flights to casualty evacuation. Today the task may not be so exciting, but flying over vast areas of jungle alone in light aircraft will always be a hazardous task.

Flying at the high altitudes in Kenya provides ample excitement while Aden and the Aden peninsula require yet another type of knowledge in flying.

Army aviation can only hold its own if it is ready to operate wherever the man on the ground is required to go. In this modern day of worldwide communist attempts at expansion, armies are operating in the worst terrain possible; yet Army aircraft are supporting them and proving not only their worth but their essential need as an integral part of the Army.

The Auster Mk IX is the standard fixed wing reconnaissance aircraft. It has an endurance of 3 hours, cruising speed of 80 knots, seating for 3. The maximum all up weight is 2,550 lbs. The large landing wheels give excellent flotation in soft surfaces.

THE NEW BREED

Aviators Who Feel It's Smarter To Think Than To Haul Off and Hope

Richard K. Tierney

IT WAS HOT in the editorial room of the "Post News" when we finally met the deadline. I was anxious to get out of the office for a while. Just then Captain White of the Post Safety Division walked in and came straight to my desk.

"I've got a story for you," he said. "Colonel Linke's outfit has reduced its aircraft accident rate by 50 percent in the last year."

I ached inside at the thought of another safety story based on "statistics." But the sight of the zealous safety division officer mopping his brow with a huge handkerchief make me chuckle. Maybe he had something . . . he hadn't come all the way over here in the heat for nothing.

"Fine," I said cynically, "but you can prove anything you want with statistics. What's the catch?"

"No catch." The reply came smoothly. "That's an honest figure. Colonel Linke's outfit always has had a good safety record and now they've set an all time mark for themselves."

I was unimpressed. "That's the same propaganda you've been handing out for years. What did you do? Change the definition of an accident . . . or did you ground all of the Colonel's aircraft?"

"Very funny," he countered. "If you're so cocksure of yourself you ought to jump at a chance to make a few bucks. I've got five dollars that says you can't find a thing wrong with this record."

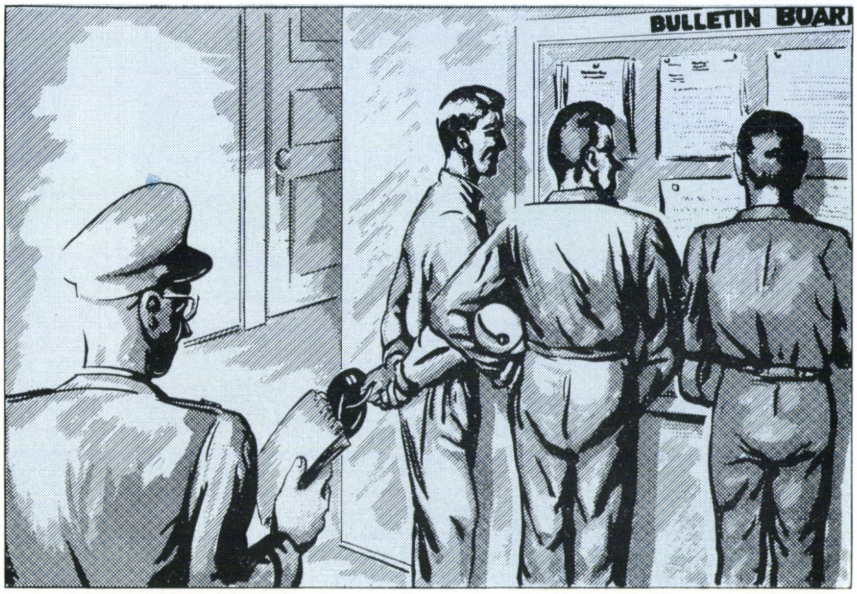
He sounded confident, and the idea of putting up five bucks didn't appeal to me. But I'd talked myself into a corner and took the bet, vowing to pick this reduced accident rate to pieces.

My first setback came the next morning as I arrived at Colonel Linke's headquarters. To my surprise, several people were READING the safety bulletins on the board in the hall.

I quickly pulled myself together. There must be a promotion list up there, or a good looking pinup, I concluded. But I was wrong, there were only the usual posters, notices and illustrations. These guys must have flipped, I thought . . . people **never** read what's on the safety bulletin board.

I headed down the hall, but couldn't resist one more quizzical glance at the strange breed around the bulletin board. I

I was surprised to see several people reading the bulletin board



"We don't have any surprises here"

shook my head and proceeded to the Colonel's office — and promptly encountered my second setback.

The Colonel, a distinguished looking man with a moustache, left no doubt in my mind that **he** was in command. Instead of the polite, cut-and-dried lesson on air safety, the Colonel was dead serious. We discussed such things as initiative among his commanders, preplanning and thinking. He seemed to get mad as we talked. His face reddened a bit and he'd occasionally emphasize a point by giving his desk a resounding thump with a tightly clenched fist.

"We don't just talk about safety here," he said, **"we think it and act it."**

I collected my thoughts. This fellow wasn't talking along the lines I'd expected him to. I thought he'd be telling me about statistics, safety meetings and a lot of gimmicks that a million words have been written about. If I wanted to win that five bucks, I reasoned, I'd better interrupt and get him back on the right track.

"Colonel, don't you have someone keeping statistics? And what about safety meetings, posters and things of that sort?"

The look he gave me would have stopped a Mohawk in mid-air. "Of course," he answered brusquely. "We have an air safety officer, an aircraft accident prevention officer, a safety council that meets weekly and a good bulletin board. These are important. But we've also got commanders and instructor pilots. Their roles in air safety are just as important." Thrrump . . . he banged his desk again . . . "perhaps more important."

"Bear in mind," he continued, "that our mission comes first. Safety is right up there with it, an integral part of the program, but the mission takes priority. The two are compatible, but accomplishing both is a unique job. It's an art, and the whole thing falls right into the laps of my commanders and instructor pilots. I can't be everywhere, and sometimes they've got to act on their own. In this outfit they know they've got the authority. The credit for our improved record goes to them."

After a pause the Colonel added, "My men are professionals, and a professional is safety conscious. They're thoroughly trained and standardized. They're checked and checked and rechecked. We don't take anyone for granted. Each man must continually prove that he is capable and has the right attitude. The rest comes easy."

The Colonel leaned forward in his chair. With a determined look and his voice lowered to a near whisper he said, "We don't have any surprises here. **We think things out and plan in advance."**

The Colonel stood up and reached for his hat. I knew he had an appointment and was ready to end the conversation. He told me to poke around the area and learn more about their safety concept. Just before leaving he said, "We've seen what a little extra thinking can do to the accident rate around here. It could have the same effect Army-wide." With that he whirled on his heel and was gone.

The Colonel's departure left a void, which I filled with a variety of thoughts. I summed up our discussion and realized I wasn't doing too well punching holes in the safety program.

My third setback came when I sat in on a meeting between an IP and a group of Army Aviators. A young looking lieutenant asked a searching question on air safety: Can't we come up with a stricter set

"The credit goes to both the colonel and the aviators"

of SOPs and crack down on their enforcement to ensure safer flight operations?

Aha, I thought, now we'll see if the Colonel was just letting off steam or whether his people really are thinking and talking safety.

The IP replied: "Well, a lot of organizations have conducted far reaching studies of air safety. They have given us specific sets of do's and don'ts and have published many articles and pamphlets about the need for proper command supervision. Both are required to maintain an orderly flow of air traffic and to keep accidents at a minimum.

"But that's not the whole story. The problem goes much deeper. It is rooted within each pilot, beyond the reach of study groups and down where regulations and commands do not always penetrate.

"We ourselves, each in his own way, can find the answer. Certainly as everyday pilots we **must** find a practical, broad flight philosophy that will keep us from buying the farm.

"The way I see it, we all have certain inborn safety devices that rally our senses in time of danger and drive our bodies to the accomplishment of seemingly impossible feats. These devices allow us to move with confidence in our normal lives. **But none enters very far into the realm of flight and air safety.**

"We don't have the 'radar' of the bat, the calibrated eyeball of the eagle, or the homing and navigational instinct of the birds to avoid collision.

"What do we have in our favor? We have a priceless gift: **the ability to think and plan.**

"We must study and understand our limitations and those of our aircraft. We, as individuals, will achieve air safety only when we make an effort to **think** and then follow it up with effective planning and prediction. Then we will clearly see the dangers lurking in cowboying, in neglected or half-written URs, in defying marginal weather, or in flying in poor physical or mental condition.

"The first step toward flight safety is the **training of ourselves. Then it is imperative that we create in others the proper attitude toward flying and flight safety.** We must all realize that flight safety depends almost entirely upon thought, prediction, planning, and command emphasis."

A disturbing silence followed as glances shifted from person to person. A nod of accord from the lieutenant who posed the question broke the spell and the conversation swung to other topics and became general before the meeting broke up.

The instructor pilot left the group and headed toward the flightline. I hastened to catch him and then continued the conversation. "How many around here feel as you do about flight safety?" I asked.

"Most of them. We try to set good examples for others to follow."

"I've seen some cowboying here," I said, "and people taking needless chances."

We walked along briskly. "A few," he answered. "If they applied some thought to it they'd realize they're flirting with death—and setting a witless example for those around them. You know, a lot of people will chance it just because they've seen someone else get away with it. Let's face it: cowboying is a sign of immaturity."

"Who's responsible for the reduced accident rate? The Colonel?" I queried. "Or have your aviators acquired a flight philosophy such as you mentioned—are they thinking and planning ahead?"

The question brought our brisk pace to an abrupt halt. The IP answered slowly—as though he were thinking over each sentence. "The credit goes to both the Colonel and the aviators. Consider the Colonel first," he continued. "The Colonel honestly believes in his flight safety program. He studies and plans his program and constantly tries to improve it. He realizes that he doesn't know all the answers and is quick to recognize and accept good advice from his commanders and IPs.

"For example, we had a case where a hydraulic leak caused the brakes to fail on a Caribou being taxied on a tactical mission. The Caribou went off the strip and suffered incidental damage.

"The pilot didn't **think** of using his emergency brake. He never had occasion to use it and when the need arose there was no simple reaction, such as when we put on our car's brakes at a stop light. There wasn't time for a complex reaction, which requires some thought.

"We applied some thought to the matter. We recommended to the Colonel that our Caribou pilots be given some 'on the job' practice in the use of the emergency brake. The Colonel agreed and saw to it that the Caribou boys were familiar enough with the emergency brake to use it instantly when the need arose. We have good reason to believe that this practice has prevented several similar incidents."

We started walking again, but much more slowly. "This is a case where the Colonel wisely accepted advice. He also has instigated many excellent safety procedures of his own, and sees to it that they are understood and complied with."

"You mean he sort of cracks the whip?" I asked.

"No; it's not done with that attitude. Everything we do is designed to make our aviators themselves see the need for thought, prediction and planning. The Colonel is not trying to force issues. He's planting the idea within our men and then creating and maintaining an environment in which it will flourish. He has set up a safety program containing incidents and problems that force our people to think about the issue.

"For example, instead of just giving lectures and showing slides on the Caribou emergency brake procedure, we took the men out and let them use the emergency brake on aircraft. This got them all talking—and thinking. We've also used similar techniques in other instances."

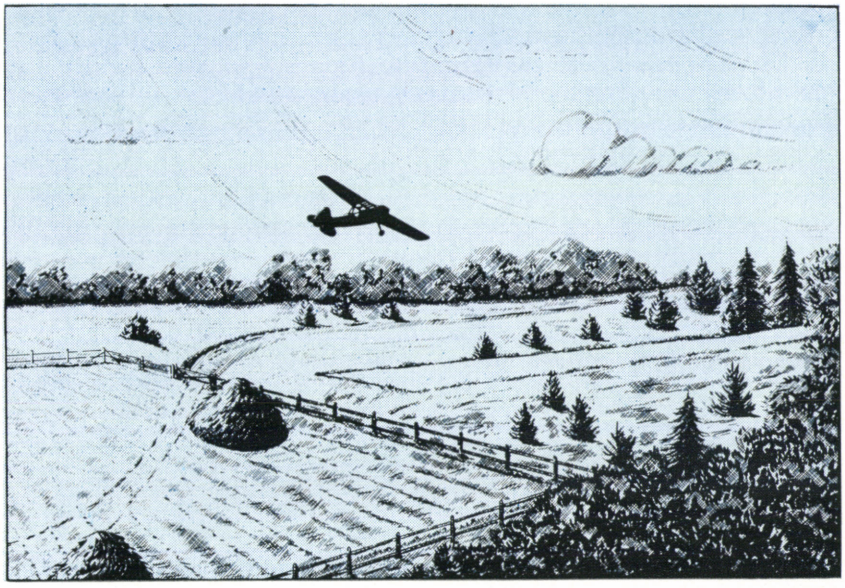
"You said that credit for this reduced accident rate should go to the Colonel **and the aviators,**" I said.

