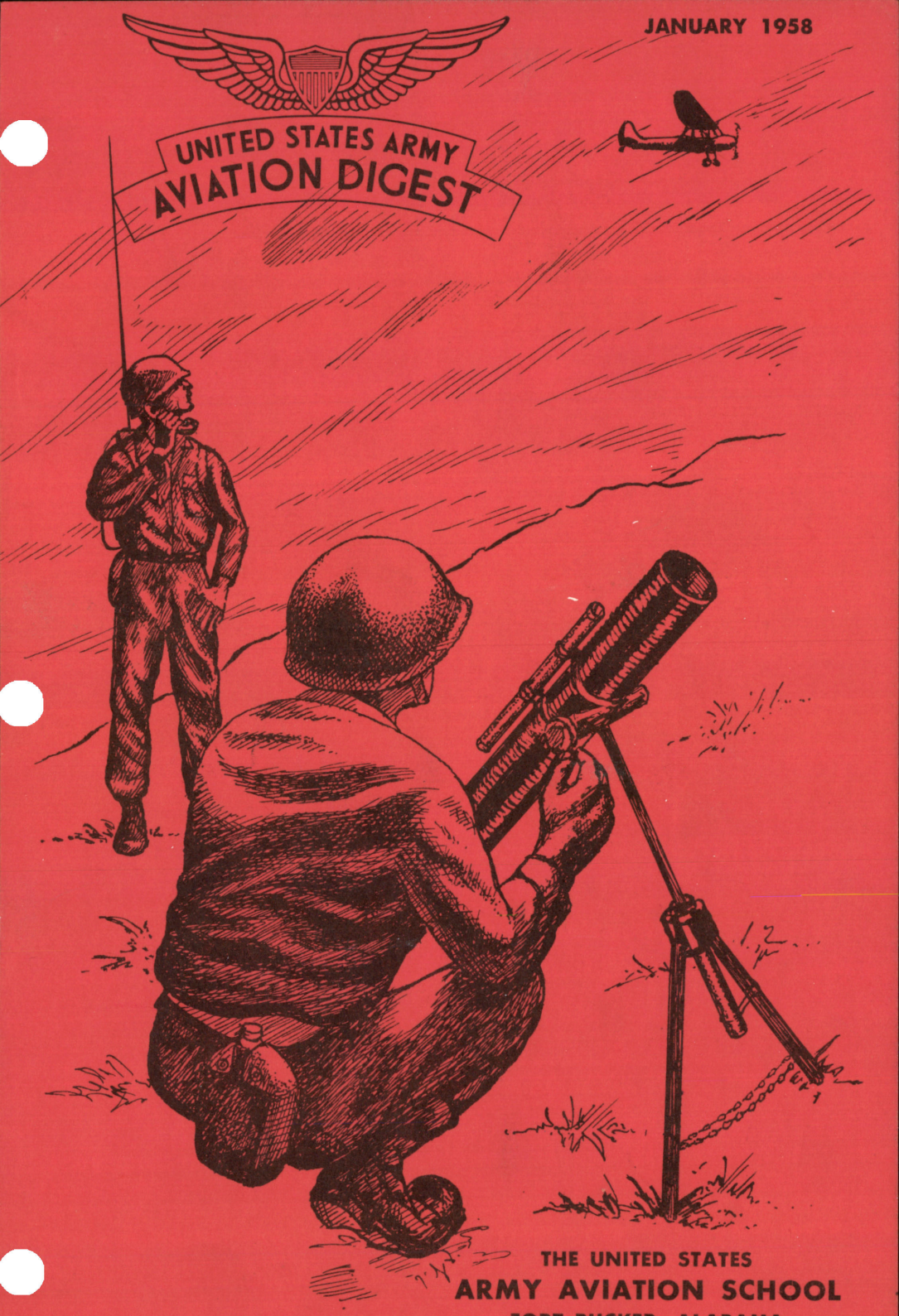
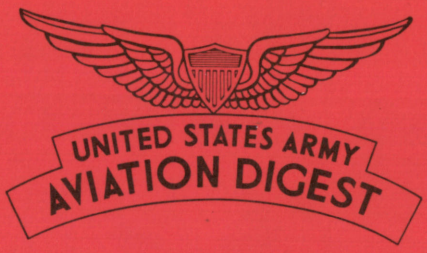
JANUARY 1958

UNITED STATES ARMY AVIATION DIGEST



THE UNITED STATES
ARMY AVIATION SCHOOL
FORT RUCKER, ALABAMA



The U. S. ARMY AVIATION DIGEST is an official publication of the Department of the Army published monthly under the supervision of the Commandant, U. S. Army Aviation School.

The mission of the U. S. ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine, and other related data.

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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NG: State AG.
USAR: None.

For explanation of abbreviations used, see AR 320-50.

UNITED STATES
ARMY AVIATION
DIGEST

Volume 4 January, 1958 Number 1

ARTICLES

DEPARTMENTS

COVER

Artist Don Smith and Aviator Clare Beames teamed up to produce this month's cover. The ink drawing speaks for itself and Lt Beames' words to fit are found on page 20 in this issue, as the striving for air-ground coordination goes on and on. And quite well, we might add.

Notes FROM THE PENTAGON

THE NUMBERS RACKET

Brigadier General Ernest F. Easterbrook, *USA*
Director of Army Aviation, ODCSOPS

WHEN HE WAS PRESIDENT of the United States, Calvin Coolidge announced with unimpeachable wisdom that the way to effect economy is to be economical. Simple and admirable advice.

Military people are also given to proverbs. An old chestnut, true today as it was for Hannibal's G-1, is that all problems in the military art are, in the final analysis, personnel problems; if you have the right man in the right job either the problem doesn't arise, or he solves it. While this is a sound philosophy for an Army of a few thousand, its application is stretched a bit in an atomic army of 900,000* or 950,000* or 1,000,000* people.

In these notes we'll discuss a few ramifications of a small segment of the personnel problem. The scope is limited to one report (the R-45), and 19 enlisted and 7 officer MOSs. These 26 MOS descriptions delineate the aviation specialist field in the Army, as of this writing.

First, the enlisted aviation specialist situation. In addition to the many common specialists (e.g., clerk-typists and cooks) and the many other specialists in various fields (POL handlers and crash crew fire fighters) which go to make up any aviation organization, there are 19 specialties which are strictly aviation in nature. As thoroughly described in AR 611-201 (to include Change 9), these are, in

*Choose one

numerical order:

	School Trained
282.2—Radar Repairman (GCA)	Fort Monmouth
284 —Electronic Navigation Equipment Repairman	Fort Gordon
670 —Aircraft Maintenance Crewman	Fort Rucker
671 —Airplane Mechanic	Fort Rucker & Fort Eustis
672 —Reconnaissance Helicopter Mechanic	Fort Rucker & Fort Eustis
673 —Single Rotor Helicopter Mechanic	Fort Rucker & Fort Eustis
674 —Tandem Rotor Helicopter Mechanic	Fort Rucker & Fort Eustis
680 —Aircraft Component Repairman's Helper	Fort Eustis
681 —Aircraft Engine Repairman	Fort Eustis
682 —Aircraft Carburetor Repairman	Fort Eustis
683 —Aircraft Power Train Repairman	Fort Eustis
684 —Rotor and Propeller Repairman	Fort Eustis
685 —Aircraft Electrician	Fort Eustis
686 —Airframe Repairman	Fort Eustis
687 —Aircraft Hydraulic Repairman	Fort Eustis
688 —Aircraft Instrument Repairman	Fort Eustis
901 —Air Traffic Controller	Keesler AFB
902 —Flight Simulator Specialist	Fort Rucker
907 —Flight Operations Specialist	None

Generally speaking, the "point ones" (Ex: 671.1) and "point sixes" are found in troop units. The "point twos, threes, and sevens" are located in backup support units. Thus, you will find a 671.1 in a divisional aviation company while next door in the backup TAAM Company is a 671.2. Both are at approximately the same skill level.

An important step, quite obviously, is to familiarize yourself thoroughly with the job descriptions for each of the MOSs listed above. As I said a moment ago, the bible for this purpose is AR 611-201 with all its nine changes. While you're about this chore you might browse through the rest of the AR; you're sure to find other MOS descriptions which are now or may some day be important to you. For one example, there's the artillery weather observer, MOS 215. It is possible that one day you may be glad to have this lad around.

Analyze your unit and the people in it. Keep in mind that, if you have problems, somewhere in the organization you may not have the right man in the right job. Assuming that *you* are not the square peg in the round hole, you are beginning to put the personnel jigsaw puzzle together.

