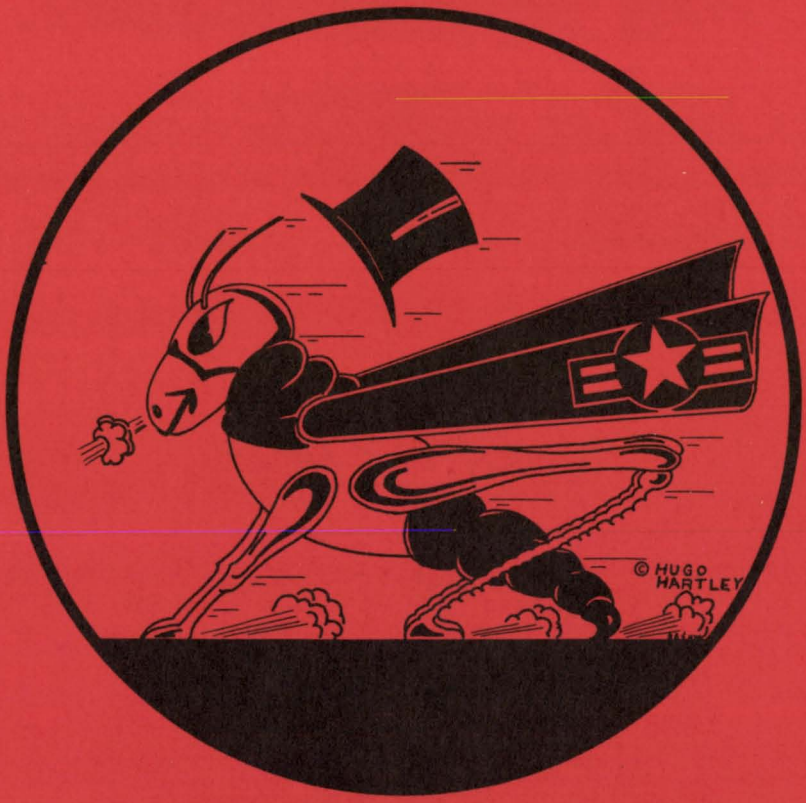
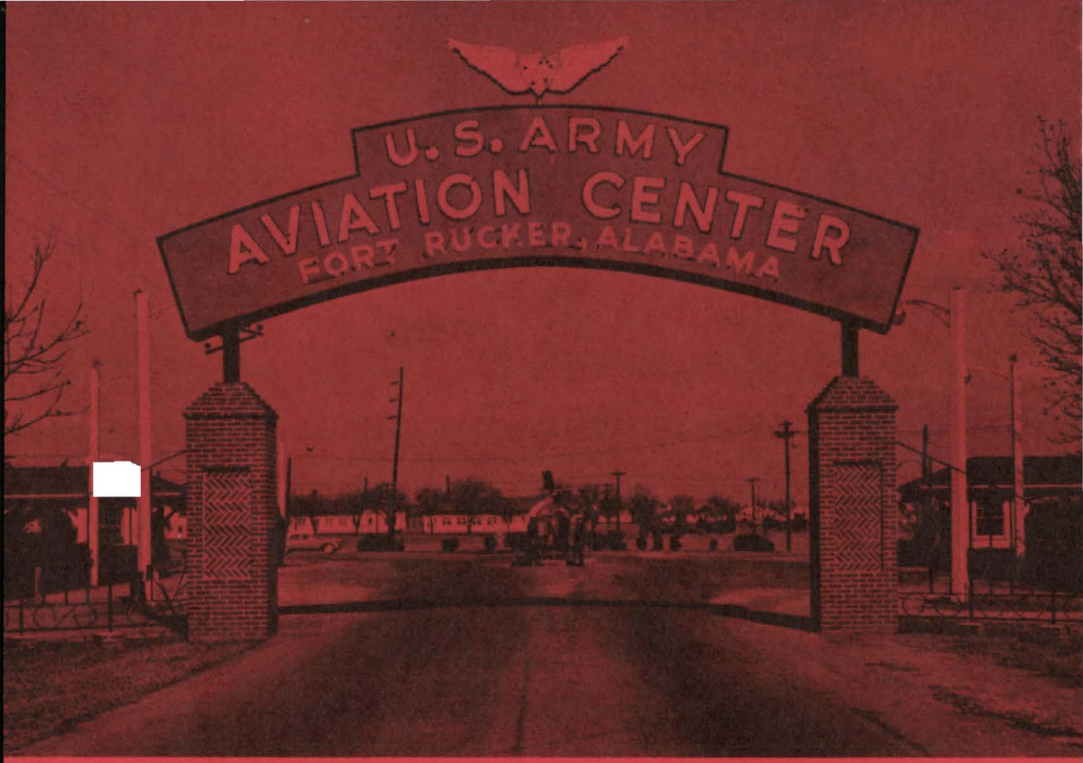
ARMY AVIATION DIGEST



ARMY AVIATION SCHOOL
FORT RUCKER, ALABAMA

MAY 1956 VOLUME 2 NUMBER 5



ARMY AVIATION SCHOOL

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ARMY AVIATION
DIGEST

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COVER: This insignia was developed at Fort Sill, Oklahoma, in the early days of Army Aviation, then "Organic Air Observation for Artillery." In the Department of Air Training it was proudly worn on the leather flying jackets of all instructors and students. Inspiration is said to have come from President Eisenhower, then Chief of Staff, Third Army. Ike is supposed to have said, upon observing these aircraft on maneuvers in the summer of 1941, "Why they're not airplanes, they're grasshoppers." Artwork in devising the insignia was done by PFC Hartley, a member of the Department, who copyrighted it. The device is particularly apt, showing the grasshopper making a short field landing with maximum braking action, his snort betokening pride, gratification, and no small measure of relief.—Brig Gen W. W. Ford, *USA*, Ret

This copy is not for sale. It is intended for more than one reader.

PLEASE READ IT AND PASS IT ALONG

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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, ARMY AVIATION DIGEST, Army Aviation School, Fort Rucker, Alabama.

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THE COMMANDANT'S COLUMN

Brigadier General Carl I. Hutton, *USA*
Commanding General, The Army Aviation Center

The views expressed in this article are the author's and are not necessarily those of the Department of the Army.—The Editor

Universal Superhighway

GENERAL George S. Patton used to say that battles are fought where there are roads. Roads have been necessary for the movement of armies at a reasonable rate as well as for supply. For huge armies railroads have been a necessity, unless the action occurred adjacent to the broad oceanic highway. Only within the last few years has it become apparent that the Army might have a highway even more flexible than the ocean. In fact, the air is a sort of universal superhighway. It reaches across rivers, swamps, jungles, tundra, deserts, and canyons. It can not only traverse mountain ranges but also it can reach their otherwise inaccessible peaks without lung-bursting and time-consuming efforts. The universal superhighway is there now; it does not have to be constructed. It is truly a miraculous gift to the soldier.

The principal reason we have made comparatively little use of the universal aerial superhighway is technological. The state of the art has just started to develop to the point where we can begin to use the flexibility which the air affords. It will support not only trans-sonic bombers, massive cargo carriers, and mach-2 fighters, but it will also support many sorts of lift devices which are now in stages of invention from mere ideas—through basic studies, drawing boards, mock-ups, and prototypes—to full grown production. These lift devices were not foreseen during the early years when the theory developed that everything which moves on the ground belongs to the Army; everything that flies, to the Air Force; and everything

that floats, to the Navy. Technology is developing something new for ground warfare.