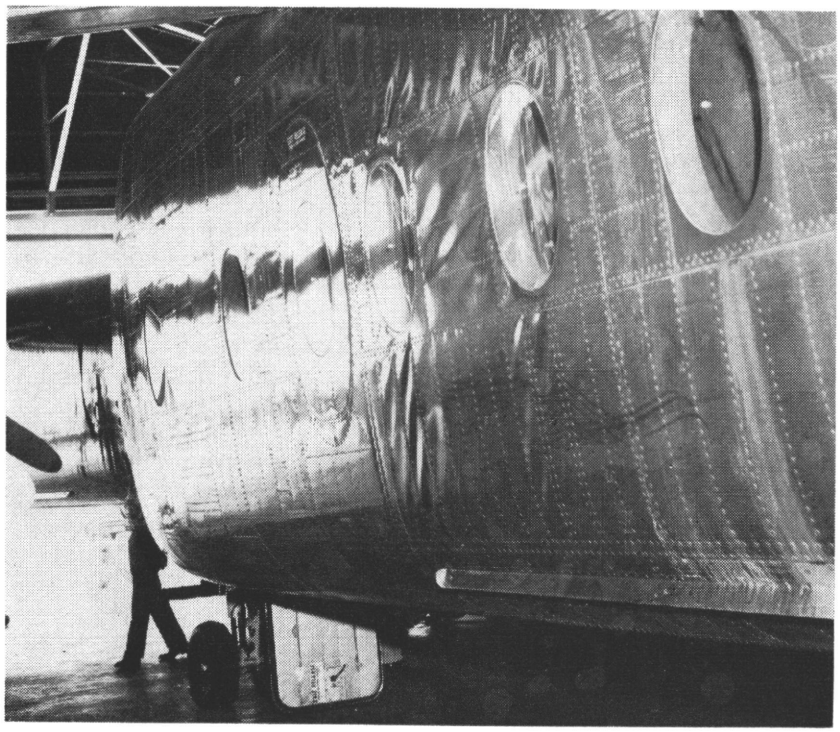
"Yes. Army Aviation is getting more and more people who have the ability to think and plan ahead. This is to their credit. The problem is that many need a nudge and ideal conditions to get started. Good command supervision provides this nudge and the smart aviators take advantage of it. We're getting more and more who have the desire to think and plan and fewer who bolt off like some kind of animal, trusting to instinct and luck."

"Are you saying people used to fly like animals?" I asked.

"A lot of them did, but that breed is almost extinct. Nowadays we're **insisting** that aviators think before they act. For instance the other day I had a young aviator who was manhandling an aircraft like an orangutan might. He was probably able to perform any maneuver better than I could, but he was hedging on every safety rule in the book. When we grounded him he proved that he could also holler like an orangutan. Well, he'll stay grounded until he's able to mix

"See anything wrong here?"





Thought, prediction, and planning will help eliminate costly incidents like this

a little thinking with his flying."

I'll have to admit, I was impressed, but I wasn't going to give up yet. I decided to take a deeper look into the routine mechanics of the program and started with the safety officer.

Here, too, I found much thought being devoted to air safety. The safety officer kept charts and statistics that would immediately reveal any accident trend.

"Charts and statistics are only as good as their keeper," I was told. "You get out of them what you put in. If you shovel in garbage, that's what you get out."

The safety officer showed me a stack of accident and incident reports on his desk. "It's easy enough to put each into a category, and they may show a trend," he continued. "But if you look deeper you often find hidden causes. Who was the pilot? What about his family life? Has anything out of the ordinary happened to him lately? What about his physical condition? What about the condition of his aircraft?

"Those are just a few of the questions I can ask about each report," the safety officer said. "A little thought about each accident often uncovers hidden causes that could develop into trends."

I learned that this safety officer had plenty to do with his regular duties alone. But he was caught up in this tide of thinking safety. He performed his added safety officer duties diligently and thoroughly. He did more than was required. He studied his statistics and transformed them from dormant figures into a vital, living part of the program. They play a major role—speaking loudly and with authority.

The safety officer showed me how he coordinates his findings with the accident prevention officer, and how both in turn work with the safety council, or anyone concerned.

My next interview was with the aircraft accident prevention officer. He told me that the major part of his job consisted of searching out potential accident causes and eliminating them. "In fact," the major said, "I'm going out on an aerial inspection now. Would you like to go along?"

I eagerly accepted his invitation and presently found myself flying over the reservation while the accident prevention officer scanned various areas. Finally he pointed to a dirt strip and began circling it. After we had made several low passes over the strip I heard a click in my earphone and the major said, "See anything wrong here?"

A little bewildered, I pressed the intercom button and answered, "No, it looks okay to me."

"That haystack on the other side of the fence," he said banking slightly and pointing, "That's just been put up in the last day or so. It's too big and too close to the end of the strip. We'll have to get the farmer to move it."

I stared at the haystack without answering.

"There's another hazard down there," he added. "The trees have grown a lot taller during the last year. I've been watching a few at the other end of the strip and they're getting too big. We'll have to take them out."

The major dropped the nose and started a descending turn. "We'll go down so you can take

a better look," he said. We made a low pass and it was obvious that an aircraft taking off would have difficulty avoiding those obstacles.

En route back, the aircraft accident prevention officer radioed ahead to close the strip. I wondered to myself if he shouldn't have consulted the Colonel first. But my apprehensions disappeared as I recalled the Colonel's words: "Sometimes they've got to act on their own, and in this outfit they know they've got the authority."

After returning to the field we visited commanders, pilots and IPs and informally discussed the inspection tour. Later I sat in on a safety briefing in which various accidents and their causes were thoroughly aired. Here again I noticed a constant emphasis that accidents must be minimized without sacrificing the mission. "Don't shy away from difficult strips and confined areas on training flights," the aircraft accident prevention officer stressed. "Remember, it's part of our mission—and your job—to be able to land safely in confined areas. Let's hope you're up to it."

It was getting late as I left the briefing. I decided to get back to the office and as I walked down the hall I again recalled the interview with Colonel Linke. It was obvious that he was responsible for the emphasis placed on thinking safety in his unit. He fosters this attitude by taking the time to carefully plan and think out his programs. This attitude trickles down as he disseminates his ideas and policies, along with the authority to enforce them, to his commanders and IPs.

And he has people who feel as he does, I thought—a new breed—people who feel it's smarter to **think** than to haul off and **hope.**

Nearing the front entrance I noticed a small group was reading the bulletin board. I almost asked why they were reading it, but decided I knew the answer. They were **interested** in safety. They were professionals.

I pushed open the door and went out. Colonel Linke was coming up the steps. "What's your rush?" he asked.

"Well sir, I'd like to get back and start on my story before quitting time. And I'll have to cash a check to pay off a bet I lost."

Commanders, pilots, and IPs discuss inspection problems

FUEL HANDLING COURSE

The success of the Aviation Fuels Handling Course at Fort Lee, Va., has resulted in plans to conduct it on a continuing basis.

Organized in January 1961, the course provides personnel working with aviation fuel a thorough background in safe fuel-handling procedures.

The course lasts one week and covers all safety techniques associated with fuel handling. A more detailed description of the course of instruction was covered in the March 1961 issue of the DIGEST.

Commissioned officers, warrant officers, and enlisted and civilian personnel whose job requires the handling of aviation fuel are eligible to attend. Enlisted personnel must have nine months or more active duty remaining upon completion of the course. There is no obligated service requirement for Active Army officer personnel.

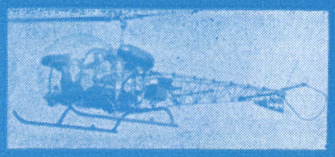
Requests for quotas for this course must be submitted to the Commanding General, United States Continental Army Command, ATTN: ATTNG-Sch., Fort Monroe, Va.

Four courses are scheduled for the remainder of this fiscal year. They begin on the 4th, 11th, 18th, and 25th of June.

L-19 BIRD DOG

H-13 SIOUX

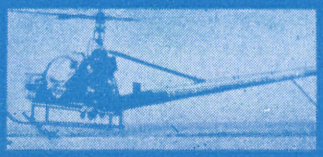
U-1A OTTER



TWX

THE UNITED STATES ARMY BOARD FOR AVIATION ACCIDENT RESEARCH

Ex



HU-1 IROQUOIS

H-34 CHOCTAW

H-23 RAVEN

H-23C ROLLED INTO SURF after engine dropped to 2500 rpm while aircraft was flying along beach. Aircraft destroyed. No injuries. Suspect carburetor ice.

H-34A STRUCK WIRES during takeoff. Incident damage to ADF antenna. No injuries.

H-21C DEVELOPED SEVERE VIBRATION in forward rotor during overwater flight. Flight was continued and aircraft landed without further incident. Forward green rotor blade separated along trailing edge on outboard end for approximately 4 feet. Pressure relief valves were blown out of blade dampners.

L-19A STRUCK ILS ANTENNA during night approach. Aircraft landed short of runway and left gear collapsed at touchdown. Major damage to propeller and landing gear bulkhead. Pilot sustained minor cut.

AO-1 NOSE GEAR FAILED during sod landing. Major damage to fuselage, nose wheel strut, and propeller. No injuries. Caused by blowout of nose wheel tire at touchdown.

H-23D CRASHED during attempted autorotation. Engine failed at approximately 150-200 feet during takeoff. Application of collective pitch in attempt to avoid wires caused low rotor rpm. Aircraft landed hard and rolled on right side. Postcrash fire caused extensive major damage. Pilot sustained back injury. Suspect materiel failure in No. 6 cylinder.

L-23D STRUCK MARKER while aircraft was taxiing out for takeoff. Incident damage to propeller.

L-19A ENGINE FAILED. Aircraft completed forced landing with no damage. Suspect obstruction in fuel line between auxiliary fuel tank and fuel selector valve.

L-23D PROPELLER CONTROL LINKAGE became disconnected in flight. Aircraft completed forced landing with no damage. Caused by improperly installed control linkage.

H-21C ENGINE FAILED in flight. Aircraft crash-landed in trees on side of gully. Suspect total loss damage. Instructor pilot and pilot sustained back injuries. Crewchief sustained abrasion. Cause of engine failure undetermined pending investigation.

H-13H TAIL ROTOR HIT BY BASEBALL while aircraft was performing pre-takeoff runup. Incident damage to tail rotor. Major damage to baseball.

HU-1A LOST ENGINE OIL PRESSURE in flight. Aircraft completed forced landing with no damage. Oil pressure loss caused by broken oil hose assembly.

L-19E CRASHED during 180° turn while on flour bombing mission. Aircraft destroyed. Pilot and passenger sustained minor injuries.

H-13H LITTER STRUCK BUSH while aircraft was landing from hover. Aircraft was tipped to left and main rotor blades struck tree limbs during recovery. Incident damage to main rotor blades.

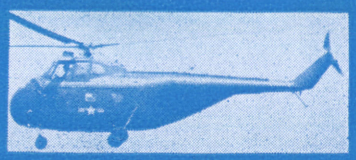
AO-1 SWERVED during landing when No. 2 engine propeller failed to reverse. Both main tires blown.

RL-23D TAXIED INTO DITCH bordering PSP taxiway. Major damage to No. 2 engine and propeller, engine cowling, and right main gear.

H-13H CRASHED during attempt to avoid wires. Aircraft caught fire and burned. Pilot sustained minor burns.

AO-1 MOHAWK H-21 SHAWNEE L-20 BEAVER

cerpts From Jan. and Feb.



L-23 SEMINOLE H-37 MOJAVE AC-1 CARIBOU H-19 CHICKASAW

H-13H CRASHED during night approach to tactical lighted helipad. Aircraft struck ground slightly nose low at approximately 25 knots airspeed. Aircraft destroyed. No injuries. Suspect spatial disorientation.

H-13E CRASHED when left skid struck bale of straw carried by pedestrian. Major damage to all components. No injuries.

H-21C STRUCK STUMP during approach to confined area. Incident damage to skin on under side. No injuries.

H-13H STRUCK WIRES during takeoff. Minor damage to tail boom, tail boom extension, aft short shaft, navigation lights, tail rotor blades, and FM homing antenna. No injuries.

L-19D OVERTURNED when wheels broke through crust of ice during attempted forced landing on glider strip. Suspect engine failure caused by ice in fuel. Major damage to vertical stabilizer, wing, and propeller. No injuries.

H-19D ENTERED GROUND RESONANCE after touchdown from practice autorotation. Whip antenna struck tail rotor blade before aircraft could be lifted back into air. Incident damage to tail rotor blade and whip antenna. No injuries.

H-13E ENGINE CAUGHT FIRE during engine start. Incident damage to engine. Cause undetermined.

H-34A ROTOR BLADES OVERLAPPED rotor blades of parked H-34 while aircraft was taxiing into parking position. Major damage to two main rotor blades of parked aircraft, and all main rotor blades and tail rotor blades of taxiing aircraft. Blowing snow considered a factor. No injuries.

H-19 ROTOR BLADE STRUCK parked H-23 rotor blade while aircraft was taxiing. Major damage to main rotor blades of H-19 and H-23. No injuries.

AO-1 EJECTION SEAT FIRED inadvertently during training flight. Ejection was successful and instructor pilot parachuted to ground. Pilot landed aircraft without further incident. Instructor pilot sustained serious back injuries. Cause of ejection was inadvertent firing of drogue gun.

YAC-1 SLID ON PERMAFROST during landing. Aircraft slid into large pile of rocks, shearing left main gear and dropping wing to ground. Major damage to left wing, left engine, and fuselage skin. No injuries. Weather considered a factor. Partial thaw had moistened surface, but left ground frozen 1/16" under surface.

H-13H TILTED TO REAR after aircraft had landed on slope. Tail rotor blades struck rock. Incident damage. No injuries.

L-19A STRUCK WIRE during approach to tactical strip. Incident damage to propeller. No injuries.

TWO L-19A's COLLIDED IN AIR. One aircraft crashed, killing the pilot. The other aircraft sustained minor damage and landed without further incident.

L-19A VEERED INTO EMBANKMENT during takeoff. Major damage to left wing, main landing gear, fuselage, and propeller. No injuries.

H-21C STRUCK ROCK with left main gear while instructor pilot was demonstrating and practicing pinnacle approaches. Major damage to supporting bracket for vee brace, main landing gear, firewall, and keel. No injuries.