Next, by and with the advice of your superiors, establish what

your personnel requirements are going to be in three months, in six months, a year from today. Who can you count on to fill the jobs? How many of your good crew chiefs are going to try that supposedly greener pasture on civvy street? Is your operation going to expand? If so, in what direction? How many already-trained aviation specialists are on the post driving garbage trucks or clerking for the AG? Who are these people? If they are worthwhile aviation specialists you should probably have them in your outfit, or at least on tap to join when a vacancy occurs. If they're *not* worthwhile you owe it to yourself, to the aviation program, and to the Army to instigate action to have their aviation MOS rescinded and get them off the books. They're *on* the books at DA until somebody in the field does something about it, showing up on the R-45 Report, big as sin and twice as worthless to us.

Once you've got your ducks all lined up *and you know whereof you speak,* pay a visit to the personnel people at the highest level your immediate commander will authorize you to go. Lay all your cards on the table. Establish your present and projected requirements beyond the shadow of a doubt. Keep in mind here that *you are competing with all other agencies at your installation for personnel spaces.* Spaces are allocated in bulk to major commands throughout the Army without detailed regard to individual specialities within the allocation. To get aviation specialists—and it will take from four to nine months before you see the fruits of your efforts—you must establish a requirement more valid than the others. Keep in mind during this maneuver that the G-1 and the AG are usually pretty sharp in the personnel field. If you can't prove everything you say you need, you'll stall out.

The purpose of the exercise (its success depends p r e t t y much on you) is to get your requirements translated into authorizations in the R-45 report, by MOS. Once this figure for any given MOS is consolidated here in the Pentagon, the wheels start turning. More (or less) people are trained, losses to ETS are recomputed, planning factors are adjusted. If you've done your job correctly and laid the groundwork intelligently, your personnel situation will perhaps begin to pick up before you are due to change station. Caution: in the long run it is equally as dangerous to overestimate your requirements as to be caught short. Make every possible effort to be accurate, and learn to think ahead.

One word about TOE as opposed to TD units. You all know, I presume, that the structure of a TD unit is determined by the local major commander within certain limits, and changes in this structure are pretty much up to him. On the other hand, TOEs are prepared at Headquarters of the Continental Army Command at Fort Monroe, Virginia. The people who write these TOEs are able, hard-working officers, but are hardly infallible. The point is that if you know, from experience, that the personnel makeup of your aviation TOE is inadequate in one or more respects, write

CONARC a letter through channels. Properly presented, your comments will be carefully considered.

Now about officers. If you've read Change 3 to SR 605-105-5 within the past couple of years, you know that there are seven aviation specialist officer MOS designations. Just to refresh your memory, overloaded as it probably is with VFR minimums, tower frequencies and procedure turn limits, I suggest you look up the descriptions:

1980—Fixed wing aviator
1981—Helicopter aviator
1982—Airfield Operations Officer
1983—Aviation unit commander
2518—Aviation staff officer
2519—Instrument flight examiner
4823—Aircraft maintenance officer

While you're about it, read up on the "6" prefix. The number six before any nonaviation officer MOS means that the job calls for a rated aviator. You at higher headquarters should review this business carefully. As an example, most of the officers in my office here in the Pentagon are classified as 6-2162s (Operations and Training staff officer). The "6" means that their particular 2162 jobs call for aviators to fill them.

With respect to officer requirements, you must go through the same mental processes as you have already done for your enlisted men. How many people are you going to lose? How many helicopter drivers must you have? Six months from now will you need a replacement aircraft maintenance officer? How are you fixed for instrument flight examiners? Then go back up to the Personnel Wheels, and lay your problems before them.

In all these gyrations, don't forget to further the training of your already-assigned officers. The problem here will probably be that of squeezing TDY funds out of the Comptroller and getting the G-3 to get school quotas for you. Remember that somewhere, in somebody's pocket, are the necessary funds and school spaces for most of our aviator school requirements. Ferreting out the necessary dough can be and usually is quite a chore, but if you've laid your groundwork correctly the job can be done.

You might remember that in handling officers' careers you are charged with a high and serious responsibility. In peacetime we've got to round out and broaden the experience of our younger officers, both in flying and ground assignments, so that they can pay off in large dividends for our country should the balloon go up.

Finally, assign the MOS which most nearly describes his position to each of your aviators. If he meets the requirements, and it will further his career, award him a primary MOS a little more descriptive of his talents than 1980 or 1981. Make this your personal business.

I have tried here to touch on a variety of personnel problems which almost every one of you reading this publication faces in one degree or another. To sum up: Read and understand the references, analyze the personnel situation of your organization, think ahead, get the backing of your superiors, then fight like blazes for what you believe to be right for the United States Army.

How to Start on IFR

Wolfgang Langewiesche

HE'S GOT THE INSTRUMENTS, he's got the rating; but he never goes into a cloud. And so he gets only half the utility out of his airplane that's built into it. This is the situation today of thousands of us — this hesitating on the brink of a new era, this self-imposed hold down. Why is it? Our man knows he can control the airplane on instruments. He knows he can find his way cross country by radio. He knows he can make an instrument approach. He's proved all this in his flight tests for the instrument rating. But he can't seem to put it to use. He can't get started. It seems such a terrific jump. Someday, yes. Today —? No, not today.

EMBARRASSMENT

Or perhaps he tries it. One day, as lower clouds slide in under him, he stays on top; and when he gets to his destination, he calls for a clearance to let down. This is a bad start. He is not properly prepared; he is excited; he probably calls on the wrong frequencies; he expects clearances and other answers to come through more quickly than they do; he has not had time to study the approach plate properly. He is not ready for the job, and everything about his performance shows it, even his voice on the radio. And the ground is really not ready for him. They didn't know he was coming; quite likely the weather situation is unexpected, and they are swamped. And now here comes a greenhorn, on, so to speak, his first solo and demands to be taken care of. They have to shuffle him in; but they can't help him much. It's not a good way to begin IFR operations. It starts in excitement, and ends in explanations and embarrassment.

Or here is another way he might try it. One morning, the ceiling is 800 feet, visibility 1 mile, the hills are in the stuff.

This article is reprinted from the October 1, 1957 issue of AIR FACTS magazine.

Wolfgang Langewiesche is one of America's foremost test pilots and a well-known author on aviation subjects. He has written several widely read books and is a frequent contributor to magazines. Views expressed in this article are the author's and are not necessarily those of the Department of the Army or of the U. S. Army Aviation School.—The Editor

Unless he goes IFR, he can't go. So he takes the jump. He quickly scribbles together a few data, he files a flight plan and taxies out. This is a lot better than the system just described. At least he does have his flight plan; at least he is in contact with the System right from the start. But it is too big a jump.

In this weather, IFR operations are in full swing. On the radio the pace is snappy and professional. Nobody has extra time or patience for the uncertain first steps of a baby instrument pilot. He is not really familiar with Radio Facilities Charts. He wrote out his flight plan in a hurry, under tension, and probably made mistakes. His clearance throws at him some reporting point he has never heard of. He tries to look it up on the chart, can't find it. Behind him, an airliner is waiting to take off, and he feels pushed. So he reads back his clearance and takes off, hoping to figure things out in flight. This is a hell of a way to run a railroad.

He is excited. His cockpit is in disorder. And so is his mind. Gosh, he forgot to write down

his time off. Let's see, it must have been about two minutes ago — he scribbles this figure someplace on the chart. While he does so his computer falls to the floor. By the time he has picked it up, his airplane has turned 45° off-course. He looks up, he straightens the airplane, but does not notice the change of heading for several minutes. He holds his pencil with his teeth, his microphone jammed into his crotch; his chart he sits on. Under the pressure of his departure, he disregarded the time-check the tower gave him. His clock is five minutes fast. He reports, claiming to have passed over beacon X at 20 minutes past the hour, when the time right then is only 15 past the hour. They call him on this . . . He cuts a sorry figure and says, "Never again."

In fact, most pilots can foresee all this in their imagination, and that is why they don't even try.

But the truth is that it's easy to start on IFR. You *don't* have to jump; you can do it by steps. You learn different phases of IFR flying each separately. You let the New wear off each of them separately, let familiarity make it easier. Keep doing this, and first thing you know, you *are* flying full-dress IFR.

PAPER FLIGHTS

The first step is entirely on paper. Get out your radio facilities chart [or Jep Manual] and work out a flight plan. No — more than that; a set of detailed instructions on how to fly from A to B via Airway Victor Umteen. It should not only contain altitudes, courses, drift angle, times, (using a probable wind) but also to whom you will report, on what frequency; what frequency he answers on. On which of your radios are you going to tune in whom? How can you navigate and communicate at the same time? Here is an "on request reporting point which is not a range station or beacon, but only an intersection on two omnitracks: What radial are you going to turn to on your omni scale? Will the meter read "To" or "From?" As you go past this checkpoint, will the omni-needle move from right to left or from left to right? Can your ADF help you? Can you perhaps do a smoother job flying the old (low-frequency) airways while using the omni for cross-checks? Approaching your destination, you will have to navigate first by the range, then by the ILS; while at the same time talking to Approach Control. What transmitter frequencies, what receivers are you going to use for what, and when do you shift? Those are the little problems that could almost overwhelm you if you tried to solve them the first time while also making a real instrument flight for the first time. This way, you pre-solve them in the comfort of your home. And that's the idea; to cut down the percentage of first-time-ness in one's first IFR flights.