Unfortunately, it is not a simple task to convert to the necessary skills, equipment, tactics, and techniques to take advantage of the superhighway. We have, so to speak, an inventory of all of those things. This alone would require time to overcome. Next, ideas and engineering studies are excellent but they are a long way from being hardware we can fight with. As a guess, the short end of the time frame in which we can safely count on the development of suitable hardware is 10 years away.

This does not mean that we can sit down and do nothing now and then suddenly have the hardware in 10 years. On the contrary, what we shall have in 10 years depends entirely upon what we are doing now. If the soldier in 1966 is to be able to make full use of the universal superhighway, those things we are doing now are urgently necessary. The training of aviators, the development of airmanship, the tactical experimentation, the training of maintenance skills, and the research and development must go on. We are laying the foundation for the future.

All of this is costly business but so is everything in war. On the other hand, all of the aircraft we now have are handmade. Mass production techniques are not applicable to producing five or six items per month. It is possible that larger orders over longer periods can do much to reduce unit costs. That approach will not be possible until we have a clearer idea of what we need.

The universal superhighway is not a dream—it is a fact. Only the use we make of it is uncertain, for *that* depends upon us. There is no natural division or law or rule which says that the soldier cannot do whatever is necessary to improve his fighting capabilities. Such restrictions have frequently been tried before, but in the end they have always failed, because they violate common sense. Those who have been slow to take advantage of technological advances have often paid the penalty of defeat.

It is going to be an interesting future, for the opportunities are very great indeed.

ALASKAN OPERATIONS

Captain Richard L. Dowden, *Signal Corps*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or of The Army Aviation School.—The Editor

"BRYANT CONTROL, this is Army 2679 ready for takeoff."

"Army 2679, this is Bryant Control. You are cleared for takeoff."

The opening of the throttle is actually an anticlimax in getting this aircraft into the air because of the long hours of work in subzero temperatures required to ready it. This work must precede every flight, and many experiments have been conducted and are still being conducted to adapt Army aircraft and personnel to Arctic conditions.

Hours before the plane took off, ground personnel started the readying process by applying heat to it with a Herman-Nelson heater. Since only one installation in Alaska has hangar facilities, the aircraft has been tied down outside, where the temperature is anywhere from —20° to —60° F. The oil is like molasses, if not frozen. The wing covers have to be removed and the wings defrosted, as do the windshield and all control surfaces. The fuel drains are often frozen, and in some cases the fuel selector valve will also be frozen. While the heating and de-icing is in progress, the battery is taken out of heated storage and put back in the aircraft. Emergency survival equipment and parachutes are checked and placed in the plane. The skis and any other special equipment are checked. After the heating process comes the preflight; the aircraft is then ready to be run up.

While his aircraft is being "defrosted" and readied, the pilot has been busy getting as good a weather briefing as possible and trying to find out the field conditions at his point of destination. He checks the radio navigational aids and the NOTAM's on range facilities and completes his computations on airspeed and ETA's. All of Alaska is either domestic or coastal ADIZ; and, unless a flight is carefully planned and executed, a pilot may find two jets from the Alaskan Air Command suddenly flying formation with him in an attempt to identify the flight. Last, but not least, the pilot

must file his flight plan so that in the event of an emergency Air Sea Rescue will know over what route to search for the downed aircraft.

Cold Weather Equipment Needed

Army aircraft in general have very little equipment to fit them for operation under severe cold weather conditions. The L-19 has no winterization kit available, and in extreme cold weather it is difficult, if not impossible, to maintain proper cylinder head temperatures. Metal plates have been made by the mechanics of our unit to fit over the air intakes in the cowling and then holes drilled in this plate to allow some air to pass. By experimenting they have finally designed a plate through which enough air will flow to maintain an adequate cylinder head temperature. The L-19 cabin heater is inadequate for cold climates, and bulky clothes must be worn on all flights. An improved heater would also improve windshield defrosting in flight.

L-20 Best Fitted

The L-20 is probably the best cold weather aircraft the Army has in that a winterization kit is provided and heat control in very low temperatures is adequate. However, for an aircraft of this size a wheel-ski combination, not currently available for issue, is needed.

A recent incident during extreme cold weather operation of the L-23 indicated the need for some type of winterization kit or cowl shutters developed for the aircraft. During operation in extremely cold air the oil in the pitch change transmission froze and made it impossible to change pitch on either propeller. Attempts to exercise the propellers resulted in damage to the seals and forced the oil out through the front shaft of the pitch change transmission. The cruise control chart published for the L-23 is not suitable for this climate since the lowest temperature shown is 0° higher than we ever

(continued on page 16)

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CONCEALMENT: YOUR RESPONSIBILITY

YOU ARE an Army aviator assigned to an air section in combat and orders have been received to relocate forward. What does this mean to you? What are your responsibilities and what are those of the engineers? Who does what first?

Did you say you reconnoiter for a new location? You are right. After a look at the operations map, you take an aircraft and head for the area in which the air section has been ordered to relocate. Do you go alone? Not if you are considering the ground reconnaissance and/or engineer coordination which must precede actual movement of the section. Take along a qualified observer, perhaps the operations or executive officer or an experienced enlisted man, who can assist you in site and route reconnaissance.

"Look at that beaut of a field below," you observe to your passenger.

"Wide open and long enough for a C-47," he replies.

Do you choose it? No, you do not, unless the terrain prohibits you from selecting another site. Have you considered the concealment potential of this field and for the aircraft that will use it? Did you say that is not your problem? The engineers are responsible? No, they are not. They help educate and train you, and are available for suggestions and help. But let us face it; you are the responsible party. You must conceal your position.

Terminology

Let us pause here briefly for a bit of terminology clarification. *Camouflage, concealment,* and *deception* are terms closely related in both meaning and training literature; and as a result they often get lumped together in a vague association with nets, protective coloration, and tree limbs. Each is quite separate from the others, however. Camouflage is the general term; it is used to describe any measure aimed to mislead the enemy by misrepresenting the existence or true identity of an installation, equipment, or activity. Camouflage encompasses the series of related concealment and deception measures which may form a part of the overall plan for protecting an installation, equipment, or an activity.

Concealment means hiding or disguising and refers to the application of camouflage techniques designed to deny information as to the existence, nature, disposition, or intent of installations, equipment, or activities.

Deception is used to describe any activity aimed to draw attention or to mislead by misrepresenting any installation, equipment, or activity. Although two distinct phases of camouflage, concealment and deception are interdependent in their application. Maximum use of both types of measures should be SOP in any forward air section.

Back again to our combat situation. You say you would not have chosen the large, open area for your airstrip. Good. You have learned the first principle of concealment: Of two sites, both adequate from the standpoint of operations, select the one offering the most natural concealment. Particularly in the case of pioneer airstrips, natural concealment should be relied upon much more heavily than any artificial measures of camouflage. Further, taking advantage of this natural concealment should begin with site selection and continue until the site is abandoned.