? ? ?

WHAT AM I

? ? ?

ANNUAL AWARD Monthly Winner CONTEST

Captain Charles A. Stephenson, III, Arty

WHAT AM I?

When the commander, 175 miles from a POL supply point, needs gasoline to continue his attack, who can deliver 1,007 gallons (nineteen 53-gallon drums, more than enough to move his command 75 miles) in an hour plus negligible loading time? Me.

When a disaster occurs and a requirement exists to move 14 litter patients, 4 ambulatory patients, and 4 attendants to a hospital 650 miles away, who is sent? Me.

My range depends on the amount of fuel aboard (maximum of 828 gallons), which is usually governed by the weight of my cargo. With a full fuel load I can still carry 3,200 pounds for 950 nautical miles. While the cargo-fuel combinations are infinite, my gross weight is fixed at 28,500 pounds. I can accommodate 32 passengers or 24 fully equipped paratroopers.

I can land or take off, even at gross weight, in less than 750 feet. I can go up to 26,200 feet altitude using both Pratt & Whitney R-2000s or 11,600 feet on only one of them.

Although my pilot puts 155 knots TAS on his 175, I come down final with a full load (or empty) at 60 knots with full flaps. The more flaps my pilot has down, the less buffeting warning he gets of an approaching stall. So when he gets down to 7 knots above stalling speed, for his particular flap setting, I lightly shake both the pilot and copilot yokes to remind them. If they choose to ignore this signal and slow to 3 knots above stalling speed, I give them the high intensity stick shakers. And if that doesn't tell them we're about to fall out of the sky nothing will.

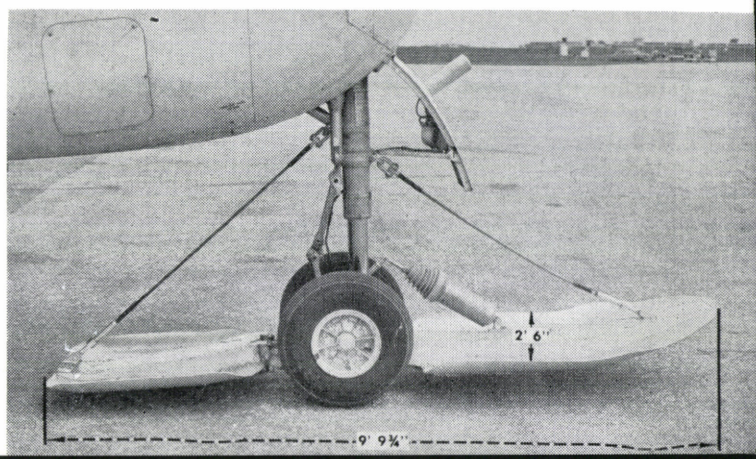
At METO power I climb at 95 knots, which gives me a vertical

Capt Stephenson is an AC-1 Caribou instructor pilot, Dept of Adv F/W Tng, USAAVNS. A Senior Army Aviator, he is fixed wing rated and instrument qualified with approximately 2,700 flight hours.

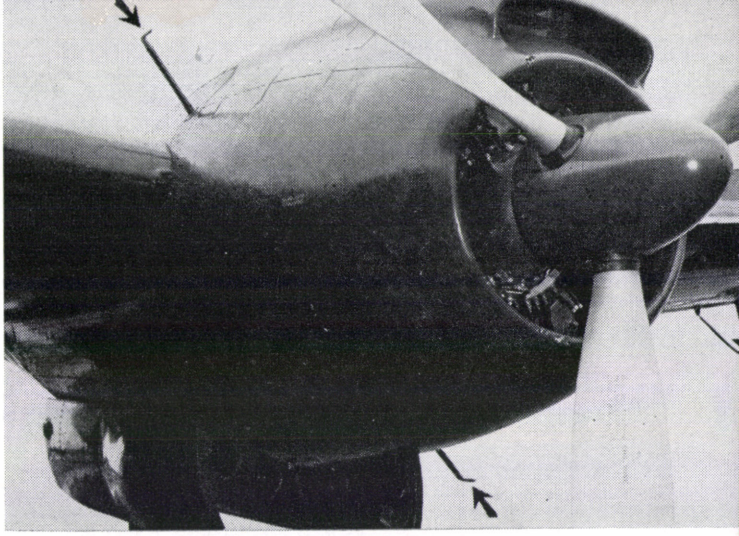
The U. S. Army Arctic Test Board, Fort Greeley, Alaska, is evaluating a wheel-ski configuration on the Caribou.

The aluminum alloy skis are installed on the main and nose landing gear. Hydraulically operated by the pilot from the cockpit, the main skis may be raised or lowered (relative to the main wheels) in flight or on the ground. The nosewheel ski is fixed.

Conversion from the normal wheel configu-



A thin plate of gold is sandwiched between the two sheets of plexiglass on my windshield for added safety.



Behind each of my propellers are two pitot tubes. These constantly measure the thrust being produced and operate the autofeather device.

speed of 1,600-2,000 fpm.

For all-weather flying I'm equipped with deicing boots on my wings and horizontal stabilizers that inflate and deflate automatically on a 1-minute or a 4-minute cycle, or manually by my copilot as often as needed. I have alcohol for my propeller anti-icing system and heating elements in all six pitot tubes and also in my cabin and cockpit heater intake ducts. Electric 4-speed windshield wipers come in handy on final approach in heavy rains.

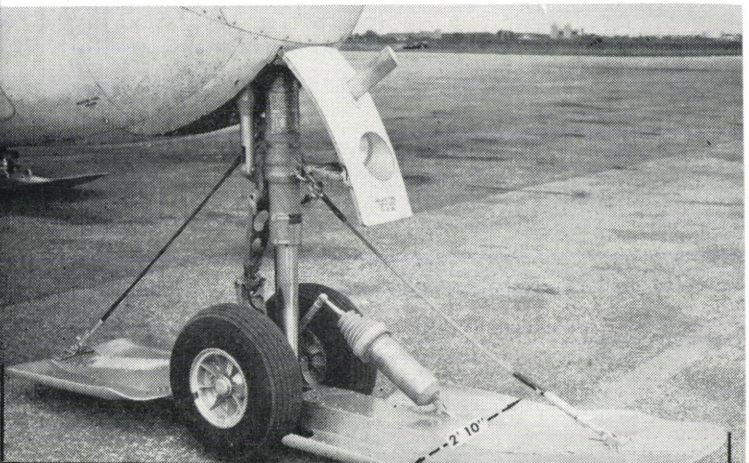
Sandwiched between the two sheets of plexiglass that make up my windshield is a thin plate of gold. This is wired to my AC circuit and keeps my windshield at a constant 100° F for anti-icing in the winter and bird shatter-proofing in the summer.

For navigation I have two VORs, one ADF, glide slope and marker beacon receivers, a 1750-channel UHF transceiver, a 5-channel emergency VHF transmitter, an ARC-44 FM transceiver, and a selective identifier frequency transponder.

To eliminate the chinese fire drill that occurs in the cockpit on takeoff or climbout when an engine is lost, I have an autofeather system. Two pitot tubes behind each propeller constantly measure the thrust being produced. If one engine varies from the other by 40 percent, and my pilot has the autofeather switch on, the low power engine will automatically feather itself. Should an engine feather, the automatic system is immediately deactivated to preclude autofeathering my remaining engine.

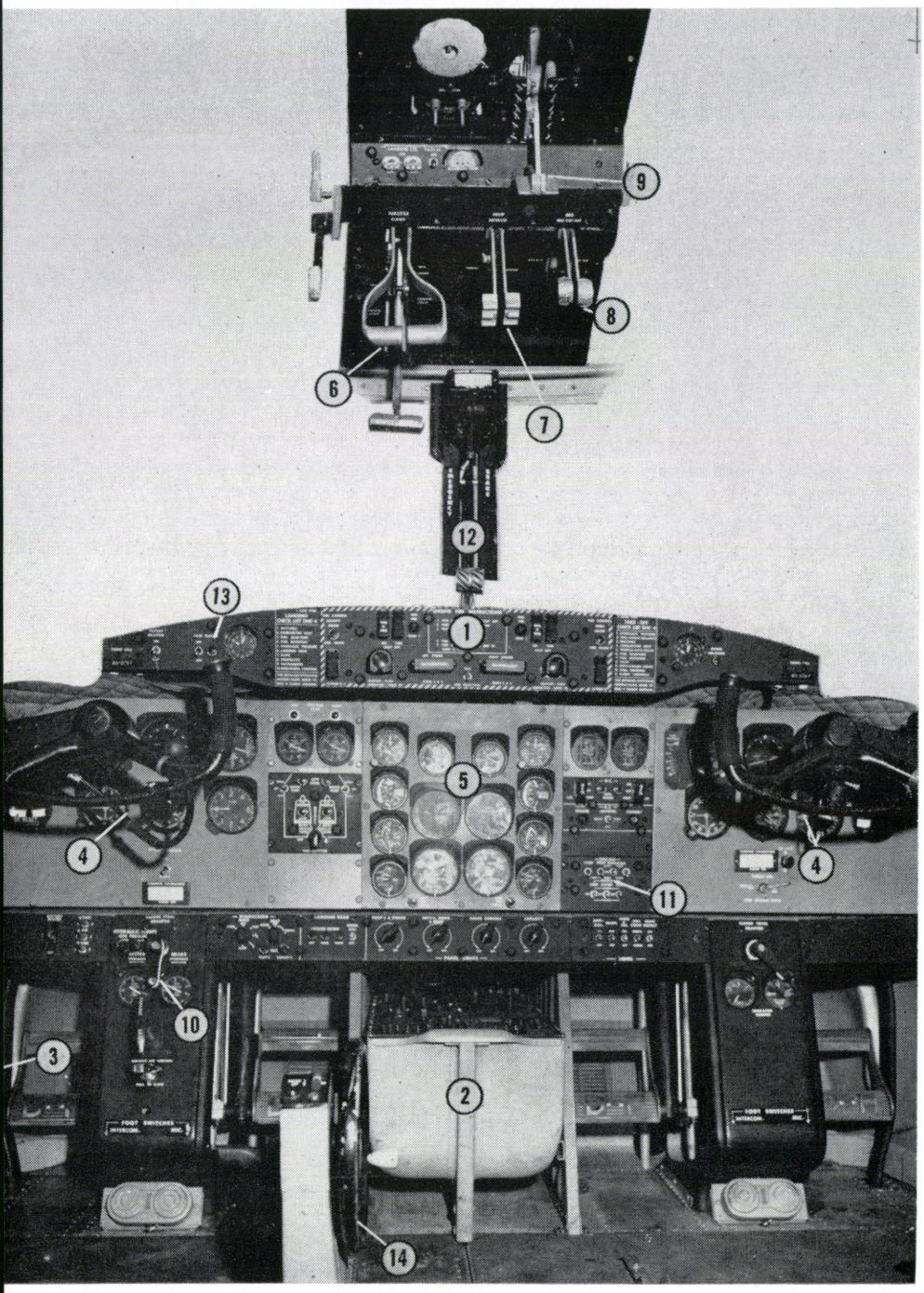
I have a fire detection warning light system that informs my pilot of a fire in any of three engine zones, or in the cabin or cockpit heaters. I have two Freon fire extinguishers, one for each engine, or both for one engine using a cross-feed arrangement. The cabin and cockpit heaters are protected by separate CO_2 extinguishers. All the extinguishers are controlled from the cockpit.

ration is easily accomplished in 2½ hours, and both the installation and removal of the skis may be carried out with the aircraft resting on its wheels. **No jacks or special equipment are required for the conversion.**



"And here is my cockpit"

1. *Emergency system panel.*
2. *Sliding radio cabinet.*
3. *Steering wheel (off picture, under pilots window).*
4. *Navigation instruments.*
5. *Engine instruments.*
6. *Throttles.*
7. *Props.*
8. *Mixtures.*
9. *Flap selector lever.*
10. *Rudder pedal adjustment handles.*
11. *Deicing switch panel.*
12. *Autofeather selector switch.*
14. *Elevator trim wheel.*



My main gear can withstand a drop of 960 fpm and uses four Otter tires, while my nose gear tires are those of the Beaver.

To facilitate taxiing I have nose wheel power steering. This system is controlled by the pilot, using a 10-inch steering wheel mounted on the wall on the pilot's side. For operations under certain conditions though, my power steering can be turned off and steering can be accomplished with the use of power or brakes.

Without unlocking my controls (which are usually kept locked during ground operations), my engines will not produce more than 1600 rpm. This prevents takeoffs with locked control surfaces.

In case of hydraulic difficulties my nose gear can be pumped down manually, as can my flaps, and my brake pressure brought up to normal. My pilot merely has to pull a D-ring, located behind him, to let my main gear fall into the down and locked position. I also have a high pressure air bottle that is used to blow down my nose gear if all else fails. I have another air bottle for a one landing emergency brake operation.

I have a built-in oxygen system for my crew plus portable oxygen equipment for my flight crewchief to use in case of a cabin fire.