LANGUAGE OF THE CHARTS

Flying on paper, you also learn the radio facilities charts —the language, so to speak, of the map maker! What is the man saying with his dots, crosses, stars, heavy numbers, light numbers, shaded areas? What

does he mean: "MRA 5000." "T 2000." "G 7"? Here he shows a commercial broadcasting station, and beside it he says "780." Is that kilocycles, or is it feet above sea-level, or what?

Whether you use government charts or Jeppesens, you don't learn their language just by looking them over. It takes many hours of intensive map-use. And it would be foolish to mix this learning process with your first IFR experiences.

It will amaze you how many sources of error there are in unfamiliarity with those charts. I once spent a whole day writing out a flight plan from New York to Des Moines, Iowa. A few days later, when I flew the route it turned out I had dropped out a 17-mile stretch here, a 10-mile stretch there; had written 275° instead of 257°, had mixed up nautical and statute miles. In flying IFR for real, that sort of thing could be embarrassing. And those mistakes were made at a quiet desk! How can one hope to use those charts effectively when one's first use of them is under the pressure of actual instrument flight, without co-pilot, when you can't keep your eye off the gauges for more than a few seconds at a time?

"W"

This paper work also makes you learn some routes by heart. The airline pilot knows his route by heart: frequencies, distances, facilities. Not for him the embarrassment of trying to start a conversation with a range station that is "W"—without voice. You and I are likely to do just that—and feel silly.

CLEAR-WEATHER IFR

The second step consists of some flights under Instrument Flight Rules, but in the clearest weather you can find,—and without hood. Many pilots still don't realize that you can file an instrument flight plan even with ceiling and visibility unlimited. And you get the full treatment: a clearance, full separation from all other IFR traffic, further clearances as needed, perhaps holding instructions. You are expected to give "them" the full treatment: read back your clearance, report as you go your estimated time over the next reporting point—all just as if it were for real. But all the time, if you should really get messed up, you can get off the hook by simply saying two words: "Cancel IFR." This takes a lot of pressure off you.

But don't cancel too soon. There is a tendency, as you approach your destination, to cancel IFR and make your letdown free-style. That way, you miss valuable experience: how, as you approach your destination, they

step you down to a lower altitude; how they require additional reports, from over "on-request" reporting points; how they clear you to the ILS Outer Marker. All this is stuff you want.

In this clear-weather IFR the new wears off the procedures. After a few such flights you *can* understand a clearance. You *can* write the main points down and repeat them back correctly. Your mind begins to translate the clearance, as you hear it, into a plan of action, a flight path. You learn to report more crisply. You forget less often one of the items required — the words "Instrument Flight Plan" on the first call-up, the frequency on which you await the reply, your time over, altitude, estimate for next reporting point, name of reporting point after that. You get many small experiences which sum up into one big experience: you find out how the system works. One day they shunt you over to a different route, and you have to fly directly off the radio facilities chart, willy-nilly. One day they make you hold. One day ATC suddenly wants to know your ground speed. One day you get a "screwy" takeoff and climb clearance. And all the time, you hear the words and phrases that are your working tools on IFR. All the time, you are working the System, and you learn how the System works.

You also learn *that* it works. You rebuild your confidence in the ground organization of our Airways. In recent years, as a non-professional pilot, you have been getting the Cold Treatment from communications stations and towers. They haven't answered your calls. They haven't put out the weather broadcasts the schedules called for. Or they have mumbled them in a rapid monotone that made them useless. Now, all of a sudden, your social standing goes way up! The system is *for* you. The words "Instrument Flight Plan" have a magic power. Your transmitter, which you thought was too weak, suddenly reaches out and gets results! They know that ATC presently will inquire after you. They talk as if they meant to be understood. If you don't call them, *they* call *you!* As you approach your destination, the latest weather is handed to you on a silver platter, without any request on your part. The system has you in the hollow of its hand and carries you lovingly from point to point. It's wonderful!

PAPER WORK

On this good-weather IFR, you also develop your cockpit

housekeeping. If you fly without a co-pilot, this is important. Where do you keep your computer? How do you hang up the mike so it's easy to reach, easy to get rid of? Where do you put your Jeppesen, where do you do your writing, where does the pencil go? What sort of flight plan do you make for yourself?

Most ready-made flight plan forms are too elaborate. They assume you have a co-pilot, and have time to give to the filling-out of a lot of little boxes. They also are too inflexible. They don't have space, for example, to note down how you will identify one of those reporting points that's merely an intersection of two omni-radials. And some are too complete; the designer acts like an inexperienced traveller packing for a trip; he puts in everything you might need, instead of the minimum you can get away with. Every time you transfer a piece of information from your R.F. chart to your flight plan, an error may creep in. It's a personal matter. Some minds need a chart-like presentation, so that the flight plan becomes a simplified radio facilities chart; others work well from pure numbers, arranged in columns. If a man were really and truly familiar with radio facilities charts, he could fly IFR right off the chart, without a written menu.

At any rate, you need to work out your own system by trial and error, and that takes more than one flight. Included should be a system for noting down estimates, corrected estimates, actual times-over, ground speeds. You need to get some form down pat, so you can work it without mental effort and confusion.

Once you have this, plus the experience of working the Airway System under IFR, you are much, *much* more competent than the harassed, embarrassed guy who taxied out that morning.

Now the third step towards Real: a little flying in real cloud. People have instrument ratings who have never been inside a cloud. It isn't right. In most of the country, there is still uncontrolled airspace where it is legal to pull up into an overcast and fly a while. And I believe there are still places, times and circumstances where it is proper and safe to do so.

But if you don't think so, you blend this third step with step four, below. In any case, you get yourself some cloud-flying, burdened as little as possible with other requirements and anxieties, such as reporting, time-keeping, radio contacts.

Again, you learn a lot. Again, you convert big batches of New into Old Stuff. How wet it is in clouds! How the windshield pours with water! And how pleasant it is. Working conditions are better in real stuff than under the hood. The best of hoods cramps your style. Now, without hood, you have decent light, you use your eyes freely, you move your head as you like, you work with charts and kneepads and radio controls in a natural manner. You feel as if you had taken off some heavy boots and put on tennis shoes.

Then come bits of experience. A cumulus cloud can look quite mild outside, and be rough inside. It jolts you about, it suddenly puts one wing way down,

it tries to suck you upward from your altitude. So you *don't* push forward, you *don't* let the airspeed build up, but you cut the power back and keep on going slow and easy. Perhaps you hit a heavy shower. It throws water at you by the bucket. It almost scares you. The noise is something. Gosh—is this hail? No, relax, it's only rain. Some other time, perhaps you pick up a little ice. Each of these small experiences is a gain. Each is a first-time that can never bother you again—not as a first time. That's the idea: you reduce the number of first-time items that could gang up on you during your first full-dress instrument flights, fluster you, put you under pressure and lower the level of your competence. Piecemeal, step by step, you make yourself familiar with IFR-land.

FAMILIARITY

Familiarity is almost the same thing as competence; it is the big unseen basis of all living. If a man, as of this moment, had forgotten how to talk, how to eat, how to cross a street, how to drive a car, etc., etc.—if he had to figure all this out anew, he would die from sheer incompetence to keep on living! The man who jumps with both feet into full-dress instrument flight puts himself into a situation where small problems can overwhelm him by their sheer mass.

The fourth step: you file an IFR flight plan in just any average weather. You still shy away from really low conditions at the far end. You don't go into heavy traffic. You are cagy about Fronts. But now you seek the cloud levels, rather than staying away from them.

In fact you don't have to. Just naturally, as you keep on flying IFR, you will hit cloud. And when you do — it's *your* cloud. You not only may, you must, under IFR, go right through it. So, first thing you know, you're flying in and out of cumulus—rough, good experience. Some other day, you find some stratus, and fly in the stuff for a solid hour.

Soon you find you prefer the inside of the clouds to the outside. On IFR flight plan, one big load is off of you: you no longer have to watch for traffic. And there is something else, more subtle. You no longer have to worry about the weather! At least, you don't worry in the grinding, helpless way of VFR flying in bad weather. The main fear of VFR flying is that you may run out of ceiling and visibility and get caught in the stuff. This fear is gone. Hell, you already *are* in the stuff! "The worst," by VFR standards, has already happened, and it turns out to be rather nice. You know where you are. You are legal. *They* know where you are. That you should face a really low approach at the far end is unlikely, if you have picked the weather. But should you have to make one, well, that is the part of your instrument flying for which your rating has prepared you best. Your problem, right along, was not how to make an ILS approach. It was how to get to that Outer Marker in good and legal fashion, with "tranquillity of spirit," and get yourself cleared for an ILS approach. From there on, you know what to do.