Mission, Access and Concealment

What would be the "best site" for a forward airstrip? Site selection, of course, must adhere to the considerations of mission, access, and concealment, usually in that order. The mission of the airstrip is to provide room for safe takeoffs and landings, for adequate maintenance facilities, and for dispersed parking of aircraft. Mission adequacy of any site would, of course, depend upon the size of the aviation unit to be located there. The need for access is obvious, but *it can be overemphasized.* Often strips are sited near surfaced roads at otherwise unsuitable locations with the result that more heavy repair equipment and work are required to ready the airstrip than would be required to construct a single-lane road to a

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This article is in consonance with current instruction at the Engineer School, Fort Belvoir, Va., and was prepared by Captain Frederick W. Rupp, Chief, Aviation and Camouflage Engineering Section, Department of Training Publications; Captain John V. Keating, Chief, Camouflage and Reconnaissance Section, Department of Engineering; and Mr. Edward J. Bierly, Camouflage Branch, The Engineer Research and Development Laboratories, Fort Belvoir, Va.—The Editor

more naturally suitable site. Even when the initial earth-moving requirements are the same, the concealment achieved by careful construction of an access road far outweighs any advantage of clearing or grading an area solely to locate the airstrip near an existing road.

Terrain factors and concealment go hand in hand. Defilade should be exploited when at all possible. Farm country offers many favorable concealment factors. Usually it has existing access routes, and terrain is such that relatively smooth, well-packed fields are usually bordered by areas of trees. If planes and supporting equipment can be placed so as to create the *minimum change* in the terrain appearance and kept that way, the aviation section can usually accomplish its mission and move on unobserved. River beds and little-traveled roads too generally offer maximum natural concealment for pioneer strips. Landing areas must be relatively smooth and treeless, but they do not necessarily need to be straight.

Camouflage Discipline

What about concealment after the site is selected? One important factor is strict camouflage discipline within the unit. This discipline is a psychological state which is easy to establish the hard way (among the survivors) but maddeningly hard to create the easy way (by training). Another important factor is a pilot with a Sherlock Holmes talent for deduction. It helps too if he has a persuasive manner or is the commanding officer. No camouflage manual can outline remedial action as effectively as an Army aviator who has just looked over his own strip "with the enemy's eye." I feel that such a procedure is so important it warrants a place in the SOP of every forward air section. Further, if each approaching pilot can divorce his mind from familiar characteristics which reveal the strip to him and consider objectively what might reveal it to an enemy pilot at his altitude and distance, he is then prepared to suggest valid remedial action. Necessary corrections should be made immediately.

Actually, concealment of an airstrip involves no magic beyond good judgment. Unfortunately, however, the aerial appearance of any military installation usually begins to deteriorate with the tracks made by the advance party and continues until the site is vacated or attracts a curious enemy observer. Fighting this deterioration is as difficult as opposing any insidious natural process. It requires effort as unremitting as the process itself but it must be done. During

movement into a site, careful consideration must be given to preserving the original appearance, and rigid self-discipline must prevail from those moments on.

Too often locations of otherwise fairly well blended forward airstrips have been given away to enemy aerial observers by a profusion of ground tracks which clearly indicated such support vehicles as fuel, mess, and supply trucks. While it is not always practical to break these supplies down to quantities small enough for manual transport to each aircraft, there are many cases in which just a little more manpower and a little less vehicle power would hold obvious indications of such activity to a minimum.

Natural Growth Best

The best method of concealing an aircraft is, obviously, to place it where it will be wholly or partially concealed from overhead observation. This is why trees adjacent to a pioneer airstrip are very important. However, overhead natural growth is not absolutely necessary for effective concealment. Any terrain, regardless of how barren it may be, offers many possibilities for concealment

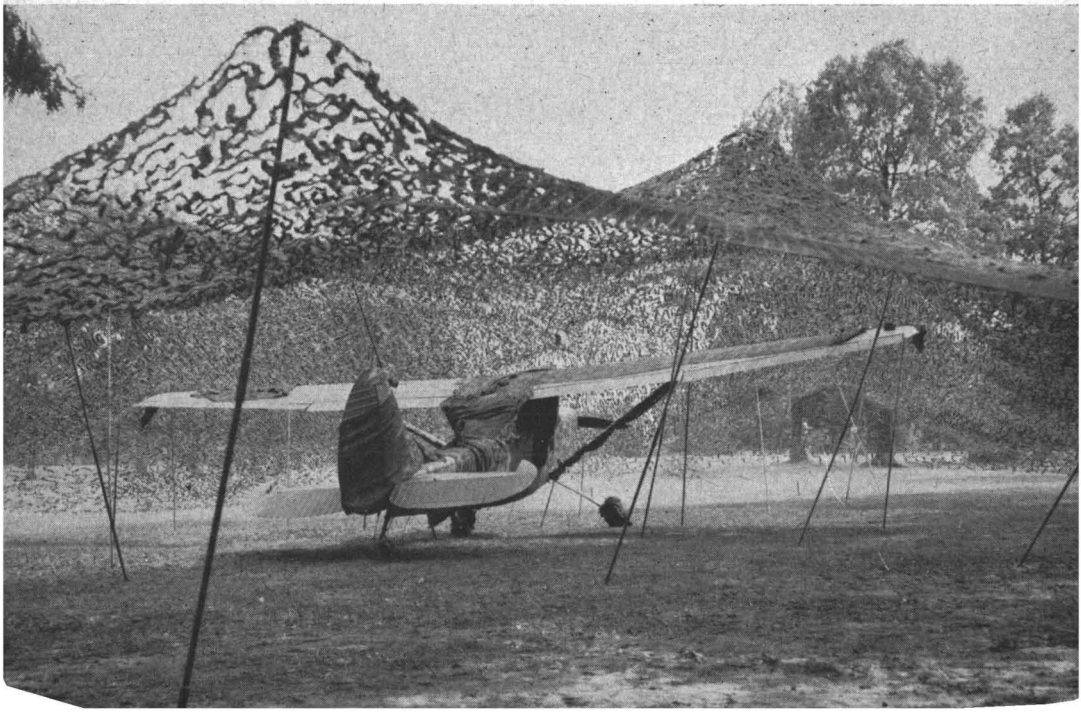
Ground crew members of an air section in the field cover "give away areas" of the L-19. Windshield, insignia, propeller, and wing struts already covered or wrapped; wheels and landing gear will be included before the job is completed.

if effort is made to blend objects on the ground with the surroundings. Study of the terrain pattern from the air will reveal those locations in which aircraft will be least conspicuous.

Reflection

Windshields and insignia are the "dead give away" areas on aircraft and must be covered with burlap, tarpaulin, or dense brush. Wrapping of the propeller, wheels, wing struts, and other surfaces likely to reflect light is also desirable. Small quantities of dark camouflage burlap or tentage should be carried in the airplane for this purpose. While providing effective concealment, camouflage nets presently available are too heavy and bulky to be transported in Army aircraft. Further, they have so many frustrating handling and erecting characteristics when used for aircraft that they are largely impractical in fluid situations. Foliage and brush can, therefore, be used to better advantage. Limbs or small trees can be placed on upper wing and tail surfaces and leaned against the fuselage. Smaller branches can be held to the fuselage by pressure-sensitive vinyl tape.

Standard engineer camouflage net used to conceal an L-19. Such nets are adaptable to use in rear areas and in less fluid combat situations. Poles are raised to allow movement of the aircraft to and from the netted area.