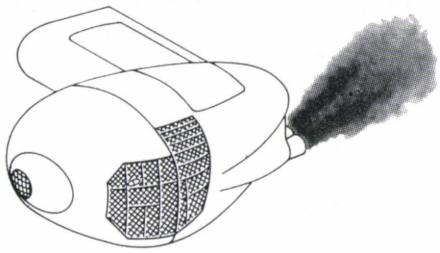
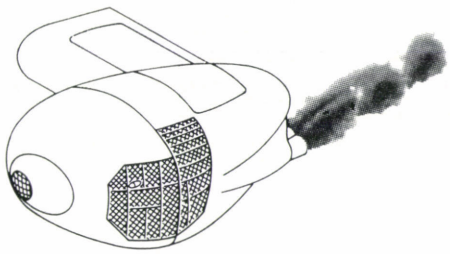
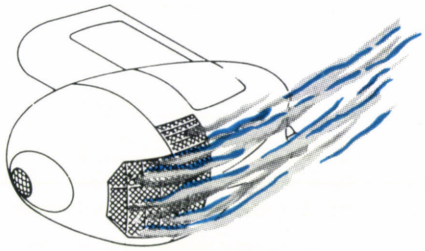
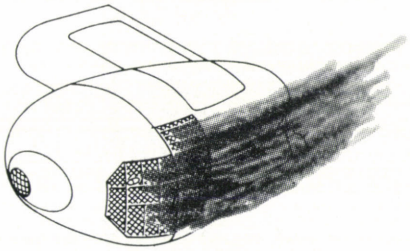
For pilot comfort my soft cushioned seats, with arm rests, can be adjusted up or down and fore or aft. Also my rudder pedals can be adjusted in or out to suit my pilot or copilot.

By now I'm sure you know that I'm a big, husky, dependable, durable AC-1A CARIBOU, the pride of the Army Aviation fleet.

Smoke Signals Are Not Obsolete

The conditions shown are common to all reciprocating engines. If you saw them would you know the cause and action to take? Test yourself. Cover the ACTION column before reading the cause.

ENGINE FLAME AND SMOKE IDENTIFICATION CHART

	CAUSE	ACTION
 BLACK SMOKE FROM EXHAUST EJECTOR	USUALLY OCCURS AT HIGH POWER SETTINGS AND INDICATES TOO RICH CARBURETOR MIXTURE. THERE WILL BE NO INSTRUMENT INDICATIONS EXCEPT THAT FUEL WILL BE CONSUMED AT A FASTER RATE THAN NORMAL.	MANUAL LEANING BEYOND NORMAL SHOULD NOT BE ATTEMPTED. REDUCE POWER.
 PUFFS OF BLACK SMOKE FROM EXHAUST EJECTOR	DETONATION, AND/OR BACKFIRE. INDICATED BY ROUGH RUNNING ENGINE, HIGH CYLINDER HEAD TEMPERATURE AND CARBURETOR AIR TEMPERATURE, AND LOSS OF POWER. IF THIS CONDITION CONTINUES, ENGINE FAILURE IS IMMINENT.	ENRICH MIXTURE, REDUCE POWER, MONITOR ENGINE INSTRUMENTS.
 THIN WISPS OF BLUE-GRAY SMOKE FROM ENGINE COOLING AIR OUTLETS	SLIGHT OIL LEAK. POSSIBILITY OF FIRE EXISTS, BUT NO ACTION NECESSARY UNLESS FIRE DEVELOPS.	WATCH CLOSELY AND LAND AS SOON AS POSSIBLE IF VOLUME OF SMOKE INDICATES THE NECESSITY.
 BLACK SMOKE FROM ENGINE COOLING AIR OUTLETS	OIL LEAK AND OIL FIRE, POSSIBLY VARIABLE OIL PRESSURE, HIGH CYLINDER HEAD TEMPERATURE, AND ILLUMINATION OF ENGINE FIRE WARNING LIGHT. AN UNCONTROLLED FIRE MAY DEVELOP.	PERFORM ENGINE FIRE IN FLIGHT PROCEDURE. ALERT CREW.

VFR on Top

IT WAS A typical California morning with lots of golden sunshine—gold because the sun had to shine through a 7,000-foot layer of haze and smog. An overcast was moving inland from the coast above the haze. The field was IFR due to the low visibility. I was in the operations office planning my flight to the east.

I selected a convenient departure route and requested 13,000 feet, the minimum en route altitude to get through the mountain pass. I completed all the ritual connected with the 175 and walked out to the ramp where the L-23 was parked.

I put my gear aboard, checked the book, and went through the preflight. The aircraft checked out O. K., so I climbed in, fired up, and tuned the ground control frequency for taxi instructions. Directed to runway 14, I waved the chocks away and taxied out to the runup area. I parked, completed my runup and told the tower I was ready for my clearance.

Ten minutes later, I was still waiting, although several aircraft that followed me had received their clearances and were gone. I called the tower to ask about the delay and was informed there was heavy traffic. The tower told me that aircraft reports gave the tops at 7,000-9,000 and asked if I would accept an IFR takeoff and VFR on top. I answered that I would, hoping this might expedite my takeoff.

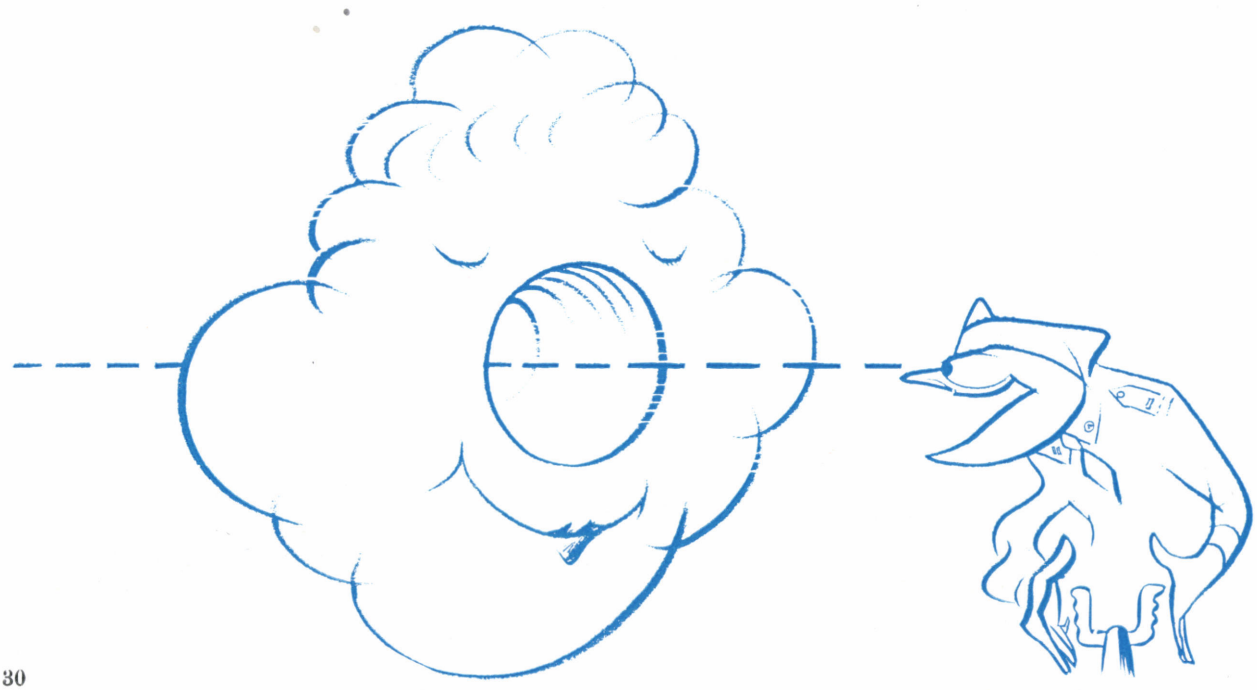
A few minutes later, the tower called and reported the field was VFR. The overcast was solid at that time and from where I sat it still looked IFR.

Ten minutes later, I asked about my clearance again. The tower reported there was still heavy traffic and I'd have a short delay. A few minutes after this, the operator called and asked if I would accept a VFR takeoff and climb to VFR on top.

I had been waiting at the end of the runway for 40 minutes and was getting extremely impatient. I looked up and found a small hole off to the right of my takeoff path. I answered that I'd accept the VFR climb if I could have radar surveillance. I figured this would keep me out of the mountains and help to avoid other traffic if I hit IFR conditions.

My clearance was granted. But as I started to taxi out, the tower told me to hold. An aircraft had just declared an emergency and was on ap-

Prepared by the U. S. Army Board for Aviation Accident Research.



proach. I scanned the instrument panel to make sure everything was still in the green after the long wait.

Ten minutes later, the aircraft with the emergency landed and stopped on the runway for a landing gear inspection. I waited for it to clear. When it did, the tower gave me another watered down clearance —VFR climb to VFR on top. I was cleared to line up for takeoff.

At this time I had been waiting for 1 hour and 15 minutes. I glanced up, looking for the hole. As you might guess, it was gone and the overcast was solid. Now what? Well, I'd have radar surveillance, and at this point the possibility of a violation being filed against me was nothing to what I'd been through. I taxied out and lined up.

The tower gave me clearance to roll and I opened the throttles. Just as I was breaking ground, the tower called again, to tell me that radar surveillance wouldn't be available. It was too late then. I was committed.

I began to rationalize — the weather was clear on the other side of the pass and the tops were at 7,000-9,000 — all I had to do was get on top and stay away from the mountains. Maybe it wasn't as thick as it looked. After all, I did have a standard departure procedure I could follow and surely no other ##**!! fool would be flying VFR in this mess.

When I reached 2,000 feet, everything was completely white. I could see the wingtips, but that was about the limit. I continued climbing, intercepted the airway and turned outbound to make sure the mountains were behind me. I didn't break out at 7,000 feet or 9,000 feet. And it was still solid at 10,000 feet.

Finally, at 11,000 feet I broke out, or thought I had. I looked up and could see a large round piece of beautiful blue sky. It was at the top of a large white cup and I was in the bottom. I began a climbing spiral inside the cup, looking alternately at the wall of clouds to judge my turn and at that circle of blue above me.

In a few seconds I felt a sickening shudder — the one that comes just before the bottom falls out in a stall. This was followed almost immediately by the stall itself, and down I went.

I forced myself to go back on instruments, recovered from the diving spiral — it was pure luck I wasn't in a spin — and began a series of standard rate climbing turns. After an eternity, I broke into the clear at 13,000 feet.

I checked my position, said a little prayer of thanks, and turned on course. The remainder of the flight was routine. And that's how all my flying is going to be from now on — routine. Whatever routine the weather calls for!

Safety Problems Encountered In the Operation of Military Light Aircraft And Helicopters in Europe

Colonel James F. Wells, Arty

ONE MAY WONDER why someone from the United States Army presumes to discuss safety problems of light aircraft operation in Europe. The reason is that we consider ourselves authorities in the matter — we have more accidents than any other operator in Europe.

This discussion must necessarily be confined to those areas wherein the Army operates, West Germany, Northern Italy, and Northern France. Five general problems have been identified and will be presented in the order of their seriousness.

WEATHER

Weather accidents are the most serious problem, both in fixed and rotary wing operations. Two-thirds of the fatali-

Col Wells, director, USABAAR, is a dual and multiengine rated Senior Army Aviator. This article was taken from a paper Colonel Wells delivered to the 14th Annual International Air Safety Seminar of the Flight Safety Foundation in Naples, Italy, 14 November 1961. He is leaving this assignment in June.

ties occur in weather accidents and usually involve inadvertent flight into actual instrument weather when either the pilot or the airplane (or both) is not qualified for instrument flight. The ability of the helicopter to operate in lower weather than the fixed wing makes it tempting to fly in that lower weather in order to maintain the utilization of the aircraft. We say we must stay 2,000 feet (horizontally) from a cloud; but with a 500-foot ragged ceiling, is the cloud 2,000 feet or 200? Then try it at night and it becomes more puzzling.

The answer of course is all-weather capability and such a program is underway, but there are many problems to solve.

Weather facilities and forecasting in Europe are excellent. It is the weather that is bad. Particularly troublesome are:

- The frequent temperature inversions in the Loire Valley.
- Prevailing low weather in the Rhine Valley, aggravated to some extent by industrial waste in the atmosphere.
- High precipitation caused by impingement of moist North Sea air masses on the northern slope of the Alps.

In general, weather problems in other areas are not so pronounced. In winter, carburetor (or inlet), wing and rotor icing cause some difficulty, but this causes inconvenience more than a serious safety problem.

WIRES

Wires are second only to weather as a cause of accidents involving fatalities. In the case of Army Aviation the mission frequently requires flying at treetop level with the accompanying risk of flying into wires. Helicopters are, for obvious reasons, more vulnerable to wire strikes than fixed wing aircraft.

Though a certain amount of risk must be accepted, our experience has been that wire strike accidents can be reduced. A two-thirds reduction was effected by:

- Assuming that a wire or cable in the flight path cannot be seen from the aircraft.
- Flying low only when the mission requires, and then over a route known to be free of wires.
- Eliminating and preventing erection of wires in vicinity of landing strips and helicopter pads.
- Providing a chart currently maintained in the operations office for briefing pilots on the location of high wires and aerial tramways.

SECURITY AND MILITARY REQUIREMENTS

Currently in Europe many restrictions are imposed, necessarily, on aerial operations in certain areas for security and military purposes. Prohibited areas are quite abundant. Identification zones cover a fairly wide area. This imposes a responsibility on every pilot to keep currently informed on the areas involved and on the proper procedures for operating in or near them. Following the wrong autobahn or tracking the wrong nondirectional beacon may cause (and has caused) undesirable notoriety for the pilot.

INCREASING DENSITY OF AERIAL OPERATIONS

The remarkable growth of aviation in the past few years is as noteworthy in Europe as it is elsewhere. The marked increase in general aviation activity, the increase in small aerodromes and the expanded activity at commercial air terminals have posed traffic control and collision avoidance problems which were not generally anticipated 10 years ago. Being sports enthusiasts, the Europeans have avidly developed glider, soaring, and parachute activities, posing a problem in foreign object damage to other aviation operations. A parachutist in the intake may stall the engine.