So you are capsuled in, your cockpit a little world apart, and you feel good. You don't feel scared, or that you are taking a chance: you feel "in control." First thing you know, you are flying over a stretch of country where ceilings are 500 feet or less, where flying ground-contact would be impossible both in law and in fact. First thing you know, you realize: you *are* now flying IFR. You are on a clearance, at an altitude, in actual cloud, reporting as you go. And you feel like telling your friends: "Come on in, the clouds are fine."

PUZZLER

TWENTY-FOUR hours after arriving at a new maneuver area, an Army Aviator finds himself on a night surveillance mission. He is flying a Bird Dog equipped with VHF and a PRC 9 FM radio. After an hour of flight the VHF suddenly becomes silent. While attempting to fix his VHF radio by switching headsets, channels, etc., he becomes disoriented over a barren area that offers little in the way of checkpoints. He has contact with the base airfield on his tactical radio and explains his situation. The only aircraft on the field at the time has an ARC 44 radio but is not flyable. You as operations officer have the problem of directing the aviator back to the base field. You would first:

- ☐ **Direct the aviator to land on the nearest road or pasture and initiate an air search with the remainder of the unit aircraft when they return.**
- ☐ **Turn on the radio in the Bird Dog on the field and using the manual loop to get a null on the aircraft.**
- ☐ **By giving a reciprocal of the bearing taken with the loop the pilot can fly to the field.**
- ☐ **Direct the pilot to key the FM radio while you use the ARC 44 homing device. When the "D" or "U" signal is received the aircraft on the ground can be turned by hand until an "on course" is received. A reciprocal of the heading when the "on course" is received will bring the lost aviator to the field.**
- ☐ **Instruct the aviator to call the nearest DF facility or GCA unit to ask for a steer.**
- ☐ **Have the aviator fly until he locates himself by finding ground checkpoints. If he hasn't found himself when his gas supply is exhausted, instruct him to bail out.**

The correct solution to the PUZZLER may be found on page 22.

What Did I Learn From That?—No. 1

MY MOMENT OF STARK TERROR

Lieutenant Jack R. Kalmbach, *Inf*

IT WAS A BEAUTIFUL March morning and everything went smoothly on the flight to Stevens Village. Another aviator and I landed our ski-equipped Bird Dogs on the snow-covered river and taxied close to the bank to unload our passengers. The snow covering was dry and several feet deep, making it extremely difficult to taxi.

I discharged my passenger and started taxiing to the strip as the other aviator started his takeoff. I wondered then if he would ever make it. I was using almost full throttle to taxi.

As I lined up for takeoff the snow began to settle and I saw that he was airborne. I was reassured and began my run. After what seemed an eternity, I felt my aircraft lift off the ground. Soon after breaking ground, I found myself in a steep left turn with the terrain coming up to meet me. Application of right aileron, full right rudder, and increased back pressure on the stick, returned my Bird Dog to level flight, but my troubles had just begun.

I didn't have the slightest idea what had gone wrong. The rate of climb was zero and I had to use full right rudder to maintain level flight.

To avoid high ground on the south side of the river, I started a shallow turn to the right. Everything was under control for the moment and I called the other aviator's attention to my difficulty. He had witnessed my acrobatic takeoff and turned back to check on me.

I asked if he could see anything wrong with my aircraft. He replied that the left ski was hanging straight up and down: This situation had not been covered in flight training at Fort Sill.

I decided to return to Ladd Air Force Base, where crash equipment was available. I called the other Bird Dog and stated my intentions, asking the other pilot to stay above or behind me. I didn't think I could maintain control if I got into his

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Lieutenant Jack R. Kalmbach is a flight commander in USAAVNS's Department of Fixed Wing Training. He was Operations Officer and Aviation Officer at Fairbanks, Alaska from 1954 to 1956. Lt Kalmbach's flight hours add up to 1800 in both fixed- and rotary-wing aircraft. Views expressed in this article are the author's and are not necessarily those of the Department of the Army or of the United States Army Aviation School.—The Editor

prop wash.

Squeezing enough altitude to clear the hills south of the river, I began the homeward journey.

The same scenery, that had looked so good on the flight to Stevens Village a few minutes before, now looked pretty cold and desolate. At that time I would have given all the gold in Alaska to be basking in Southern California sunshine!

The flight home was, with one exception, uneventful. I was cruising at an indicated 75 mph when a DC-3 passed me on the left and turned across my flight path. This was it. I knew that I would get into his prop wash and lose control, but I could do nothing about it. What little composure I had regained was lost. By the time I realized that nothing was going to happen, I had worked up quite a sweat.

About twenty miles north of Fairbanks, my wing man called Ladd tower and informed them of my difficulty. The tower gave me landing instructions and requested that I pass over the field from west to east prior to making an approach. This was agreeable since that approach would keep me over the lowest terrain.

As I passed the tower, the operations officer radioed that my left ski was hanging down and to the rear at about forty-five degrees.

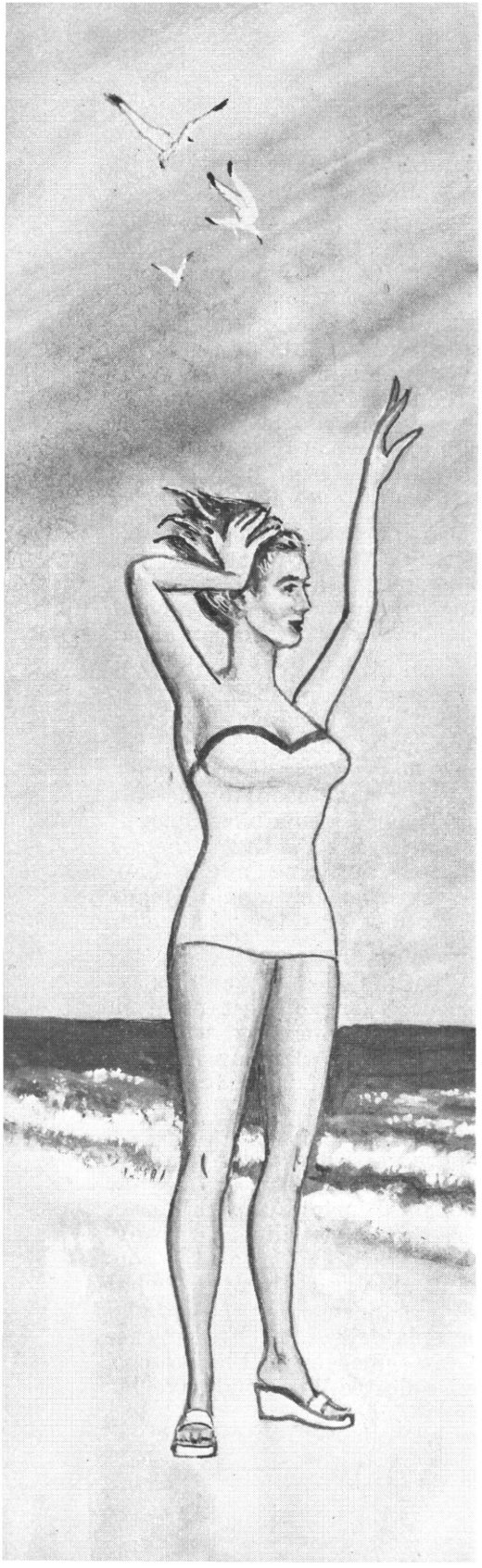
Passing the field I made a wide 180° turn and started a long final. Up to this point I hadn't given much thought to how I would make my landing, and time was running out. After a few moments of agonizing indecision, I decided to make a deadstick landing. This would minimize the danger of fire if the plane nosed over.

Intending to land about 1,000 feet down the runway, I failed to consider the increased drag from the dangling ski on my glide path. Soon after pulling the mixture control, I realized that my landing would be short of the intended touchdown point. I was tempted to restart the engine but when I thought about the torque effect, I decided to leave well enough alone.

Waiting until the last possible moment before starting the round out, I lowered my right wing and made a two-point touchdown on the overrun about four feet short of the runway.

I expected almost anything to happen upon landing. However, after moving straight ahead for about 30 feet, the aircraft made a slow ground loop to the left and stopped, remaining upright and undamaged. Even then I expected anything might happen. The crash crew said I made the fastest exit they had ever witnessed.