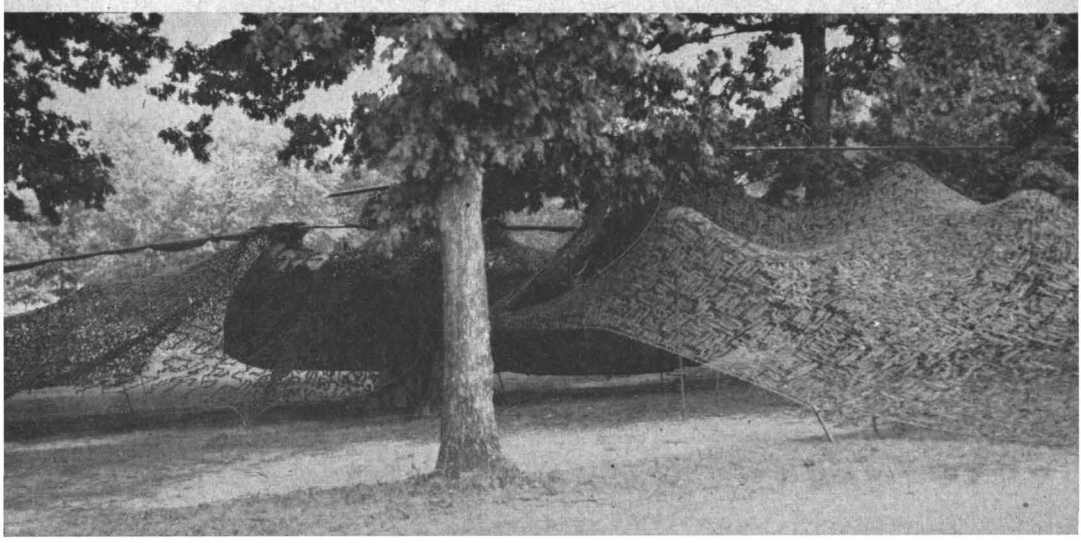


These measures, of course, do not offer perfect concealment, but they will cut down the chances of recognition from the features which most often indicate the presence of aircraft on the ground. Such measures, however, inhibit free access for maintenance and delay takeoff; so, if no overhead concealment exists, the commanding officer must decide what camouflage measures are justified or necessitated by the tactical situation.

Pattern Painting

Pattern painting of aircraft often makes them somewhat less conspicuous, but prepainting aircraft in patterns may result in their not blending with eventual operating terrain. To cope with this problem, experiments are being conducted on a colored coating which can be easily applied or stripped off by operating crews in the field. The tape is being developed by the Engineer Research and Development Laboratories, and prospects for its availability are good. The material would be carried in the airplane in a fire-extinguisher-type pressurized container and applied in a pattern by spraying. This method of coloring would be particularly effective in solving problems presented by temporary snow cover and changes in seasonal and terrain colorations. Possibly a smaller can (shaving cream size) could also be used to coat windshields and to cover insignia while the airplane is on the ground. The coating could be stripped off without undue delay during the preflight check.

A dual-rotor configuration helicopter concealed with the aid of overhead cover and a drape of engineer camouflage nets. Portions of the net can be thrown back and the helicopter rolled free of the trees without undue delay of takeoff.



Factory Coloration

Aircraft coloration at factory level is also being studied, with consideration being given to protective painting of aircraft destined for use in theaters with unique terrain coloring. For example, planes destined for the Arctic would be painted white; those destined for a desert theater, a sand base tone for patterning in the field. Engineer research and development personnel, charged with solving these and other aircraft camouflage problems, welcome information and ideas from pilots in the field.

Helicopter Concealment

Helicopters offer concealment problems differing from those presented by fixed-wing aircraft in that they are large, or high, and cannot be easily pushed or taxied under overhead concealment. When not in motion the rotor blades are fairly inconspicuous at a distance if upper surfaces are painted a dark, lusterless color. Pattern-painting and countershading of the fuselage, covering of insignia and all glass surfaces, and use of foliage and brush to lessen reflection and to disguise shadows are among measures effective in helicopter concealment. However, one of the best concealment precautions is to locate a helicopter landing area at a site where the background forms a vertical view and tone and color are as near

Overhead growth, camouflage drapes, and a smoke screen are employed in combination to prevent aerial spotting of this L-19. Wooded areas such as this provide backgrounds with a vertical view, which facilitates helicopter concealment.

those of the helicopter as possible. Low brush should always be *left* in the landing area to provide a dark background and to absorb the distinctive shadow of the helicopter.

Decoy Strip

A very effective measure of deception can often be gained by treating an alternate airstrip or landing field as a decoy. The very mistakes which should be scrupulously avoided at a forward airstrip can be produced to advantage at the decoy site to indicate to any enemy observer the existence of an airfield. Particularly if this decoy area is located in the general line of flight between the actual airfield and the enemy, a great part of the enemy's firepower and attacking force can be diverted to it. In returning to the airstrip, pilots can drop low over the decoy field, as though making a landing, before proceeding at low altitude to the actual landing site. For further deception small sections of crashed or salvaged aircraft can be placed to protrude from existing concealment to such an extent that they would indicate to the enemy the presence of actual aircraft. For night deceptive operation flare pots may be used at the decoy field in a very convincing demonstration which, from the air, looks like an airfield slowly reacting to a possible enemy air attack. Any false signs used at the decoy field should be realistic enough to be recognizable, but care should be exercised to keep them from being too obvious.

Developing proper camouflage is an art and an operation in which every member of a unit plays a part. Initiative in making maximum use of resources available in any specific situation and strict individual camouflage discipline are the most important factors. More detailed information on methods to be used can be obtained from series-5 Army manuals.

At the present time the following publications are being written or revised by the Corps of Engineers and distribution is expected in 1957-58: TM 5-251, Army Airfields and Heliports; FM 5-20, Camouflage, Basic Principles and Field Camouflage; FM 5-21, Camouflage of Fixed Installation; FM 5-22, Camouflage Materials and Manufacturing Techniques; FM 5-23, Field Decoy Installations.

Delivery of the U-1A

Pilots of the 14th Aviation Company, Ft Riley, Kansas, accept delivery of 7 U-1A "Otters" at the de Havilland aircraft plant near Toronto, Canada. The officers who participated in the fly-away were the second graduating class of the 1956 de Havilland U-1A Otter pilots and mechanics training program. Since 1955 when officers and men of the 521st Aviation Company, U S Corps of Engineers, Mt. Uniat, Alaska, attended the first instructional classes, personnel from the 937th Aviation Company, Ft Kobbe, Canal Zone; the Transportation School, Ft Eustis, Virginia; and Board Nr 6 CONARC, Ft Rucker, Alabama have also taken this training.

The pilot training program consists of 10 hours flight time. While flying the aircraft is the primary instruction, pilots are drilled intensively on all phases of the Otter operation and leave the factory with a thorough understanding of the U-1A's design. The mechanics attend a course consisting of 40 one-hour periods covering all the aspects of U-1A maintenance.

The 14th Aviation Company is the first fixed-wing tactical transportation unit in the Army. It was organized in June of 1955 and used the L-20 (Beaver) and L-19 aircraft prior to the 1956 delivery of the U-1A Otters.

(ALASKAN OPERATIONS continued from page 6)
encounter in the winter. To be flown under instrument conditions, the L-23 should have wing de-icers and propeller and windshield anti-icers. Even in the summer the freezing level is quite low. Because of the high minimum enroute altitudes, some type of oxygen system is also necessary in this aircraft.