FORCED LANDINGS

In operating single-engine airplanes and helicopters one is always confronted with the possibility of engine failure and forced landings. In France and in Germany north of the Alps this is not a serious problem for the nature of the terrain and its culture afford favorable conditions for forced landings, provided appropriate consideration is given to selecting the flight path. Even in the Alps, on the northern slope, the valleys are generally flat with frequent pasture plots.

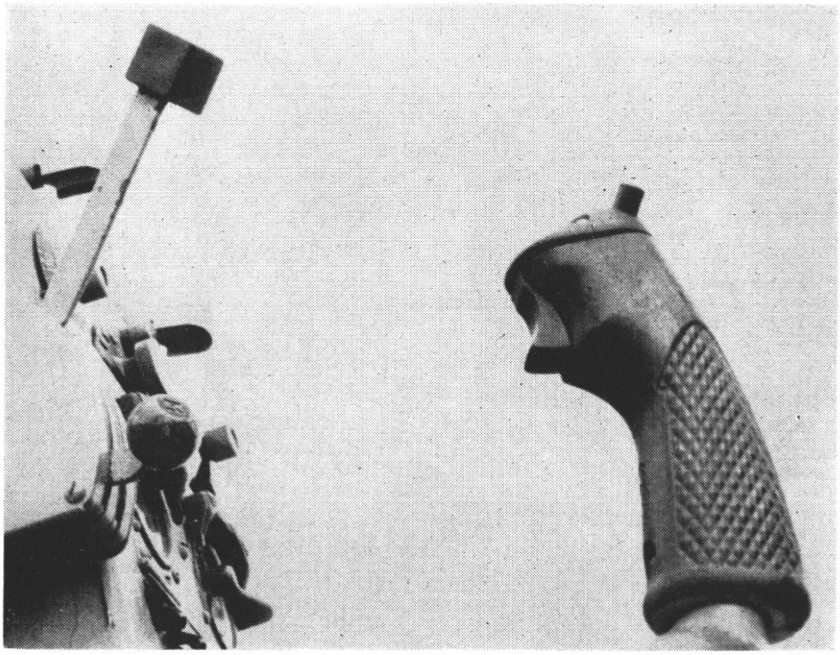
On the southern and eastern slopes of the Alps and in the Apennines the situation is not favorable, for the valleys and rived beds are rocky, and the cultivation principally terraced, making dead - stick landings tricky. Even in the relatively flat areas of northern Italy cultivation involves trellises and fences which, in the case of a forced landing, provoke concern on the part of the pilot.

EUROPEAN GENERAL AVIATION

These are the problems which have been encountered by the U. S. Army in operating light aircraft and helicopters in Europe. It is safe to predict that general aviation must face the same problems, in some cases with increasing aggravation. The importance of every pilot knowing weather and utilizing all weather facilities cannot be overemphasized. Awareness of low-level hazards and the importance of traffic control must be instilled in and practiced by every aviator (including glider pilots and parachutists). Efforts must be continued by manufacturers to improve the reliability of engines and systems so that forced landings become rare rather than routine.

General aviation can become safe if the people involved make an effort to be safe.

You Wrote These Safety Captions



When it ain't inspected it's neglected.

The hand that rocks the stick controls the destiny of men.

Safety is the by-product of perfect performance here.

No margin for error.

These controls for experts only.

An inert mass that does no harm until a "loose nut" holds the stick.

Safety starts with the "nut" that holds the cyclic.

* * *

If you have unusual photos or drawings adaptable to this type of safety message, please send them to the editor.

Keep Those Straps Tight!

William H. Smith

The captain had a little chute,
Its silk was white as snow.
And everywhere the captain flew,
The chute was sure to go.
He had to make a jump one day,
His straps were not too tight.
He went floating toward the left,
His chute went to the right.

Both Mary and her Little Lamb would probably flip at the sound of such a jingle, but it illustrates a point.

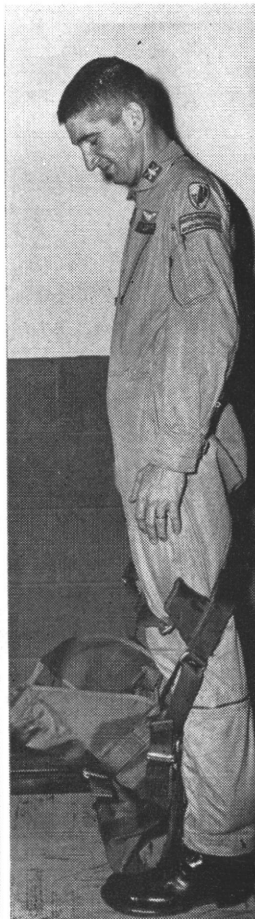
If you don't keep those straps tight, you may end up like the captain in the rhyme. You'll go one way, your chute another.

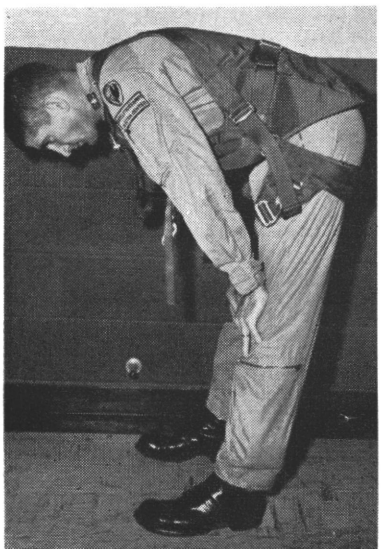
In these pictures you can see what happens when your chute is not properly adjusted. Take the first picture, for instance. Everything looks good and tight. But in the second you can see that things have been loosened just a little. And when you eject or jump, look what happens. Over and over you go. If your chute is tight, it stays with you. But when it's loose, look out below.

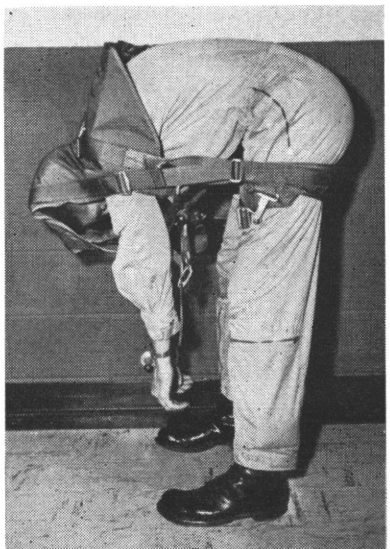
In the second set of pictures on next page, the straps have been loosened even further. Sure, you'll be comfortable, but look what happens. A good yank when it first opens and you have a nice pretty chute in your hands, if you can grab it in time.

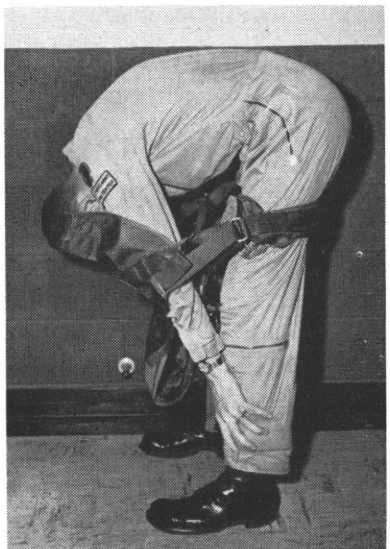
And don't tell yourself that you are too small or two thin to get it tight. The harness on the back and chest type parachutes have seven points of adjustment that allow them to fit men from 5′2″ and 110 lbs to men 6′4″ weighing 240 lbs.

To put it on properly, grasp the main left web near the canopy release assemblies and slip into it just like putting on a coat. Next buckle the chest strap and then each leg strap. Now that you have it on, tighten the straps to a proper fit.









The main left web adjusters govern the vertical distance between the saddle and the shoulders. If the saddle is riding high, loosen your web adjusters. If it's too low, take up on the webbing. The saddle should fit well down on the buttocks when you are in a slightly bent position and should be snug.

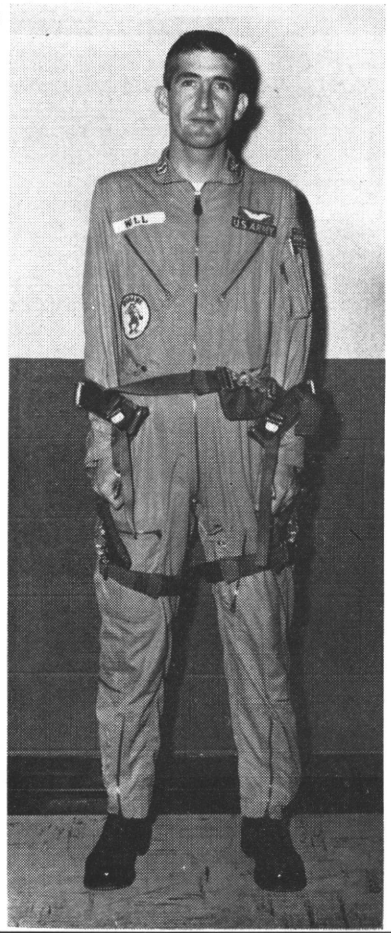
The diagonal back strap adjusters draw the main left webs back toward the shoulders and toward each other. Heavy men have to loosen the adjustments to allow the lift webs to be farther apart. Slender men need to take up the adjustments to draw them closer to the body. These adjustments are found under the sponge rubber back pad on the parachute harness.

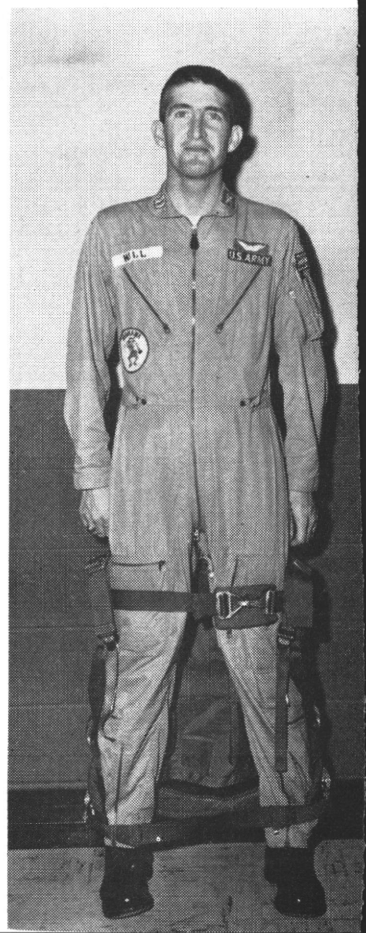
The two leg strap adjusters tighten or loosen the leg straps. These straps are brought from the bottom of the saddle, between the legs, and attach to the side of the main web. The webbing is then adjusted so it is snug around the upper part of the thigh.

The chest strap adjuster tightens or loosens the chest strap. It should be adjusted snugly and should not be loose enough to allow more than one finger between the strap and your body. The height of the chest strap should be about 12″ below the chin.

Now, you know how it's done. There should be no excuse, no problem, no accident. Keep all the straps tight and you will have a nice safe ride down.

Remember, if your chute is uncomfortable when you are standing, it's correctly adjusted.





Salesmen Wanted:

SINCE 1950 the number of qualified aviators in the Army Aviation program has increased from less than 1,000 to more than 6,000. By 1970 this figure will expand to around 12,000. Student input must continually increase to meet our steadily rising demand for more highly trained, professional Army Aviators.

What can you do as an aviator to increase student input? Think back . . . how did **You** get into the program? 10 to 1 an Army Aviator interested you with the possibilities of volunteering for a career in Army Aviation. Furthermore, he probably helped you put in your application.

Our need for a greater student input is constantly increasing. Your effort is now needed to explain our program to fellow officers whom you consider good prospects.

Not a salesman? You're better than you think. The best sell in advertising is word-of-mouth. People who like something tell others. The best example you can use is yourself. Your own satisfaction in your career in Army Aviation, your own love of flying are evident to the prospect.

Need the latest information for your sales pitch? Outlined below are the basic requirements for applying and a resumé of what the student can expect at Camp Wolters, Texas or Fort Rucker, Alabama.

• The basic information for making an application is given in AR 611-110. Paragraph 12 specifies the basic letter form to be used and the papers which must accompany the application. Essentially they are: Standard Forms 88, 89 (Medical) and allied papers, aviation flight certificates (civilian), military flight rating certificates, request for extended active duty (Reserve officers) and a request for branch transfer (for officers in a branch not

authorized Army Aviators). The letter of application and all allied papers are submitted through normal channels to The Adjutant General, Department of the Army, Washington 25, D. C.

- The flight physical examination can be performed at almost any installation. Some of the medical restrictions and requirements of AR 611-110 can be waived. Give prospects the benefit of the doubt. Let Department of the Army say NO, not you.
- Volunteers must be 30 years old or younger; however, waivers may be granted for special technical qualification, prior flying experience, or degrees in electronics or aeronautical engineering.
- Physical standards are found in AR 40-501.
- An aptitude test will be given at a later date.
- Reserve officers must have completed their basic officer course; however this, too, may be waived based on prior service.
- Regular Army officers commissioned in Armor, Artillery, Engineers, or Signal Corps must have completed their basic courses, airborne or ranger training and have one year of troop duty.

Those accepted for training will be sent to either Fort Rucker, Alabama for fixed wing training or to Camp Wolters, Texas for rotary wing training.