What did I learn from this experience? The biggest point in my flying education was the value of prior planning. I didn't do too much of it, and as a result, I sweated blood for a while. It isn't often an aviator gets a chance to leisurely plan a course of action, but even in the few moments during an emergency, "pre-thinking" will pay rich dividends. By this I mean the constant thinking ahead to what might happen. Even if the aviator only tells himself, "In case of an emergency I'll be cool and collected," it could save his life.



AS LATE AS WORLD WAR II, the pilot remained a reckless devil in the public mind. As the young and virile gladiator who could flash across the enemy's land and destroy him, he was entitled to demonstrate the dash and flavor of his flying ability to a highly indulgent public. Back in those days, even flight commanders were inclined to admonish a man good naturedly when he fractured a rule of safety. Why not, he would smile, "I'm not above a little of the same myself." Perhaps, surreptitiously, and with more than a little hint of pride, he might mentally or even actually pat his "hottest pilot" on the back.

After the war the "hot pilot" continued to burn up the skies

FLAT

CWO Richar

for a while. But now when he cracked up an airplane it was no longer ignored by the newspapers. With the postwar letdown and the changing temper of the people, civilian claims began to snowball and become a real source of annoyance and poor publicity for our government. The Civil Aeronautics took a long, hard look at the hot pilot, and appalled by what they saw, put a quick curb on his activities. His flying ability was not questioned; in fact, it was not of particular interest. They focused directly on his wilder escapades and slapped him with a fine, in some cases, even suspended his license. Our military, too, decided it could no longer risk the poor advertisement, much less the cost of these

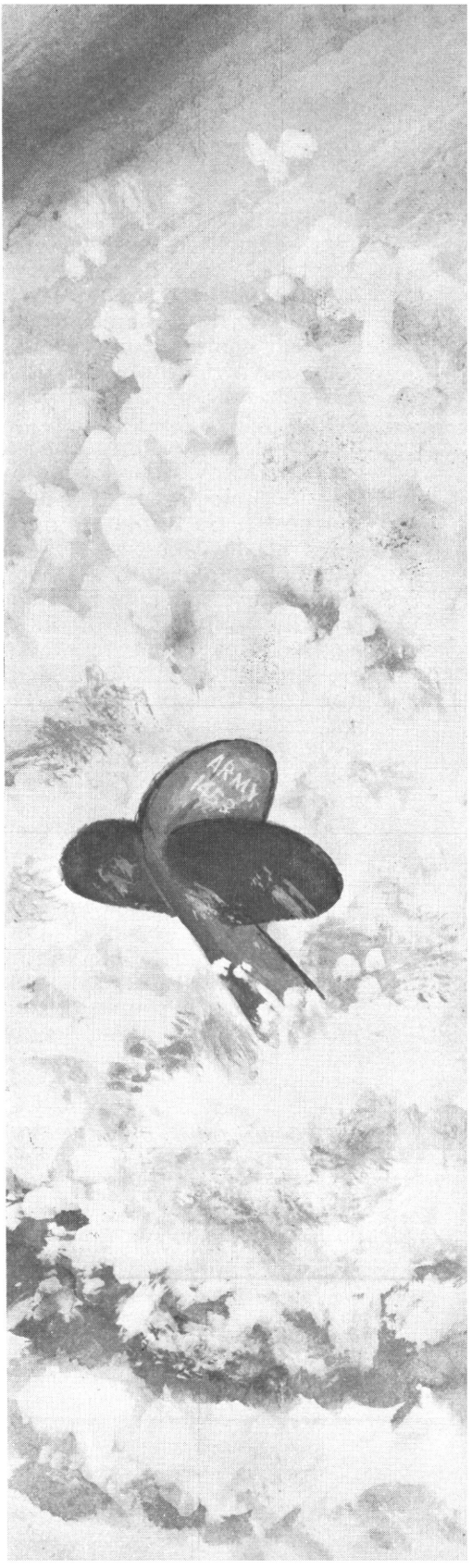
pranks, and quickly relieved its own too playful type of pilot of his flight orders. Thus, flat hatting, buzzing, low flying, showing off, whatever name you wish to call it, went out of general fashion. Unfortunately it persists in isolated instances.

Perhaps the most dangerous period of temptation for the new pilot occurs just after his first solo. He has his wings now; he's a sure enough pilot. He glances back over the past few months and laughs at his previous worries. He knows that he handles his flying steed as expertly as he once handled a pair of roller skates or a bicycle and, certainly, he ought to let his girl friend know about it. So at his first chance he floats low over her

ATTING

C. Brown, TC

house, hoping she'll step out into the backyard and look up thru the clothesline with the proper awe for his cleverness. If she stays in the house he is disappointed; nevertheless his neck is safe until a similar idea returns. If she comes out, God help him. His features take on the cast of the town drunk on Saturday night. He may zoom low enough to give the little girl a real big kick and show her she made no mistake at all in picking one John Q. Hot pilot as the man most favored in the pursuit of her charm. Matter of fact, he may get cute enough to tangle with the clothesline, and take both himself and his girl along to whatever purgatory of punishment is set aside for the young and foolish flying knight



and his mate.

At any rate, if the new pilot survives this first period he may next be tempted on a long cross-country. Let's build the picture: it is midafternoon and he has been flying for a couple of hours. His rear end is achy and his repeated yawns only punctuate the dull roar of the slipstream and propeller. Below him he spies a convertible speeding along the grey highway, top down. It is fully occupied with four of the sharpest little brunettes he has spied in the last two very dull hours. To make sure it's not an illusion and to show them how friendly a flying birdman can be, he slips down to wave a greeting. Like as not the ladies won't see it quite his way. They may take one startled look and decide that the next telegraph pole is the quickest way to brake to a full stop.

A convertible full of cute tricks may not exhaust the catalogue of temptations for the young man with new wings. Perhaps a public beach is even more interesting to his youthful but temporarily jaded sense. There it lies a couple of thousand feet below with not just four but literally hundreds of lusciously curved females lying on the sand—he is obviously invited to the picnic.

But even when the fair sex is nowhere to be seen, the cross-country tyro may get gregarious enough to dive down and fly alongside the first speeding railroad diesel he spies. The Santa Fe Chief, for example, is a fine temptation as it speeds its way along the powdery mesa of New Mexico. It's worth it. He waves once—and maybe only once—to his fellow "pilot," the engineer.

Once in a while the flat-hatting pilot may keep his own neck intact but make a grave tactical error. One of them swooped very low to greet a black sedan on an Alabama road and ran his CO into the peanut fields. The peanuts weren't ready for picking but the ex-pilot peeled many a barrel of potatoes before they kicked him back into civilian life.

As for the beach visitor, there is a case on recent record where the pilot lost his airspeed in a low turn and went pin wheeling across the sand. They never did find all of him.

It isn't only the inexperienced youngster who yields to this form of temptation. Not so long ago a pilot with roughly 5,000 hours of time yielded to the impulse after one of those life and death arguments with his girl friend. He flew his chopper over her garage and yo-yo'd down to show her a thing or three. Unfortunately, he lost his rpm and fell in. The CAA and the military displayed little sympathy for the human factor, and his girl friend took up the battle again — alongside his hospital bed.

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Another experienced pilot returned from a wild three-day pass in Seoul. He felt great. Later, on a serious mission he passed over the Tea House in Seoul and, remembering his gay time of the past, he dipped down to greet the entertainers. Like the pilot with the argument, he lost his rpm and tangled himself, helicopter, Tea House and all.

Beyond the seasoned pilot, there is the instructor who, like Caesar's wife, should be above reproach. A student's instructor may be remembered, sometimes even revered. His influence is greater and longer lasting than any the student will experience for the rest of his flying days. He can make or break the attitude of the student pilot. So it is no wonder that if he lets down, occasionally, and demonstrates non-syllabus maneuvers, or shows carelessness or boredom or a "let's not make too much over this thing" attitude, the student will soak up the idea conscientiously.

One single moment of letdown by an instructor can destroy many weeks of serious indoctrination by the safety officer. In a tight curriculum there is little time to give the student all the positive information he needs for flying efficiency much less take part of that time demonstrating poor technique.

Beyond that, there is the annoyance factor. Once during WW II a pilot took B-25 training at a base next to the town of his birth. One morning he decided to buzz his parents' home which happened to be next to the local church. It was a blue skyed and serene Sunday morning and all the pews were filled with worshipers including the young man's parents. The minister had just led the congregation into the benediction when in came Junior for his buzz job. The noise was deafening. Bricks and mortar were shaken loose and fell with great clatter and dust on the horrified congregation. Fortunately no one was hurt but his parents were a long time regaining social warmth from any of their friends.