The H-13 has a winterization kit for the engine and the kit appears to be adequate. However, the cabin and litter heaters are not suitable for operation under extreme cold weather conditions.

Batteries Big Problem

With all aircraft, battery trouble is a big problem. Batteries last only a short time if used to start the aircraft. APU's are not always available, and about one start will reduce the battery strength considerably. Some type of small engine pre-heater is necessary for operation under combat conditions. Although the Herman-Nelson heater is very good, it is bulky and hard to maneuver into small combat strips. Also, many flights are to installations where no pre-heating equipment is available.

The Territory of Alaska is so vast and so sparsely settled that an emergency necessitating a forced landing is quite a problem. Consequently, emergency gear must be carried in the aircraft at all times. The Arctic survival equipment currently available is an Air Force kit, which is not entirely suited in size and shape to Army aircraft. A revised kit would be a great asset.

Radios Needed

Because of the extensive mountain ranges and the comparatively few radio facilities in Alaska, the present standard VHF equipment in Army aircraft is inadequate. On some flights the pilot has to fly for 1½ to 2 hours without voice communication to a ground station. Additional HF radio equipment to supplement present equipment would be an invaluable asset.

When we hear the radio crackle, "Bryant Control, this is Army 2679, 15 miles north for landing instructions," we know that another mission has been completed in spite of a cold, unfriendly climate and the problems it presents. This success is the result of the ingenuity and perseverance of the pilots and ground personnel of Army aviation, Alaska.

AVIATION STAFF STUDIES

Captain Thomas A. Beasley, *Armor*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or of The Army Aviation School.—The Editor

HOW MANY TIMES have you, as an Army aviator, had an idea that you felt would be a worthwhile project for The Army Aviation School, your own branch or service school, your department or unit? Probably several times, but what did you do about these ideas? Unless you are an Army aviator with experience in staff study writing, you may have hashed the project over with a few fellow aviators, maybe presented it to "the old man" verbally, and then let it die. A good idea was born but not reared. With proper followup, the fate of your idea might have been quite different.

Many ideas sound good when embellished with a tall drink or when aired with enthusiasm across a desk. One may even be "sold" occasionally "up the line," but sooner or later someone requires facts in writing.

In a subordinate unit, an initial selling job often can be done by an organized talk with the commander. But for any proposal which must go outside of the immediate unit, the commander will eventually require something in writing. The advantage of preparing a staff study in the beginning, and not relying wholly on a talk with the commander, is that in the process you will have thought out your idea more carefully and thoroughly and will have set it down in a logical, concise, well-organized manner.

In higher headquarters, the staff study is the accepted method of presenting a proposal, or other organized material, to a commander. As an Army aviator, you will be faced at some time, whether in a staff assignment or as a project officer, with the necessity of writing a staff study. When the time comes, your ability to write a good study will prove the difference between selling the project or not selling it.

"Staff study" is perhaps not one of the most popular of military terms. However, a staff study is not a mysterious "top secret" document compiled by a complicated formula to which only a "favored" few hold the secret. It is simply a concise, methodical presentation in writing of a proposal or a problem. FM 101-5, *Staff Officers' Field Manual, Staff Organization and Procedure,* November 1954 (pages 355 and 356), outlines the accepted form for a staff study.

With the prescribed format as a guide, drafting the staff study is a matter of fitting the various aspects of your proposal into the proper slots. Subsequent polishing and rewording as necessary to achieve clarity and conciseness will produce a creditable final draft. With such a final draft, you can rest assured that any idea, regardless of relative merit, has a much better chance of being "bought" than it would have as an intangible thing still existing only in your own mind. Certainly, if you have originated an idea, thoroughly researched it, and thought it through to sound conclusions, the actual preparation of the staff study should present little or no problem. Practice is the secret.

Example

To see how a staff study is developed, let us write one. The study below follows closely the accepted form set forth in FM 101-5; however, in addition to stating *what* should be in the study, suggestions are made as to *how* the writer can best evolve the required information.

In writing a staff study, as in all military writing, keep uppermost in your mind the basic principles of—

1. Unity—Stick with a single main idea throughout the study.
2. Accuracy—Weed out any factual and mechanical errors.

Captain Thomas A. Beasley *is Chief, Training Branch, Office of the Director of Instruction, The Army Aviation School, Fort Rucker, Ala. He is a senior pilot and is rated in both fixed- and rotary-wing aircraft, having completed the Army Aviators' Course in 1944 and the Helicopter Tactics Course in 1949. He is also a graduate of the Advanced Officer Course, The Armored School, Fort Knox, Ky. During the Korean War, Captain Beasley served as a pilot with the 52nd Helicopter Detachment.—The Editor*

3. Clarity—Be sure the words you use, and their grouping into sentences and paragraphs, convey exactly what you intend.

4. Coherence—Make certain that your material is organized and developed in logical sequence, setting the stage for sound conclusions and decisions.

5. Objectivity—Maintain an impersonal and unprejudiced viewpoint, presenting ungarnished facts in their true relation.

6. Completeness—Make certain that you have completed all action except actual approval or disapproval.

The following example staff study, which concerns a proposal of a helicopter endurance flight at The Army Aviation School, is in italics.

• • •

Headquarters
Preparing Subdivision
Place
Date

File No......

The title should be as short as possible yet adequate for file identification purposes. A complete sentence is not required.

SUBJECT: Helicopter Endurance Flight

Problem

Ask yourself what specifically is the problem toward which the staff study is directed. State this problem concisely in the form of a mission.

1. *PROBLEM*
To determine if a helicopter endurance flight, which would publicize Army aviation, would be a worthwhile project for The Army Aviation School.

Assumptions

During the research phase of the project, you probably encountered pertinent factors which, while not factual data, have a basis of fact and bear directly on the study. For example, in a staff study

concerning the handling of prisoners or patients, an estimate of the number of prisoners or patients to be handled during a given period in the future would be an assumption. State any assumptions pertinent to your study clearly and briefly. An incomplete-sentence form is concise and acceptable. This paragraph, or any of the following paragraphs as outlined in FM 101-5, may be omitted when not applicable to a particular staff study and paragraphs used renumbered in order.

2. *ASSUMPTIONS*
   a. *Higher headquarters would appropriate funds for such a project.*
   b. *The Army Aviation School would support the project with equipment and personnel.*

Facts Bearing on the Problem

Facts to be considered should be stated in the order of their importance with regard to the problem. Some of these will be uncovered during research; others may be included in the oral or written directive requesting the staff study. Include only the essential facts; unnecessary ones only confuse the issue.

3. *FACTS BEARING ON THE PROBLEM*
   a. *The name "Army aviation" needs publicity to differentiate it from such names as "Army air force."*
   b. *The Army aviation public information and recruiting programs need assistance in publicizing Army aviation.*
   c. *A long-duration helicopter flight would help establish more realistic, economical maintenance schedules.*
   d. *The current helicopter world endurance record is less than 1 day.*

Discussion

The "Discussion" paragraph is the one in which you write in a clear, concise manner your analysis of data secured during research and coordination of your project. From it you, and reviewers, should be able to arrive logically at conclusions and recommendations made. You will, normally, present both pro and con considerations for the proposed project or recommended action; however, in certain studies such as feasibility studies like this one, it is necessary to present only considerations for the project. In stating your case, or developing the discussion, a few pertinent questions or a checklist of points to be covered will help you sift out the most important factors and organize them logically.