Fixed wing training at Fort Rucker is broken down into three phases:

Phase A, 18 weeks of primary flight, is conducted by a contract firm and consists of 120 hours of basic flight training in the L-19. Ground school courses in aerodynamics, navigation and maintenance are also given in Phase A.

Phase B is the tactical application of Army Aviation and consists of road and strip work, aerial resupply, aerial fire adjustment, etc.

Phase C consists of 50 hours of instrument training in the L-20.

Rotary Wing entrants spend 16 weeks at Camp Wolters, accumulating 111 flying hours in the H-23. The related ground school program is similar to the fixed wing program. After completing Phase I at Wolters, students come to Fort Rucker for 14 weeks of Phase II training in cargo and utility helicopters such as the H-34 and HU-1. In the future students may receive a third phase, helicopter instrument flight training.

Successful graduates of the fixed and rotary wing courses, having met the big challenge offered, then receive the coveted silver wings of an Army Aviator.

Remember—as a member of our growing Army Aviation program, **you** can have a decided influence on the prospective Army Aviator. As a living example you have more influence than a thousand words. Interest your friends and contemporaries — let's sell the program!

As a one-time effort by the U. S. Army Aviation School, two recruiting teams have been formed and are presently touring CONUS installations to assist you in your recruiting efforts.

Each team consists of two aviators and a projectionist. Presentations are 1 hour long, including a 15-minute question and answer session. Presentations will be given as many times as necessary to adequately cover your installation. At service schools the team will give presentations to the basic officer courses. OCS classes will also be given the orientation.

The presentation is primarily designed for eligible lieutenants and for enlisted men who desire to apply for the warrant officers flight training course.

Formation of local recruiting teams is encouraged. Material for such teams can be obtained by direct contact with: Secretary, U. S. Army Aviation School, Fort Rucker, Alabama.

More About The Chinook

A $25,645,000 contract for HC-1B Chinook Army transport helicopters has been awarded to the Vertol Division, Boeing Airplane Company.

The Chinook is the planned replacement aircraft for the H-37, H-21 and H-34 helicopters. It has a lifting capability of three tons and will transport a crew of three plus 32 troops or 24 fully equipped troops, or 24 litters. Weighing 26,600 pounds, the HC-1B is equipped with two T-55-L-5 gas-turbine engines rated at 2,200 shaft horsepower each. It has a cruising speed of 130 knots and a range of 100 nautical miles. In addition to troops the Chinook will carry a 7 ton external sling load about 7 miles.

Troop issue of production machine is scheduled for early 1963.

THOSE JUGS

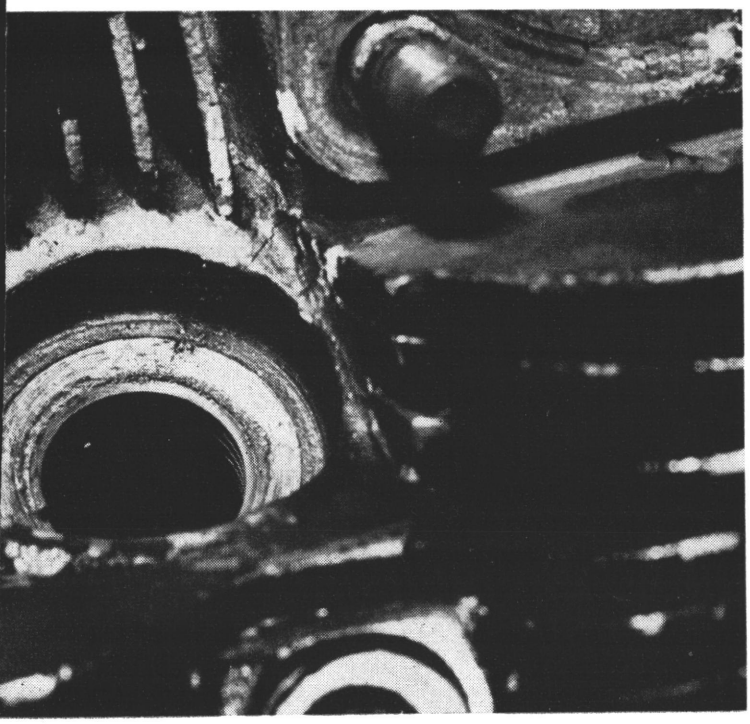
Major Joseph A. Gappa, Jr., Inf

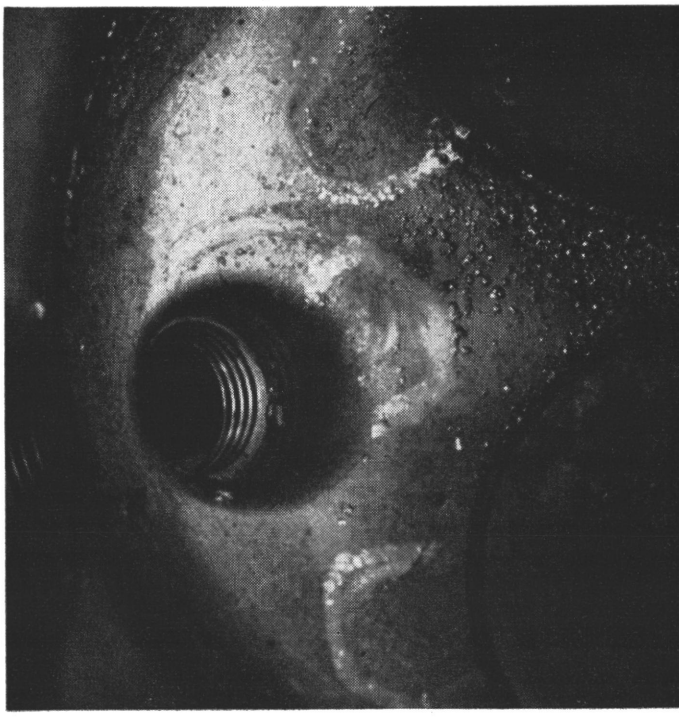
TM 1-2R-0480-1001, 22 Sept 1961, states, in part, that each 25 hours a visual inspection will be made of the cylinder of the L-23 to detect cracks. A note in the TM further advises that cylinders should be removed and checked for cracks by the dye penetrant or fluorescent penetrant inspection method where doubt exists in determining the presence of cracks.

Maj Gappa is Chief, Engineering Section, Analysis and Research Division, USABAAR. A graduate of the U. S. Military Academy, he received his Master's degree in aeronautical engineering from Georgia Tech.

Left: Outside view. Microscopic cracks (visible to the naked eye) developing in the area of the spark plug hole-valve.

Right: Inside view. First stages of fatigue (microscopic cracks) cannot be detected by the unaided eye. The cracks could have been detected by use of dye or fluorescent penetrant before becoming discernible with the unaided eye.

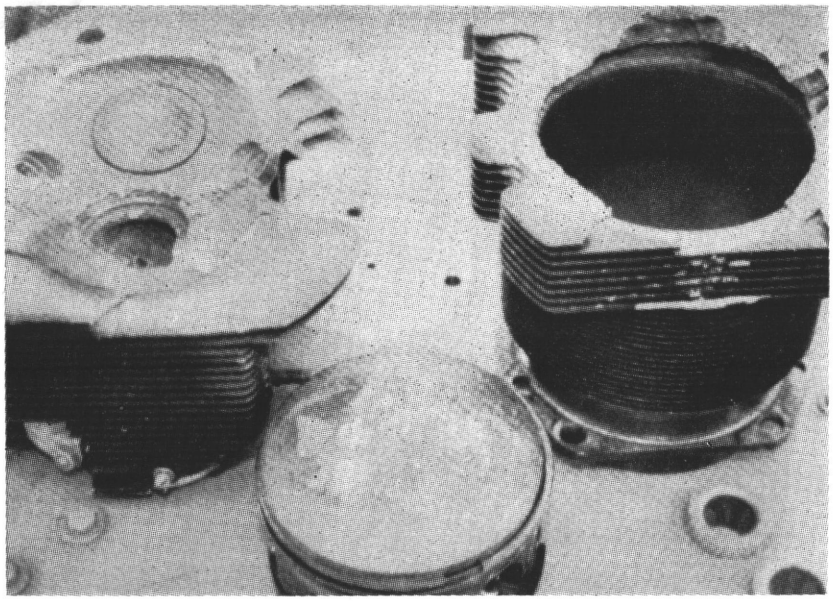




Why the frequency of inspections and what deficiencies is an inspection expected to detect? A brief outline of overhaul procedures for the engine may aid in a better understanding. A cylinder and cylinder head do not have a time life. They are operated until failure occurs or the beginnings of deficiencies are discovered on inspection or overhaul. This means that since TBO (time before overhaul) is 1200 hours, a thorough examination is made once per 1200 operating hours. A zyglo inspection, properly performed, will show existing microscopic cracks, which are characteristic of metal fatigue. When such deficiencies are discovered, the cylinder or cylinder head is replaced with a new item.

At one time, a zyglo inspection was not performed at overhaul; hence, it is conceivable that cylinders in the first stages of fatigue—microscopic cracks, undetectable to the eye—were put back in the system following engine remanufacture or overhaul. It is further conceivable that even with excellent inspection procedures at overhaul, cylinders have survived cycle after overhaul cycle and have accumulated high numbers of hours of operation. From the foregoing, the need for frequent, properly performed inspections between overhauls should be apparent. The deficiencies the inspections are designed to detect are, primarily, the early stages of metal fatigue, microscopic cracks.

Are the inspections effective in detecting cracks in cylinders? Unfortunately, an honest answer would too often be "NO" — and the reason cannot be passed off solely as "sloppy maintenance procedures." The TM is not explicit in the statement "if doubt exists," and the implications (and consequences) of using dye penetrant may be there to assist one in seeing on inspection what one would like to see, no cracks. The consequences and implications, above, refer to thoughts of removing cylinders to perform necessary inspections.



Results of faulty inspection procedures, or results of exceeding operating limitations. Note progression of failure from spark plug hole to valve port.

Is there a solution?

The Engineering Directorate, Transportation Materiel Command, St Louis, Mo., has the problem under advisement.

Page Aircraft Maintenance Inc., Ft Rucker, has submitted a UR on TM 1-2R-0480-1001 stating that a dye penetrant inspection should be mandatory on each 25-hour inspection and, further, that dye penetrant inspections can be performed without removing cylinders. The inspection can be performed by removing the spark plugs and checking, with dye penetrant, the critical areas from the plug holes to the exhaust stack. (The TM gives this as one of the critical areas. The other is between fins, which the TM specifies. The first listed area has produced nearly all of the known cracks in cylinders on aircraft operated at Ft Rucker and is the area of the cylinder "beefed-up" on the improved cylinder found on L-23F aircraft.) Where necessary, paint on the engine must first be removed by a suitable means to bare the metal area to be inspected.

It would seem reasonable to comply with TM 1-2R-0480-1001, with suggestions of Page Aircraft Maintenance, Inc., incorporated into the inspection, until such time as TMC reviews and publishes revisions to the present TM. No one need have outlined for them the hazards of flying with defective cylinders; therefore, the prudent course of action is to do all possible to detect incipient failure before such failure occurs. Parenthetically, it should be added that generally similar problems exist with U-1A cylinders and TB AVN 23-5-1 (UR Digest, Project No. 23.1 and TM 1-U-1A-6). This will be covered in greater detail at a later date.

35mm Transparencies

New Media for Learning for Army Aviation Subject Matter

Major Arvil B. Quinn, Armor

THERE IS NOTHING really new about 35mm slides, except the increased use of this effective teaching media in Army Aviation subject matter. In the past few months there has been a rapid increase in 35mm slide production for Army Aviation instruction.

Production techniques and procedures have been developed. Commercial projectors are being evaluated for more effective means of presentation. A portable rear view projection unit has been designed and is now in production. Future plans include expanding this media with tape recorded sound electronically timed to slide presentation.

For several years, Army Aviation subject matter has been supported largely by overhead (Vu-graph) graphic aids made from technical orders, training manuals, and other publications. A few photographic transparencies have been used but only in black and white, since color film of this size is comparatively expensive.

The extensive use of the overhead projection method has been largely justified by two principal advantages. First, the relatively convenient and inexpensive methods of producing edited and colored graphics from existing artwork. Second, the desirable capability of projector operation and presentation control by the instructor himself, and in a lighted classroom.

The Training Aids Division, USAAVNS, seeks to combine these advantages with the advantages of convenient slide handling and economy of color photography of the 35mm slide media to provide Army Aviation instruction a more effective means of graphic support.

In this 35mm program are three principal sources of material for the graphic slides. At the present time, the most available source is the large number of colored charts and overhead transparencies now being used in instruction. These can be easily copied onto 35mm color film with very little loss of fidelity. New artwork is done in the form of overhead transparencies or opaque artwork or a combination of these in the proper format for 35mm copying.

Perhaps the type graphic most effective and economical for 35mm slide media is photography of actual aviation equipment and situations. This type graphic generally requires only the work of a well-trained photographer to produce the most realistic type of graphic. Because of these convenient sources and the ease and economy of 35mm duplication from a production standpoint, the 35mm program will make much needed graphic aids available in increasing numbers.

The major complaint of instructors on the use of the 35mm slide media has been the necessity of a darkened room and an assistant instructor. The lack of full instructor control of the presentation when using the assistant is a serious handicap to the more effective instructor who varies his presentation to meet specific needs of his students.