And consider any mother trotting along complacently with her brood. When approached by a strange, low-flying aircraft, she is very prone to think of herself as "target for today." Result: Possible hysteria and other medical consequences. Older people, too, will fret over loud noises which threaten to dislodge them from their pleasant autumnal memories. Result: A possible hastening of death. Turkey farmers will go grim at the sight of a low flying aircraft —not to mention the turkeys who sometimes turn up their toes in sheer horror; and others, John Q. Citizen, in general, will squawk angrily by phone to the nearest military establishment or CAA station. Result: Lawsuits for the government and loss of public support for the military establishment.

Flying today is an exacting and responsible science. There is little room in the air for children or clowns. The temptation to flat hat grows strong when we are tired and bored, at the very time when our reflexes are slowest and our reason most cloudy. It isn't smart today and, most certainly, it is not worth the price.

Hey! You Forgot About Us

Lieutenant Clare F. Beames, III, *Inf*

ONCE THERE WAS a very fine aviation company with a complement of very fine officers and men, possessing the very finest equipment. This particular unit was part of a very fine division. As a matter of fact, all ran quite smoothly. The division trained and the aviators flew. The only significant discrepancy was that there was no liaison between these two groups.

If you were to question any individual in the division about the activities in the aviation company, he would reply, *"I guess* they're flying." If you asked anyone in the aviation company in what phase of training the division was engaged, he would probably answer, "Two up and one back, *I guess.*"

Furthermore, if you asked when the two units participated in joint operations, or when the aviation unit actively supported the division's problems (regardless of size), the aviator would probably reply, "They never call on us." The ground soldier would answer, "I know they exist, but nothing of what they can do."

Army Aviation has only recently gained the equipment and personnel to assume a larger role in support of the division. As aviators, we appreciate the vast potential we possess and the employment capability of our air units. Yet, unless our equipment is used and the potential exploited, a feeling will develop that Army Aviation possesses no practical value.

IMAGINATION

Now for clarity, assume there are two identical aviation companies: one, a part of the 51st Division, the second, a part of the 52nd Division. Both divisions are undergoing extensive platoon training in seizing and occupying hill masses. Here, the similarity ceases.

Let us go back a few months and see why these two units are not similar. Both contain the same equipment and the aviators are of equal experience. The difference stems from the initiative and imagination of the

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Aviation Officer and operations section.

The Aviation Officer of the 51st Division, realizing the lack of understanding and cooperation between his unit and the division, took steps to orient the Commanding General and his staff, and unit commanders, including those of the rifle companies. He also included key noncommissioned officers in the G-3 and S-3 sections. It was his aim to spread knowledge, and he went about it in a thorough way.

WHEELS TURN

Just what did he do? First, he arranged for an interview with the Commanding General to explain his plan. Next, he instructed his operations officer to prepare a course of instruction to be presented by the aviators to division personnel. And, lastly, he assigned tactical problems for the aviators to prepare employing aviation to the maximum. The wheels began to turn and after several weeks of preparation, the plan was ready for its first test.

On a predetermined day, the first group arrived at the division airstrip. To insure a complete understanding, these men were given four hours of classroom instruction. Many subjects were covered with emphasis on close support, and included parachute resupply of small units, wire laying, radio relay, aerial photography, route and combat reconnaissance, artillery adjustment, and target marking. The wealth of subjects was limited only by the imagination of the participating pilots.

Class members were repeatedly reminded that the purpose of aviation was not to provide taxi service to rear areas, or helicopter rides when roads were too rough, but to actively support the division in training and to facilitate success in battle.

After a lunch break, the group toured the airfield, examined the equipment and witnessed a flying demonstration of the topics covered that morning. Once again the idea was not to show how *pretty* airplanes looked in a formation "fly by," but how they could and would act under combat conditions.

FULL UTILIZATION

Now let's see if this schooling and indoctrination paid dividends. When the G-3 of the 52nd Division was preparing his training schedule, he omitted the aviation unit entirely because he lacked understanding. But in the 51st Division, the G-3 remembered what he had heard and seen. Realizing that the aviation unit should be incorporated into the division's overall plans, he took pains to achieve full utilization.

When a platoon of the 51st Division moved out to secure hill 405, they had many things in their favor. The platoon leader had in his possession aerial photos of his objective taken only hours before by division aircraft, and when he made an aerial reconnaissance of the hill, he was able to confirm or establish the best avenues of approach.

The battalion commander arranged for a paradrop of ammunition and supplies as soon as the hill was secured, and three Bird Dogs were prepared

for an immediate takeoff from a forward strip.

A Bird Dog was overhead to adjust accurate mortar and artillery fire on the enemy. It was also prepared to call in air strikes, relay radio messages, or to drop and pick up messages if other communications failed.

Rotary-wing aircraft were ready to evacuate wounded or fly in reserve forces. It was also the job of the helicopter crew to deliver a hot evening meal if the platoon were to remain overnight.

There was now little chance for a surprise counterattack because those pilots above the troops could see behind intervening hill masses and into the marshalling areas.

The soldier on the ground could now fully appreciate the capabilities and usefulness of Army Aviation. Because the aviation company was utilized adequately, the problem was more easily and quickly executed.

As the hypothetical 51st Division progressed into company and battalion training, the men of the aviation company willingly undertook more frequent and diversified supporting roles. Now they were performing their intended mission.

What about your unit? Have you heard anyone say lately, "Hey! You Forgot About Us."? Perhaps the trouble can be traced to a lack of liaison and poor understanding.

Solution to PUZZLER

On the basis of the factual information contained in the PUZZLER on page 13, the recommended solution is as follows:

Direct the pilot to key the FM radio while you use the ARC 44 homing device. When the "D" or "U" signal is received the aircraft on the ground can be turned by hand until an "on course" is received. A reciprocal of the heading when the "on course" is received will bring the lost aviator to the field.

Memo from Flight Surgeon

THE TOUCH-AND-GO LANDING, although designed as practice to make you perfect, may have two very different faces. It can make you more proficient or, on the other hand, it may land you in the Post Hospital.

One aviator flying an L-23B made several touch and go landings, and in each case he performed every necessary operation. But on entering the traffic pattern for final landing, he forgot his cockpit check and landed with landing gear retracted. Happily, he was not injured but his aircraft suffered near total loss.

What happened? Why the sudden lapse? The answer lies in a couple of concepts formulated recently by the psychologists.

In a series of interviews Dr. Frank P. Gatling, Head, Human Factors Division of the U. S. Naval Aviation Safety Center, disclosed that of 56 wheels-up

landing accidents, nearly half occurred after the pilot had completed several touch and go landings. Puzzling over this strange phenomena the psychologists came up with two possible explanations for the strange lapse. The first they labeled "telescoping" and by this descriptive term mean that we learn a habit correctly at first but as we repeat it we may shorten the task unconsciously by leaving out a detail here and there. In the above, in performing the landing task, the important detail left out was the wheels down response.

The other explanation has been labeled "transfer effect." The pilot performs a task repeatedly, and now he is ready to perform it one final time. By running his mind through the task he invokes certain stimuli identical to previous stimuli, but this time the response occurs in his mind only. He believes he has already performed the wheels-down operations when actually it was performed in a previous landing sequence.

So be warned in practicing the touch and go. Unless you take care you may complete the operation with a short, hot and embarrassing skid along the runway.

FEAR IS NORMAL

Let's admit it! Fear is normal. It may rise out of a real possibility like motor failure or fire in the air or death in combat. Or, it may be an instinctive thing like the fear of falling that you know best in infancy. Depending on how you handle it, fear may be good for you or it may become a chronic thing to make you ill and lead you into a crack-up.

Fear is your body's way of summing together all of its resources to meet an emergency. It can make you sharp; it can enhance your alertness at the controls. It can make you work or fight harder and longer. But, if the pressure it builds doesn't find a release valve, it can also make you a sick man and a very poor pilot risk.

Fear may bring on vertigo or nausea or blur your vision. It may seize enough of your mind to cut you off from much of the flight world around you, a world which makes so many demands that you must have the total picture in order to do a total job. Matter of fact, the world of the cockpit is so complex that sometimes you've got to have the total picture just to keep from getting hurt.

These are immediate symptoms; there are others more prolonged but just as serious. There

are those which follow you around, go home with you, make your life a persistent misery and sometimes insure you a prominent spot in the accident files. Loss of appetite, bad dreams, persistent ideas that run round and round and an almost constant low feeling are some of them.

Fatigue is a prominent symptom much mentioned today. Of this latter the Flight Safety Foundation writes: "Anxiety fatigue is the fatigue that stems from tension or prolonged mental strain. If bad weather is encountered on a flight, perhaps with excessive turbulence or possibly icing, the pilot on a long cross-country may feel physically and mentally exhausted by the time he nears his destination. The noise and vibration of the airplane, the number of items the pilot has to be concerned with either simultaneously or nearly so, the duration of the flight and the cumulative mental strain combine to deplete a pilot's store of energy. As a result, at the end of the flight when efficient pilot performance is most essential, his skill has deteriorated to the point where even the most ordinary and second-nature items of operation are apt to be overlooked."