This is the part of your staff study in which both brevity and emphasis are very important. Brevity assists in achieving clarity. However, clarity should never be sacrificed in favor of brevity. Emphasis is achieved by arranging your arguments and the facts to support them in proper relation in such a way that the important ideas stand out. This can be done on a paragraph, sentence, or word basis.

From the research and coordination of your project, select for discussion only the points of major significance; don't try to cover every "if, and," and "but" which may touch on the problem. With this approach, reviewers have before them only the points which have a substantial bearing on the problem and from these they can make a decision. In long staff studies the discussion paragraph can be treated as a summary, with the details included in a discussion annex.

4. *DISCUSSION*

a. *Being relatively new, the name "Army aviation" is unfamiliar to the general public, and to many Army personnel. One of the reasons for this has been the many changes in terminology during the past 10 years, for example: Army Air Corps, artillery pilot, liaison pilot, Army Air Corps liaison pilot, Army liaison pilot, Army aviator, Army aviation, and Air Force. Publicizing Army aviation would help immeasurably in establishing the name "Army aviation." To catch the public and military eye through newspapers, periodicals, television, and radio, an event which will stir worldwide interest, such as a helicopter endurance flight, must be staged. Public information media should be furnished, well in advance, releases which emphasize the mission of Army aviation and the maintenance information value of the proposed helicopter endurance flight.*

b. *The Army aviation recruiting program would greatly benefit from the attention called to the world-record-breaking helicopter endurance flight. For the most benefit to the recruiting program, the flight could and should be flown by young pilots recently trained or presently being trained at The Army Aviation School, rather than by highly qualified, oldtime instructor pilots. Using such pilots would demonstrate the thoroughness of the Army's flight training program.*

c. *Helicopter maintenance is generally considered a hindrance to sustained helicopter operations but many people concerned with aircraft maintenance disagree with this conclusion. Many oversea and stateside units experience fewer helicopter maintenance difficulties than does The Army Aviation School. Why? Many units have safely operated past the scheduled inspection and replacement time limits. These experiences question the validity of the current required com-*

ponent parts replacement schedule. A long-duration flight would prove or disprove the present replacement schedule and might establish new, more economical schedules. If weak points show up during the record flight, schedules can be corrected and instruction changed to reflect the inspection of these points.

Conclusions

From the facts presented in your discussion paragraph, formulate your conclusions. Alternate lines of action are eliminated. If you have presented both pro and con considerations, which set of considerations has more factors in its favor? Conclusions should be brief, concrete, and logical. In most cases action that you recommend in the final paragraph will be approval of conclusions drawn.

5. *CONCLUSIONS*
The Army Aviation School should stage a project to break the world fixed-wing endurance record with a helicopter. As a result of the public information program built around the event, Army aviation would be more firmly established in the minds of the public and military personnel and recruiting of personnel for Army aviation would be facilitated.

Applicable Additional Paragraphs

This paragraph is not included in those prescribed in FM 101-5, but paragraphs may be added as required by the nature of a particular staff study.

6. *PUBLIC INFORMATION ASPECTS*
   a. *Proposed project is of current interest; its development and release to the public will not violate security or have any adverse effect on public relations.*
   b. *The project should be carefully timed and planned so that a comprehensive public information program can be developed and well-prepared releases made before the event is staged.*

Action Recommended

State specifically what action you recommend as a result of research on the situation or problem. The commander or other reviewing authority should need only to indicate his approval or disapproval of the recommended action. An incomplete-sentence form for your conclusions is brief and acceptable.

7. *ACTION RECOMMENDED*

a. *That subject flight be planned and conducted by the Department of Academics, The Army Aviation School, to determine the feasibility of refueling methods and maintenance requirements and that, if approved, the inclosed disposition form (ANNEX A) be forwarded to the Department of Academics for action.*

b. *That this staff study be approved and used as a basis for correspondence to higher headquarters to secure approval of, and necessary appropriations for, the proposed endurance flight by The Army Aviation School.*

Closing, Annexes, and Coordination

Your staff study is then closed with the signature block; a listing of annexes by letter and title; coordination with staff sections, departments, or units affected by recommendations made (concurrences and nonconcurrences); your statement of consideration of nonconcurrences; and the action block. The signature and action blocks are always included. The other closing sections are optional and are used as required. However, FM-101-5 stipulates that, when they are not included, the headings will be typed in sequence and each followed by the word "omitted," e.g. *ANNEXES (omitted).*

Annexes are not required with all staff studies; but when any major section is lengthy or complicated, it should be presented as an annex rather than as a part of the staff study proper to facilitate handling and consideration. A summary is then given in the staff study proper and cross-referenced with the appropriate annex. Remember also that to be a completed staff action, a staff study should require only *approval or disapproval of the commander or chief* at the lowest echelon which can take action. Therefore drafts of action documents required to effect the recommendations made should be included as annexes. The disposition form referred to in the "Action Recommended" paragraph as Annex A to the example staff study is such an action document. Action documents may take the form of orders, a letter, or a disposition form.

Further, the study should be thoroughly staffed at the originating level before forwarding for approval. This staffing involves coordination with any staff section, department, or unit affected by recommendations made. Concurrence is indicated simply by the reviewing officer's initials, followed by his name, rank, branch, official position, and telephone number. In the event of nonconcurrence, the reviewing officer signs in the same manner but must state his reasons for nonconcurrence in a separate memorandum, which

is included as an additional annex. In the event of nonconcurrence, the staff study is returned to the originator for consideration. If your consideration shows that the nonconcurrence cannot be supported, your reason should be stated in a separate memorandum, which you sign and include as an additional annex.

The covering document prepared to forward a staff study may be either a summary sheet, a disposition form, or a letter. A summary sheet is normally used for forwarding the study to a chief of staff or a commanding general because of the limited time available for review and the number of staff studies reaching that level. The length of the summary sheet will vary with the complexity of the problem, but it should give the approving officer sufficient data to make a decision without reading the entire staff study. A disposition form or letter would request consideration and approval of the staff study, which would be attached as an inclosure.

Conclusions

Notice that in this staff study, the author did not go into the details of the project under study. Many questions, such as how to refuel, how to change pilots, or any of a hundred other planning details, will have to be solved. The purpose of an initial staff study, like the example one, is to get the project *idea* approved. If the idea is approved, an organization or an individual will be assigned the duty of accomplishing the project. During the follow through, at least one other staff study will probably be made to determine the best way to accomplish the project.

As it should be, ideas are sold daily by simply presenting them in an organized manner to your superior who can make the decision. However, when the idea affects higher units, the logical and most effective means of presenting it is with a staff study. Learning to write a creditable staff study is mainly a matter of practice in organizing your ideas logically and expressing them clearly and concisely in the format outlined in FM 101-5, as illustrated in the above staff study.

UER HIGHLIGHTS

Major James R. Hodge, *Transportation Corps*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or of The Army Aviation School.—The Editor

DURING THE past several months, considerable difficulty has been encountered during IRAN of command-type aircraft, due to corrosion. So much difficulty, in fact, that it is believed appropriate to devote some space to corrosion control.