Two plans of action are being taken to overcome these disadvantages. Most unique is the

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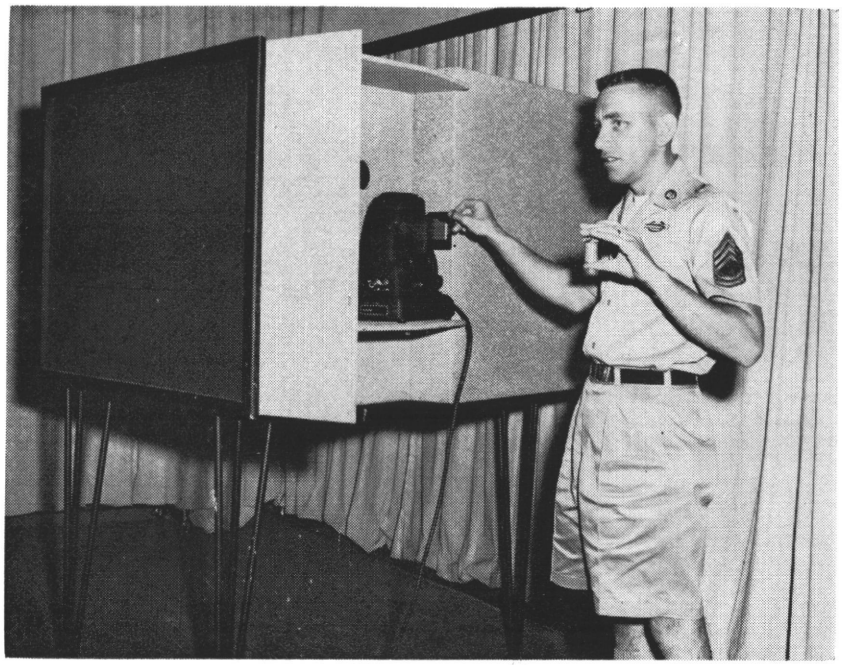
Maj Quinn is Chief, Training Aids Division, DOI, U. S. Army Aviation School. He is a dual rated and instrument qualified Senior Army Aviator with 3,000 flight hours.



The portable rear projection unit allows instructor to show his own 35mm slides at the front of the classroom

development of an inexpensive but versatile rear projection unit which uses the standard signal 35mm projector AP-9. This unit is portable, which facilitates its operation by the instructor as he gives both graphic and verbal presentation uninterrupted. With a 500-watt projector, an adequate image is available on the TV-like screen, which is also within easy reach of the instructor's pointer. This unit, now under evaluation at USAAVNS, has already received favorable comments from the instructional staff.

Planned for use independently or with the rear projection unit are commercial remotely controlled 35mm projectors. Several models being considered have such features as improved bulb and optical systems, remote, and/or automatic controls, magazine slide handling and quieter operation. Combined with the rear projection unit, these projectors will provide a graphic presentation system which will be nearly ideal.

At best, however, the portable rear projection units must be regarded as inexpensive, interim measures to allow use of 35mm color slides in existing classrooms. The ultimate step is the provision of **built-in** rear projection capability in each classroom. This feature is incorporated into the design of the new USAAVNS academic classroom buildings scheduled for construction during FY 62 and FY 63.

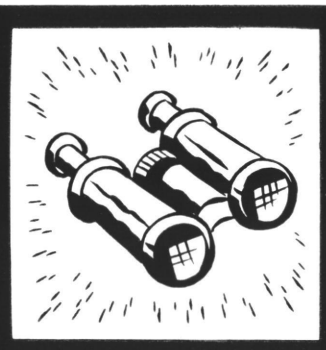
In keeping with the latest developments in visual presentation, the screen is actually three screens in one. This will permit the instructor to project a large image of a system, for example, and simultaneously present in detail two smaller images of its components. Projectors will be of the latest random-access type, in which any slide in the magazine can be remotely selected and projected.

The Training Aids Division believes that still a further development should be experimented with in the use of the 35mm slide medium. This addition is tape recorded verbal instruction, electronically synchronized with the supporting slides, to form a completely programmed or recorded point of instruction. Such recorded instruction would have the advantage of providing well-planned and effective instruction in a standardized manner to class after class.

Recordings should cover only short points of instruction. An hour lesson should contain three, four or more recordings, tied together with discussion, questions, and supplementary materials by an instructor. The use of such recorded instructional points will allow the instructor, sometimes more skilled in his subject field than in presenting instruction, to concentrate on supplementing the recorded instruction, answering student questions and controlling student discussions.

As graphic aids in the form of 35mm color transparencies are procured by the Training Aids Division, they are listed and pictured in the Army Aviation graphic aid catalog which is being distributed as part of the USAAVNS instructional materials catalog.

With the growth of the 35mm graphic aids program another step toward more effective support is being taken for Army Aviation instruction, thereby enhancing the Army's capability in peace or conflict through better trained and educated Army Aviation personnel.



CRASH SENSE

PREPARED BY THE UNITED STATES ARMY BOARD FOR AVIATION ACCIDENT RESEARCH

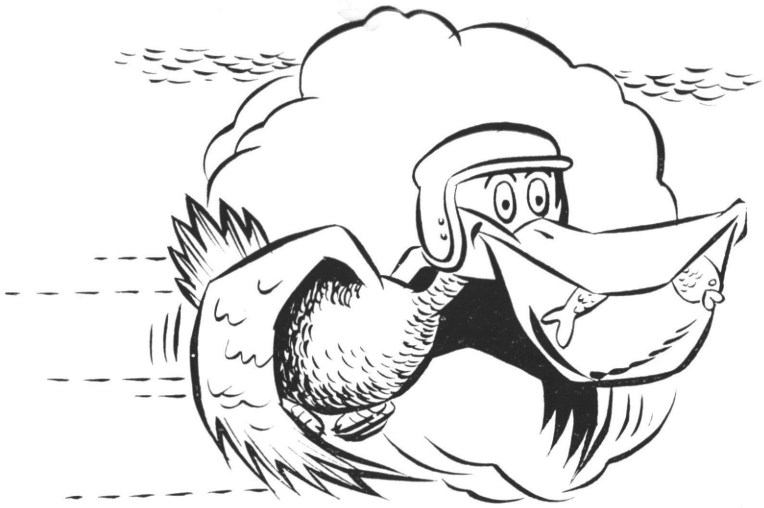
For the Birds

FEW ARMY Aviators are bird watchers — the feathered variety, that is. For one reason or another, they just don't seem to have time for it. And that's a shame, because bird watching is not only a pastime, it **can** be an education.

In the flying game for centuries before the Wright brothers, birds are much smarter than most people think. If you doubt this, consider Herring gulls — birds that lift sea urchins and clams in their bills and let them fall on rocks to break their shells. Or watch a set of parents teach their youngsters to fly.

One of the first things initiates of the Audubon Society learn is that a Richmondena cardinalis spotted in Quebec will take off, fly, and land exactly like his cousin in Florida. In short, birds are the **most highly standardized fliers known.** And the best.

A funny, funny bird is the pelican;
His bill can hold more than his belly can!



Despite this rhyme, no one on record has ever seen a pelican founder because it tried to fly with too great a load. Aviators try.

A few months back, an H-37 pilot tried to fly out of a confined area with 22 passengers aboard. It was 0930 on a warm and humid morning. Temperature was 87° F; dewpoint, 72; and the wind was out of the northeast at 2 knots. Density altitude was 1,500 feet.

The pilot didn't think there was any sweat — other H-37s with similar loads had made it out **earlier.** He figured his allowable gross weight at 31,000 pounds and estimated he'd be taking off with 30,957 pounds. He was so confident that he didn't bother to make a maximum power check or use all the open space in the clearing for his takeoff path.

Lumbering into the air, the Mojave struggled to approximately 50 feet. Then trouble started: rpm began to drop. The pilot reduced pitch and wound on full throttle, while the copilot shoved the overhead throttles wide open. But the rpm failed to respond and the aircraft sank into trees.

Hindsight checking of weight limitations charts in the back of the -1 showed the cause for this one. According to figure A-11, page A-15, maximum gross weight for vertical takeoff should have been 28,000 pounds. And the next page shows that maximum gross weight for hovering out of ground effect should have been 28,500 pounds.

A little bird hopped up
on my window sill.
He said, "If you try it,
I will."

Ten minutes after the first H-37 crashed, another with 23 passengers aboard tried to take off from the same place. The second pilot also figured allowable gross weight at 31,000 pounds and estimated he'd get off with 31,000 pounds. He, too, was confident he could make it—so confident he failed to make a maximum power check or use all the available room for his takeoff path.

What happened was an exact repeat of the first accident. Thanks to lady luck, everyone

Heavy

Heavier

escaped injury. But it cost $500,000 to repair the two H-37s.

Out of the nest you go this date.
It's time you learned to autorotate!

An instructor pilot was giving transition training in an HU-1A. The flight consisted of ten power approaches of various types and five straight-in touchdown autorotations.

After completing the power approaches, the pilot began his five autorotations. His first touchdown was made tail low and the Iroquois porpoised over the ground and bounced to a stop. Though the instructor pilot kept his hands and feet close to the controls, he did not take over until it was apparent the aircraft was going to touch tail low. The second autorotation was satisfactory; the third was normal except for a slight yaw prior to touchdown; and the fourth was good.

The fifth autorotation was started at 500 feet, with an indicated airspeed of 70 knots. Entry and initial descent were normal. He slowed the airspeed to 50 knots and made a moderate flare at approximately 100 feet. The instructor pilot told him to increase his flare attitude. This was done and the Iroquois continued to descend. At an estimated 12 feet, while still in a flare, the pilot began applying collective pitch to slow the rate of descent. Realizing the aircraft was going to make a tail-low hard landing, the instructor pilot grabbed the controls and applied more pitch. His action was too late.

The helicopter struck the ground, bounced back into the air, traveled 53 feet, then hit again in near level attitude. It began rolling to the left and yawed 50° to the right. When it settled back, both main rotor blades flexed down and struck the tail boom severing the tail rotor drive shaft and pitch control cables. The skids spread and the underside of the helicopter was damaged. There was major damage to both main rotor blades. Both occupants escaped injury, but damages totaled more than $31,000.

Two months later, this same instructor pilot, with a different pilot aboard, was demonstrating an autorotation with high gross weight (7,091 pounds at takeoff). He started the autorotation at 500 feet and maintained a 60-knot attitude. Descent was normal, at approximately 1,700 fpm. He made a moderate flare at about 90 feet and the airspeed dropped. Collective pitch was applied at approximately 12 feet, but it had little effect on the rate of descent. The IP made an attempt to level the helicopter.

The Iroquois struck the ground in a tail-low attitude, with the tail skid hitting first. It continued forward, bounced and rocked. Both main rotor blades flexed into and severed the tail boom as the 'copter slid to a stop.

Again there were no injuries, except for wounded pride and another $31,000 damage tab.

Investigation brought out the fact that the helicopter was loaded with the center of gravity exceeding forward limits by 1.9 inches at takeoff and 2.1 inches at the time of the accident. It also brought out the fact that this IP had never before attempted an autorotation

Tail low

Tail lower

with such a high gross weight.

One little bluebird, perched all alone.

During the summer a few years back, a Bird Dog pilot was practicing landings at the end of a photographic mission. He made two power-off approaches and landings, then took off to shoot a power approach. Here is his own description of what happened:

"I entered the power approach at the 180° point by applying carburetor heat and closing the throttle. As the airspeed dissipated to approximately 80 IAS, I applied 30° flaps, slowing the airspeed to approximately 65 IAS. Making a shallow turn on base, I put on the auxiliary fuel pump. Turning final, I maintained approximately 65 IAS and noted the descent was about 400 fpm. Descent was normal until 10-20 feet above the runway, when the left wing dropped, slipping the aircraft to the left side of the runway. It is believed this was due to wind conditions and heat rising from the runway. I initiated a go-around, applying throttle, right rudder, and stick. I was unable to lift the left wing entirely. We hit on the left side, buckling the gear, and slid about 75 feet."

Investigation brought to light the fact that this pilot had only flown 25 hours in the L-19 during the previous 6 months. After recommending an adequate program of instruction that would cause pilots to gain and retain proficiency in tactical flying, the investigation board made this comment:

"Board feels that accidents of this nature are inherent to this type of flying, and that no further action be taken."

Along came another, and then there were two.

Later the same month, this aviator was receiving dual training in slope operations, flying an H-23. On his first attempt, the helicopter rose to a level skid attitude. At this point, a gust of wind seemed to shove the Sioux over, with the right skid acting as a pivot. He applied corrective action, but the aircraft continued to pivot and rolled to its right side. It caught fire and burned. The aviator and his IP escaped without injury.

And another made three.