What is the antidote?

The best one is direct, positive action to solve your problem. It is the quickest way to bleed off the pressure. Violent exercise too will help you burn fear away. If you cannot otherwise find release—some way of getting rid of that deep inner tension, talk to your flight surgeon about it.

Get help before you become a pilot error statistic.

HIGH SPEED NO FACTOR

"One of the greatest deterrents to getting — and using — crash-safety design and equipment in aircraft cockpits and automobiles has been the erroneous impression that high speed is necessary to cause death or serious injury in an accident.

"Nothing could be further from the truth," writes Mr. Howard Hasbrook, Director of Aviation Crash Injury Research, Cornell University. "Low speed can be just as killing under the right circumstances. Injuries can and will vary in their seriousness, depending on the area of the body which is injured, and the pressure distribution involved. For example, when you sit in a chair you are exerting the force of only one g against the chair seat — and against your buttocks. If your buttocks cover an area of 150 square

inches (about average) and you weigh 150 pounds, the average load against your buttocks is one pound per square inch. Now, let us change the situation by incorporating a potentially lethal item in our environment; we install an icepick—point up—on the chair bottom. We then sit down slowly on the chair—and on the icepick! The point of this icepick covers, perhaps, an area equal to say, 1/64th of an inch —it's a blunt icepick. Our entire weight of 150 pounds is now born by a tissue area of only 1/64th of a square inch. This is equal to a pressure of almost five tons per square inch—and far exceeds the pressure tolerance of our tissue, resulting in penetration of the icepick up into our body—and injury.

"Such injury in this area might not be particularly dangerous insofar as death is concerned, but suppose you were slowly lowered, *head downward,* on this icepick? It would penetrate your skull, pierce the brain, and you would die, under a condition of only one g and very low velocity."

LISTS DANGER SPOTS

Mr. Hasbrook asks, "What does all this mean to crash-safety design for crew stations? It means this: vital areas of the body — the torso and head in particular must be prevented from striking, or being struck by, rigid structure or objects which can impose heavy impact blows on small areas of the body or head. Rigid knobs, boltheads, window frames, latches, fire extinguishers, and other such items must not be permitted to contact the human body in accidents in which the aircraft structure is not demolished. This means—first—that effective — and strong — floor structures, seat anchorages, seats, safety belts, shoulder harness and anchorages for interior components must be provided.

"Certainly, the t i e - d o w n strength of these items should not be less than the strength of the overall fuselage structure—equal, statically, to a dynamic load of 20 g or more.

"Secondly, objects and structures within the 'flailing range' of the head and body should be delethalized (padded, shielded or constructed of yieldable material) so that bodily contact will not result in concentrated loads which exceed the tolerance of the body part involved.

"Third, protective head gear —lightweight crash helmets— should be provided for those crew members who occupy structural environments which do not —from a practical viewpoint— lend themselves well to delethalization.

"Fourth, the crew must use the protective equipment provided, not only in known emergencies but during all takeoffs and landings, for, as the records show, a large percentage of accidents occur during the takeoff and landing phases with no advance warning."

The Gray Hair Department

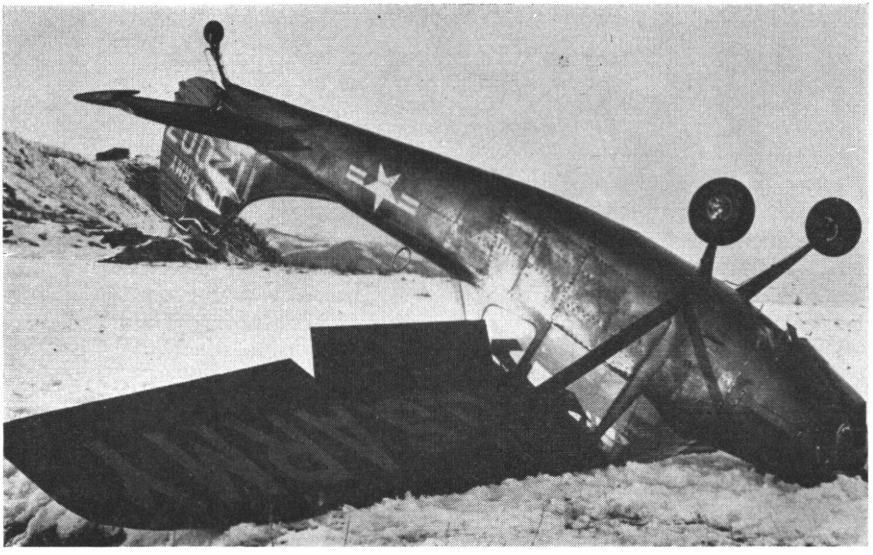
ONE WINTERY MORNING, an Army Aviator, flying a Sioux, departed on a mission to shuttle five passengers from the top of a ridge to a highway a few miles away.

The aviator's aircraft was equipped with dual controls. En route he observed no unusual flight characteristics and prior to landing he noted the cyclic was tight in rearward movement and loosened the friction lock a couple of turns. After landing he tightened down the cyclic again and picked up his passenger, who had approximately 40 pounds of equipment, consisting of a barracks bag, an incased transit, and a DR8 reel of wire.

The passenger placed his barracks bag in the forward part of the bubble, the transit box on the floor between the cyclic and the seat, and held the reel of wire on his lap. The aviator loosened the controls, checked the mags and pedals, and executed a takeoff from the ground without coming to a hover.

After reaching an altitude of about six feet, he attempted to pull the cyclic to the rear, but was unable to do so. He loosened the friction nut with his left hand, but still couldn't move the cyclic to the rear. The Sioux then struck the ground in a nose-low attitude. It did not explode

A transit box retarded cyclic movement



Supervisory error started this; inexperience finished it

or burn upon impact and both occupants walked away from the crash.

Later it was discovered that the transit box between the dual cyclic and the passenger seat effectively prevented its rearward movement. Placing the box in the same position on a similar helicopter proved the cyclic could be moved only 3° aft with a measured swashplate angle of 1° 30 minutes.

The aviator was evidently in too much of a hurry to glance at his passenger's load arrangement before executing the abrupt takeoff. Unusual loads should be checked at a hover. When the load might interfere with control movements, they too should be checked before placing the aircraft and its occupants in jeopardy.

The Gray Hair Department is prepared by the U. S. ARMY AVIATION DIGEST staff with information obtained from the files of the U. S. Army Board for Aviation Accident Research. The views expressed in this department are not necessarily those of the Department of the Army or of the U. S. Army Aviation School.

SNOW TIME

At 0700 an Army Aviator took off in a Bird Dog to reconnoiter a nearby strip and report if it were operational. A *General Officer* was scheduled to arrive there at 0800, and the assistant operations officer instructed the aviator to "reconnoiter, touch down, and land to be certain of its condition." The weather was clear, visibility four miles, winds from the north at six knots, and the ground was covered with a blanket of snow.

The strip to which the aviator flew was an emergency strip 950 feet long and 34 feet wide, lying generally northwest and south-

east. After arriving over the strip he determined the wind to be from the northwest and made his high reconnaissance at 600 feet, followed by two low drags —the first at 100 feet and the second at about 50 feet.

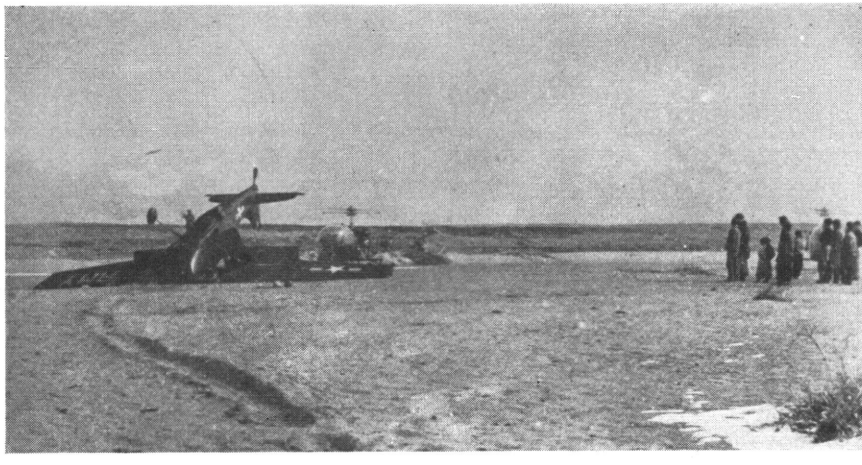
After completion of the preliminary reconnaissance, the aviator decided to check the runway surface. He made a low approach for a touch-and-go and rolled the main gear over the middle one-third of the runway for a distance of 53 feet before executing a normal go-around. He followed this with another low reconnaissance and checked the tracks of the main gear in the snow, estimating their depth at about three inches. He also noted grass and vegetation protruding from the snow at the side of the strip, and decided a safe landing could be accomplished.