The commonly used aircraft metals are resistant to corrosion after treatment applied to them by the manufacturer. However, these metals will corrode seriously under certain conditions if not given preventive maintenance.

The amount and degree of corrosion that may take place in aircraft are dependent on many factors. Some examples of these factors are: Proximity to salt water, moisture condensation, chemicals, contact with dissimilar metals, soil and dust in the atmosphere. Corrosion will also occur frequently in areas subject to exhaust and gunfire gases, battery acid, and relief tube spray.

Technical Order 1-1-2 tells us that cleaning is of the utmost importance in preventing corrosion. Army Regulation 750-5 provides that organizational maintenance activities are responsible for inspecting, cleaning, servicing, preserving, lubricating, and adjusting, as required. This makes cleanliness, the first step in corrosion control, a responsibility of the first echelon of maintenance.

Cleaning of aeronautical equipment is covered by Technical Order 1-1-1. This TO again emphasizes the importance of cleanliness in corrosion control.

Anodize, alodyne, plating, painting and lubrication are examples of corrosion preventatives. These preventatives are all, unfortunately, subject to removal by time and usage. Once the protection is broken, corrosion becomes a problem. It seems that the better metals for structures are more subject to corrosion.

Once started, corrosion may be difficult to stop. Corrosion in aluminum alloy sheet is often found progressing under the pure aluminum coating completely out of sight. Magnesium must be completely neutralized once corrosion is removed. These points are mentioned in order to emphasize the vital importance of removing all traces of affected metals before replacing the protective coating. During recent years, tremendous progress has been made in developing weapons for the fight against corrosion. Alodyne treatment and the new plastic paints are worthy of mention, but there is no known sure way of preventing further deterioration without first removing the damage.

Since most corrosion results from oxidation, the exclusion of oxygen or oxygen forming material offers the best hope. The important point is that the protection must cover and adhere to the entire area. Any discontinuity is a potential trouble spot. Visual inspection will usually detect these scratches or breaks.

Of course, we in the field cannot reanodize or replace plating. We can, however, protect these surfaces from abrasion and deterioration and/or paint those areas which have been damaged. In corrosion control, the accent is on the control. The adage is old, but still quite true that "A clean airplane is not always well maintained, but a well maintained airplane is always clean." A fact, rather than an adage, is that good organizational maintenance, which includes proper corrosion control, will reduce the ground time and, consequently, make more flying hours available. With the limited number of Command-type aircraft and the great demand for their utilization, this is an important consideration for all of us.

The UER Highlights Department, *prepared by Major James R. Hodge, is compiled from information contained in Unsatisfactory Equipment Reports received by the Transportation Corps Supply and Maintenance Command, 12th and Spruce Streets, St. Louis 2, Mo. Major Hodge is Chief of TSMC's Aircraft Maintenance Engineering Division.—The Editor*

BOOKS

For The Army Aviator

U. S. MILITARY DOCTRINE—*Smith, Dale O., Brig Gen, USAF (Duell, Sloan and Pearce, 270 Madison Ave., New York 16, N. Y., and Little, Brown and Co., 34 Beacon St., Boston, Mass., 1955. $3.50)*

This book is improperly titled. An appropriate title would be: "An Appraisal of the Doctrine of Massive Retaliation." As such an appraisal, however, the book has most serious shortcomings. It deals with massive retaliation as though it were not only inevitable under existing circumstances, but also desirable. It also seems to assume, somewhat implicitly, that developments will hardly change warfare in the future as they have in the past.

It is quite possible that General Curtis LeMay saved the West. At a time when the West had practically disarmed itself, General LeMay's vigorous and unrelenting efforts to create Strategic Air Command gave us our only military force in being to deter aggression. Whether General LeMay is a retaliation theorist is more or less beside the point. The characteristics of available machines and weapons forced him to act in accordance with the theory of massive retaliation.

It does not follow that the doctrine is desirable. It balances our existence against the enemy's. Instead of protecting our nation, the doctrine puts to risk the very things which must be protected. In the long view this condition is intolerable and, certainly under the threat, unremitting efforts will be made to find another solution. Thus, massive retaliation may prove in history to be but another stage in the development of war.

General Smith's book is one of a series of signs that the USAF is well on the way to becoming a mature service. The final part of that growing up will come when air power enthusiasts can write and speak without Mitchellian emotionalism. In that realm all ground actions become "massed infantry attacks;" anyone who expresses concern is a "traditionalist" and frequently worse. The coming prophet of air power who will take his place alongside

Clausewitz and Mahan will surely be one who understands the tactical and strategic developments of all types of warfare, along the historical road to our present situation. That spokesman has not yet appeared.

AIR PROGRESS—*(Street and Smith Publications, 304 E. Forty-fifth St., New York 17, N. Y., 1955-56. 50c)*

Both the 1953-54 and the 1955-56 editions of this aviation annual are available from the publisher and make interesting reading for any aviation enthusiast. The 1955-56 edition includes among features a pictorial review of new U. S. military aircraft, a review of WWII aircraft, a picture feature of current turbine engines, and a section of scale views of current aircraft. Foreign aircraft features cover Russian and Italian aviation developments.

HISTORY OF THE COLD WAR—*Ingram, Kenneth (Philosophical Library, Inc., 15 E. Fortieth St., New York 16, N. Y., 1954. $5.00)*

Whatever the final role assigned to it by future historians, the period between the end of WWII and the death of Stalin in 1953 will undoubtedly be recognized as a time of acute tension and of critical historical significance. The tension arose from, and was expressed in, the hostile relationship between the Western democracies and the Soviet Union, together with its Communist allies, immediately following the hostilities of WWII.

Mr. Ingram, author of several other current sociological and historical works, presents a highly readable history of the cold war, including both the Western and Communist interpretations of events. He traces the development of cold war tension in events such as the *coup d'etat* in Czechoslovakia, the Berlin blockade, Marshall aid, rearmament plans, the Korean War, unrest in Indonesia and Indo-China, the use of the veto in the Security Council, speeches of statesman, and the comments of press and radio. In conclusion, the author

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Book reviews are compiled by the ARMY AVIATION DIGEST *staff. Views expressed are not necessarily those of the Department of the Army or of The Army Aviation School.—The Editor*

reviews the existing situation in its historical context, offers some personal conclusions, and indicates a direction in which we might look for an easing of tension and the achievement of a permanent peace settlement.

History of the Cold War serves as a valuable reference for dates and relevant statistics for a period heretofore covered only in newspapers and other current periodicals. From it, the reader can put into proper perspective the events and diplomatic expressions which have shaped the years since WWII and, perhaps, gain insight into the years ahead and the final outcome of the cold war.

AIRCRAFT TODAY, 1956—*Taylor, John W. R., editor (The Philosophical Library, Inc., 15 E. Fortieth St., New York 16, N. Y., 1955. $4.75)*

An annual collection of articles by experts in the aviation field, the 1956 edition of *Aircraft Today* includes features for both career and hobby reading.

Army aviators will find Mr. Taylor's "Review of World Aviation" a concise summary of important recent developments in both military and civilian aviation. Eric Burgess writes "How Near Is Push Button Warfare?" Other features pertinent to military aviation include: "What Do We Know About Russian Aircraft?" "The Future of Military Air Transport?" "Swan-Song of the Flying Boat?" and "Shortening the Takeoff." The do-it-yourself enthusiast will enjoy "Build Yourself an Aeroplane" and "New Look in Models."