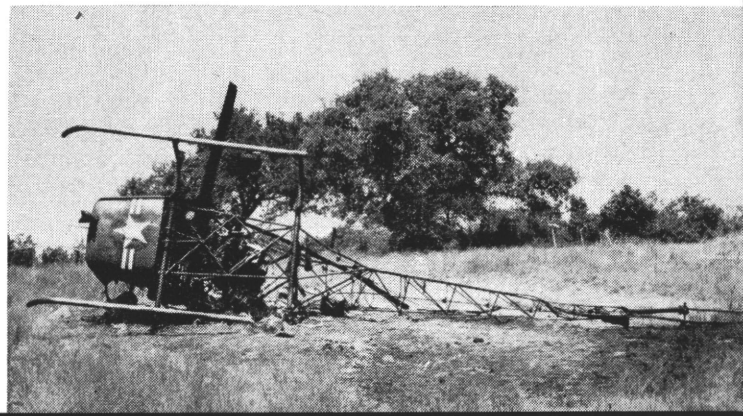
During the past summer, this aviator was flying an H-13, this time on a supply mission to a mountain pad. Taking off with 125 pounds of cargo in two litters, full tanks, and a 150-pound passenger, he flew to the destination. Here is his story:

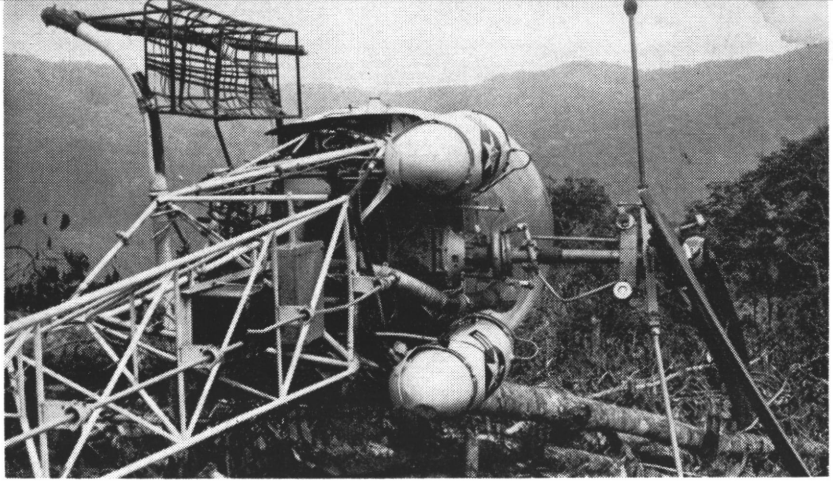
"I ran the recon and computed density altitude at 5,000 feet." (Temperature was 24° C; pressure altitude, 3,000 feet.)

"I then set up a pattern and made the approach to the pad, touching down on the near half of the logs. The pad was constructed of logs laid 90° to the approach lane, approximately

Left: One.

Below: Two.





Three

16′ x 10′. There was an open area approximately 3 feet wide running the length of the pad, down the center. This open area was perpendicular to the approach path.

"I checked the position of the helicopter with cyclic and pitch. The chopper had a tendency to tip forward into the open area so I decided to pick it up and re-position it. I only touched down for 3-5 seconds. As I picked up to a hover, the chopper moved forward a couple of feet, so I proceeded to back up to the point. I noticed that I was losing rpm and was only about 2 feet above the pad. As I backed up, the chopper began to turn to the right. My rpm was 2750. I applied full left pedal to stop the turn, but the chopper continued to turn right. At this time I was moving over the open area of the pad. I could not sit down without the possibility of crashing and endangering the lives of the four men standing around the log pad. As I was spinning to the right, I elected to make a right pedal turn out and down the slope to regain translational lift for takeoff. I was getting no ground effect while at a hover due to the height of the pad above ground, and fallen trees and brush in the vicinity.

"I applied right pedal and moved off the pad to the right, attempting to 'milk' on more rpm. The chopper continued turning right with the right side low. The blades struck first, and the chopper came to rest on the right side. I cut all switches and the passenger and I exited the chopper. There were no injuries or fire."

A reviewing official's statement contained these words:

"Prior to his TDY assignment to _____, a thorough review was made of _____'s qualification for TDY field flying. This is a standard procedure in this unit for all aviator assignments. His above average helicopter hour experience, his **accident-free record,** his aviation safety training and _____'s own admission that he felt confident to perform the mission appeared to be more than sufficient qualification to justify the assignment."

It is apparent the official didn't know about this aviator's past accident record. If he had, the assignment may have gone to someone else — or the aviator given some large doses of **standardized** mountain flying training before he was turned loose for TDY field duty.

Standardization is for the birds for sure. It's also for those featherless fliers who want a long, accident-free career. The proof of this was recently demonstrated at the Army Primary Fixed Wing Pilot Training School. Leo Carver, vice president, Hawthorne School of Aeronautics, announced in a recent news release:

"The school has just completed its second entire class of students without so much as scratching the paint on an aircraft or injury to personnel. Naturally, we are very proud of this accomplishment. According to available records, this is the first time such a fine record has been made in Army primary flight training."

Sam Phillips, Hawthorne flying safety director, placed the credit for this record with "**standardized** instructors who give **standardized** training."

Those responsible are:

Kneeling, left to right: E. J. Hubenthal, V. Turzanski, R. M. Schenebeck, J. R. Stansel, H. E. Moore, T. W. Luck. Standing, left to right: W. J. Dunnigan, J. E. Bouldin, A. B. Chapman, S. H. Klinghagen, C. E. Stockdale, F. W. Brown, F. C. Walworth, J. M. Wolfe, C. E. Havill, J. C. Meyers, I. T. Young, L. E. Hayes, S. D. Bassett (flight commander), and G. E. Crabtrey. Absent when this photo was made was George Perez, the other flight commander.

IT COULD HAPPEN TO YOU

Lieutenant G. Dennison

IT WAS my first cross-country flight in a Beaver since my return from chopper school some 3 months before. I didn't consider myself an outstanding L-20 pilot, but I did feel confident that I could make a normal instrument flight.

On the runup apron I was a little worried. I was carrying five people, their baggage, and a full load of gas. I calculated that we would reach Denver, my alternate, with 48 minutes fuel remaining. Close, but within the limits.

Shortly after takeoff and just as I was going IFR I was told to contact Kansas City center upon reaching 3,000 feet. I was going sluggishly through 2,800 when I remembered that I had one of those ships whose radios weren't the best. By relaying through the tower I received a clearance to my requested 6,000 feet.

It soon became apparent that the aircraft would climb at 200 fpm and no more. Every time I eased the nose up I got a stalling action. I asked for a lower altitude and was temporarily refused. Finally, I was cleared for 4,500 which I slowly reached.

Knowing that the fuel was critical I attempted to adjust the mixture, but to no avail. I would either lose altitude or the engine would run dangerously rough.

Between the first and second checkpoints I had to revise the ETA two times. A look out the window told part of the story. The light rime ice I had seen previously had turned into a solid sheet of clear ice!

Twenty minutes later, in western Kansas, I found a hole and down I went. We broke out at MEA in clear warm sunlight. The plane was covered with clear shimmering ice. I cancelled IFR and thought my troubles were over when I noticed that our groundspeed was almost nil.

A call to Goodland radio confirmed my suspicions. Winds at all altitudes were in excess of 50 knots, due to a rather widespread storm, which seemed to have come out of nowhere. By this time my gas supply was critical. I was faced with an old problem: whether to believe the gauges or to go by the time flown. I decided to land at Goodland and refuel. They answered my call by informing me that the current surface winds were 55 knots variable.

A quick look at the map made it clear that the most favorable point for landing, or at least where the winds were favorable, was a small airport on the Colorado/New Mexico border. Informing Goodland of my intentions I turned south, catching the best tailwind I'd ever had. Eighteen minutes out I received a call from Goodland. My destination was reporting a dust storm up to 18,000 feet.

Goodland, then, was the only place I could go. I banked into a 180 and 1 hour later reached it. All tanks read empty. I didn't bother to ask the velocity of the winds. A look at the ground told me all I needed to know.

Picking the best runway I began my letdown, using minimum power, no flaps, and higher than usual airspeed.

That landing was really something. I made five complete touchdowns before we stuck. It took all the power of the engine and a large truck to get the aircraft off the runway. We had 27 minutes fuel remaining.

One plane made it in after we did—a doctor from Texas. On his fourth try he landed, but refused to leave the aircraft or the runway for 15 minutes. That night he prescribed the same medicine for both of us.

In both instances the wind was 55/61 knots variable from the SW to the NE!

What did I learn? Several things. First to use the Weight and Balance Handbook instead of asking the "Old Pros." Second, to listen a little more closely to the forecaster when he seems edgy. And third, to review the records and my procedures when I'm flying again.

From The USAAVNS

DEPT OF MAINT

The AO-1 Mohawk mechanic's course moved into high gear last November when the student input was doubled. Present planning calls for training 394 Mohawk mechanics at the Aviation School during FY 1962. Students in this course receive 144 hours of instruction on the AO-1 aircraft during the four-week course. Instruction on the maintenance of the aircraft and individual systems is emphasized. The course concludes with ejection seat qualification.

Mohawk training aids have been received and are in use. In addition, several training films devoted exclusively to the AO-1 are in various stages of production. The first of these films to reach the field will cover the landing gear system and should be available in FY 63. This film describes in detail the construction and operation of the Mohawk's retractable landing gear. Procedure for inspecting and testing the gear and cockpit controls for gear operation are thoroughly covered. The film itself is designed not only as a supplement to classroom instruction here at the school but as a refresher for qualified personnel in the field and in field training programs.

Other training films in production at this time include the AO-1 Propeller System, AO-1 Powerplant Maintenance, and Ground Handling of the Mohawk Aircraft.

DEPT OF TACTICS

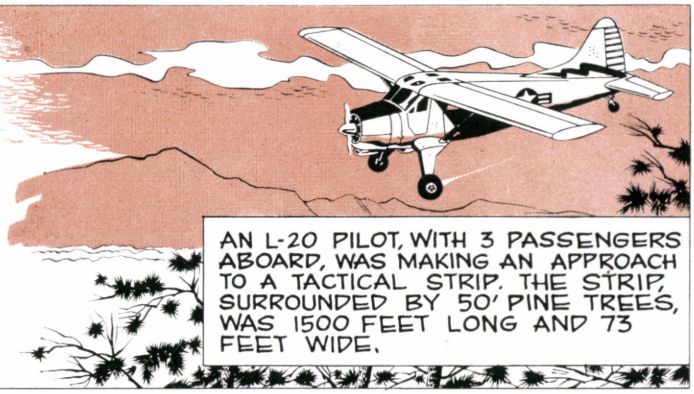
Survival training will soon be increased to 8 hours instead of the current 3 hours given to OFWAC/ORWAC/WORWAC students. The 8 hours will be both demonstrations and practical exercises as opposed to the previous 3 hours of conference instruction.

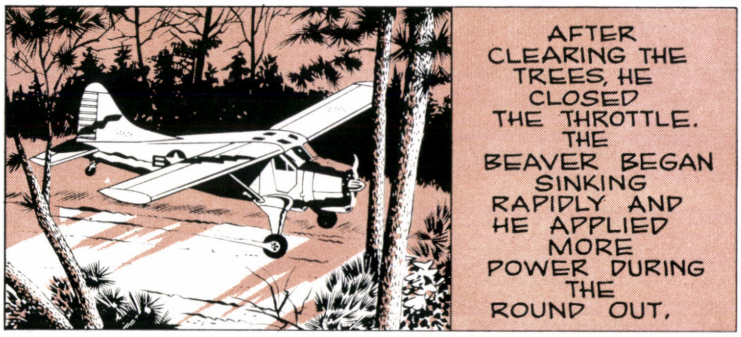
Survival training will be conducted outdoors in a typical remote area environment where students will be required to build shelters, fires, traps and snares, prepare water for drinking, and prepare and eat a meal of elements normally available to an aviator attempting to survive. Such a day of intensive training in the fundamentals of staying alive while awaiting rescue should prepare the student aviator for survival.

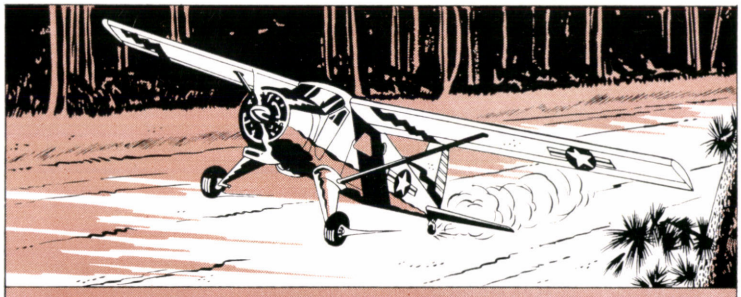
Added to the recently completed list of training literature are Army training programs and tests for the Armored Cavalry Aviation Company, 1-67D. Publication and distribution should be available to units in the field in approximately six months.

PINE CONE CHECKOUT

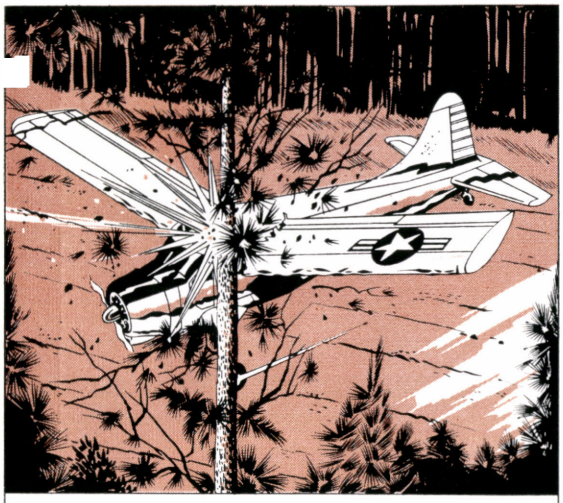
prepared by
THE UNITED STATES ARMY BOARD FOR AVIATION ACCIDENT RESEARCH







THE AIRCRAFT TOUCHED TAIL WHEEL FIRST, SLIGHTLY LEFT OF CENTER. IT BOUNCED INTO THE AIR AND DRIFTED FURTHER LEFT. THE PILOT SHOVED THE THROTTLE OPEN, ATTEMPTING TO GO AROUND.



AS THE BEAVER BECAME AIRBORNE, THE LEFT WING BRUSHED THE TREES, TURNING IT FURTHER LEFT. IT TURNED UNTIL IT STRUCK AND UPROOTED FOUR LARGE TREES, THEN CAME TO A STOP. THE LEFT WING AND ELEVATOR WERE TORN OFF. THERE WERE NO INJURIES OR FIRE.