He set up an approach carrying power and 45° flaps and touched down in a three-point attitude 50 feet from the southeast end of the strip. The Bird Dog rolled about 10 feet before the tailwheel raised off the ground. Eighty-four feet from the touchdown point, the main gear broke through the crust. The aircraft rolled 32 feet farther and turned over.

That the pilot completed five reconnaissance prior to initiating a landing approach indicates he recognized the marginal safety limits of the strip and took action to examine the depth and condition of the snow. Although he recognized these safety limitations, he still elected to land *without being certain* of the surface condition.

The touch-and-go executed by the aviator was an inadequate indication of snow depth, since the weight of the aircraft was still largely supported by the wings. The main gear penetrated only the first two inches of snow, where they came in contact with the hard crust. Since the full weight of the Bird Dog was not on the wheels during this touch-

The fire went out and the pilot went in



Continuing flight with malfunctioning equipment

and-go, they did not break through. This led the aviator to believe the runway to be only three inches beneath the surface when, actually, the total depth was about eight inches.

Operations officers should be selected from the more experienced aviators in the unit. This operations officer was obviously not a member of this group, for he would have known that helicopters are far better than fixed-wing aircraft for this type of reconnaissance. One key person failed to think and this accident was the result.

HOT FOOT

The Army Aviator took off in a Bird Dog late one wintery afternoon on an administrative flight to pick up a passenger at a nearby airfield. About 10 minutes after takeoff, he heard a "pop" and a crackling noise in the cockpit.

The aviator looked down and saw smoke coming from the battery between his feet. Then he saw flames coming out of the box. At this time the aircraft was about 1800 feet indicated. He cut the battery, generator, and ignition switches, locked his shoulder harness and picked a landing site on a sandbar in a stream bed. On final, at 300 feet, he pulled 45° flaps and landed smoothly. The wheels sank into the soft sand and the Bird Dog turned over. Sometime during the landing or in the pattern, the fire went out and caused no further damage.

Fire in the air is a pilot's greatest fear. This aviator's reaction is entirely understandable. Many others confronted with the same situation for the first time have done the same thing. However, when it is possible to discern that the source of the fire is the battery or generator, the best procedure is to turn off all electrical switches. Then if the fire continues after a reasonable time, the mags and other switches should be turned off. During this period, the aviator should be looking for a suitable field so he can land if the fire does not go out.

This type of fire is common to all aircraft and the foregoing procedure is normally used. If the source of the fire cannot be determined immediately, then

cut *all* switches (including mixture and gas) and make a forced landing. It is unfortunate that the site of this aviator's forced landing was a sandbar; his execution of the dead-stick maneuver was well planned.

DOWN FOR THIRD TIME

One morning a Raven was reported down at a subpost from a loss of power. The unit maintenance officer and a mechanic were dispatched in another Raven at 0930 to make the needed repairs and return it to the airfield. They arrived at the subpost at 1100 and checked the compression of the engine. Number two cylinder indicated 65 and number four cylinder 75 PSI compression. The mechanic replaced these cylinders and another compression check indicated number two had 120 and number four 125 PSI. The maintenance officer and the mechanic then took off *(approximately 1800 hours)* to return the helicopter to the airfield.

After 10 minutes flight, another loss of power was experienced and the aviator elected to land. During his approach the engine started backfiring violently causing him to enter an autorotation, which was successfully completed. Another inspection by the mechanic revealed the distributor zone pipe was separated from the left intake manifold.

The mechanic was flown to the airfield in another Raven where he picked up the tools necessary to make the repairs. After these repairs were accomplished, the maintenance officer inspected the helicopter and decided it was airworthy. Because of the preceding difficulties and darkness, he elected to return to the subpost for the night.

At 1900 he took off solo. The mechanic rode in another helicopter which was to "bird dog" him on this flight. Five minutes after takeoff and at an altitude of 100 feet, a third loss of power occurred. Because of the low altitude, he was unable to turn into the wind and continued his approach for a downwind autorotation.

At 15 feet he flared the helicopter to dissipate the airspeed, causing the powdery sand in the touchdown area to billow around the aircraft. This resulted in his loss of visual contact with the ground. By feel, he leveled the aircraft and waited momentarily before pulling *all* of his collective pitch. The helicopter fell from three to five feet, with the force of the impact causing the main rotor blade to flex downward contacting the tail boom and damaging it extensively.

This aviator erred in attempting to fly a helicopter with an engine known to be faulty. The flight would have been about one hour long. In his hurry to get back, he did not allow time for a short test flight. Since it was already dark, this flight was extremely dangerous. Autorotations are dangerous at any time, and at night they must be performed to perfection.

This aviator may have been well qualified to perform this maneuver, and would possibly have succeeded except for the dust. You never know when something like this will "be thrown into the game" and you must be prepared for any eventuality.

FORGOTTEN TECHNIQUES

One warm summer day an Army Aviator took off in a Beaver to pick up one passenger at a nearby municipal airport. After a normal takeoff the aviator executed two ILS approaches and proceeded to his destination, landing with no apparent difficulty. Instead of the one passenger, four were waiting to fly back with him.

Field elevation was 4,200 feet, temperature 91°F, relative humidity 24%, and winds calm at the time of takeoff.

The tower cleared the aviator to runway 09 where a normal runup was performed prior to takeoff. Engine, propeller, and flap checks indicated normal operation. *During* the ground roll he lowered the flaps to "takeoff" position. After breaking ground, the propeller was retarded to 2,000 rpm, manifold pressure was set at 30 inches, mixture full rich, and normal climb established.

At 150 feet the aviator decreased his flap setting to "climb" and his airspeed increased to 90 mph. The aircraft immediately began to settle at the rate of 1,000 fpm. He attempted to maintain the same altitude by adding full power, holding a nose-high attitude, and lowering flaps.

As flaps were lowered, the Beaver hit the runway in a right wing-low attitude with the tailwheel, right wing tip, right horizontal stabilizer, and right main gear striking the ground simultaneously. It bounced into the air, still in a nose-high attitude with full power, and traveled 80 feet before coming down on the runway in a level position. It veered 30° to the right then and rolled off the runway into soft sand, traveling 766 feet in the soft sand before coming to a stop. All switches were then turned off. The emergency release for the right rear door was pulled by a passenger during the ground roll causing damage to the door and right flap.

The aviator attempted to take off with a heavily loaded aircraft without considering temperature, altitude, and gross weight. The climb was made close to the stalling point and as flaps were raised, lift was lost. He failed to recognize the stalled condition and reversed the procedure necessary for a recovery. After the aircraft hit the runway, he failed to reduce power, which resulted in an excessive ground roll through the soft sand.

A stall in a Beaver is perceptible first through feel and is not as easily discerned as in a Bird Dog. Checkouts in this aircraft should include extensive practice in stalls and their recovery and aviators should not be cleared to carry loads or passengers until they exhibit a high degree of proficiency.

The L-23 remanufacturing project will supply the Army with a new fleet of modern L-23 aircraft having improved performance. The rebuilt planes will be comparable in every respect to production L-23D aircraft which Beech is currently delivering under a separate order.

After two days of checking the re-built Seminole from nose to tail, a 20-man team of technical advisors reported to the Contractor Technical Compliance Inspection board shown above. Seated from left, Lt Col W. H. Byrd, Jr., Maj R. W. Hinck, Col J. R. Marinelli, Lt Col R. J. Hagreen, C. F. Walker, Lt Col. R. R. Long. Standing from left, H. E. Mers, Maj L. P. Murray, Lynn D. Richardson and D. W. Schneider.

A SALUTE TO MAJOR GENERAL HAMILTON H. HOWZE

In February 1955, Major General Hamilton H. Howze, then a Brigadier General, was appointed Chief of the Army Aviation Division under the Assistant Chief of Staff, G-3. In January 1956, upon reorganization of the Department of the Army, he was designated as the Director of Army Aviation under the Deputy Chief of Staff for Military Operations. As the first Director of Army Aviation he undertook the significant task of coordinating and welding together the many facets of the overall Army Aviation program. Through his enthusiasm and drive, the entire Army Aviation program has been given a tremendous boost; and through his vision as to possible future employment, the Army Aviation program is pointed toward an ever-expanding role in our modern Army.

We in Army Aviation are particularly grateful to General Howze for all that he has done to stimulate and inspire the growth of Army Aviation, and we join his many friends in wishing him success in his new assignment as Commanding General, 82d Airborne Division.

—Brigadier General Ernest F. Easterbrook
Director of Army Aviation

Editor's note—On 18 December 1957, General Howze and General Easterbrook assumed their respective commands.