SPEECH COMMUNICATION — *Brigance, William Norwood (Appleton-Century-Crofts, Inc., 35 W. Thirty-second St., New York 1, N. Y., 1955. $2.75)*

Much of a military career is spent teaching or otherwise speaking to large and small groups. For those interested in how to do this task most effectively, here is a practical, well-written presentation of the most important principles of speech communication. The book, complete enough for the individual whose job demands a high degree of speaking proficiency, is also written to provide those with

only a secondary interest in speech communication an evening of profitable self-educative reading.

The author discusses such general considerations as what an audience has a right to expect from a speaker and how to develop the mental attitude necessary for good speaking. He tells how to make a good platform appearance, how to use action to the best advantage, how to phrase sentences for the desired audio-effect, and how voice modulation contributes to being understood as well as being heard. Subsequent chapters on speech organization and handling demonstration equipment and visual aids contribute to a complete and practical coverage of effective speaking.

TM 1-215, December 1955, titled *Instrument Flying Theory and Procedures*, currently being issued by Department of the Army is the new technical manual on theory and procedures of instrument flying, basic aircraft control, instrument interpretation, radio navigation, and weather principles and practices. It supersedes TM 1-215, 3 February 54, and other instructional material previously printed on the subjects contained in the manual. Recommendations or suggestions for improvement of this manual are encouraged. They should be forwarded through channels to the Director, Publications and Nonresident Instruction, The Army Aviation School, Fort Rucker, Alabama. However, requests for this manual must be forwarded through normal AG publications channels.—The Editor

The Gray Hair Department

AIRCRAFT accidents are more often the result of a combination of several small errors than of one large error. The compilation of small errors may be compared to a pyramid. When enough small errors are made and the pyramid is completed to its peak, an accident

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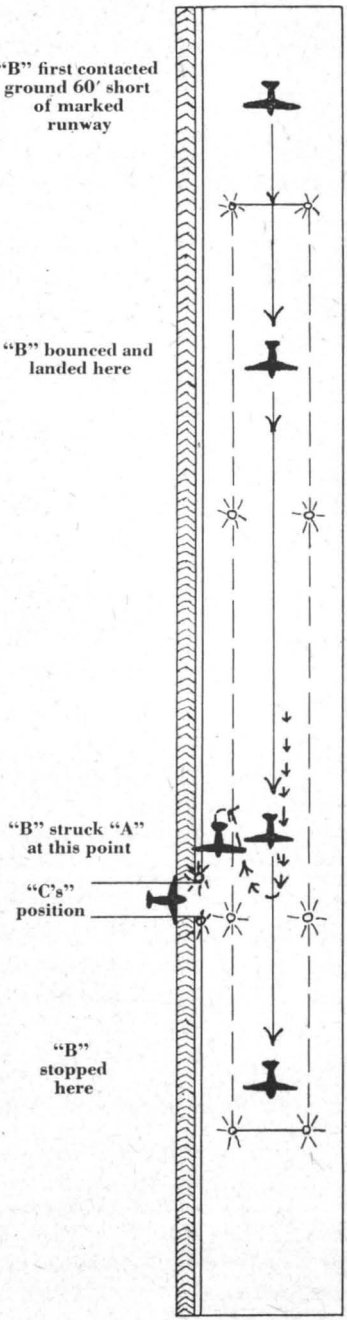
Lieutenant Colonel Duane P. Jackson, *this month's very senior Army aviator pictured above, is the executive officer of Special Troops, SU 3461, The Army Aviation Center, Fort Rucker, Ala. Since enlisting in the horse-drawn artillery in 1940, he has ridden, driven, or flown almost every type of transportation that the Army has. He received his commission from the Officers Candidate School in 1943 and graduated from the liaison pilot training course the same year. He then joined the 179th Field Artillery Group as Aviation Officer and went to the European theatre of operations with it; he also served in Europe as the 32d Field Artillery Brigade Aviation Officer. Following WW II, he served as Aviation Officer for the 415th Field Artillery Group, in Fort Jackson, S. C. and later as 1st Constabulary Regiment Aviation Officer in Europe.*

He was out of the Army for a brief period in 1948-1949, then returned to service as a training officer with the 101st Airborne Division. Following this assignment, he shipped to the 7th Division Artillery, as SSO, in Japan. Prior to the Korean War he served as senior instructor with the Air Training Department, the Artillery School, Fort Sill, Okla. Following this assignment, he became Assistant Army Advisor at Gary Air Force Base, where he remained until he was sent to Korea to become I Corps Aviation Officer in 1953. In his 13 years of flying, Lieutenant Colonel Jackson has become a very senior pilot, qualified in all types of Army fixed- and rotary-wing aircraft. —The Editor



happens. The following accident is a result of such a pyramid of errors on the part of six pilots, three students accompanied by three instructor pilots. It is very possible that if the occupants of either of the three aircraft involved had failed to make their particular error or group of errors that the accident would not have occurred.

Location: The accident scene is a practice strip located in a barren section of a military reservation. Four L-19's were utilizing the strip for night proficiency flying. We will call them aircraft A, B, C, and D.

Situation: A few minutes prior to the accident, aircraft "A" and "B" took off. Aircraft "D" taxied up the active to takeoff position, and aircraft "C" moved along the taxiway and stopped at the entrance to the active runway. These taxiways, one located near the downwind end of the strip, and one at the takeoff, or upwind end of the strip, were the only exits available. As aircraft "D" swung into position for takeoff, its pilot saw that aircraft "A" had already turned final and appeared to be intent on landing. He immediately moved completely off the active at the takeoff end and from this point on aircraft "D" was not involved.

Aircraft "A" then made a normal landing and turned to enter the taxiway to return to the parking area for refueling. The pilot saw that aircraft "B" had already turned final and was continuing its approach. "A"

waited a few moments for aircraft "C" to clear the position which he still held at the taxiway entrance. When aircraft "C" did not move, pilot "A" quickly taxied to the side of the runway and swung around to face the direction of landing. A drainage ditch paralleled the active runway, preventing "A" from moving completely off, and about 6 feet of his left wing remained extended over the runway boundary. (Note location of aircraft in illustration on page 32.)

In the meantime, the occupants of aircraft "B", on the final approach, were having their troubles. Both the student and the IP reported later that they had aircraft "A" in sight on its base, final approach, and during landing. However, during aircraft "A's" landing roll, aircraft "B" turned final, and from his position in the rear seat the IP of "B" lost sight of aircraft "A" on the ground. The student in "B" applied 30-degree flaps and slowed to 60-65 mph. He said that all seemed to be normal except for a haze condition. As the student switched on the landing light, the IP asked him if the runway was clear. He said, "yes." During the investigation he stated that all he remembered was seeing aircraft "C" still holding his position at the taxi strip entrance.

Final approach to the strip was over power lines located 150 yards short of the strip; and, when the IP in "B" called the student's attention to them, the student applied more power, but the aircraft "seemed to settle." The student than pushed the carburetor heat control and throttle forward for a go-around, but the aircraft began settling rapidly. Later the student said that, realizing the aircraft was going to hit the ground, he applied left rudder and brake so that he would not veer into the aircraft parked on the *taxi* strip. The IP stated that, as they neared the touchdown point, he realized the aircraft was settling too fast and would make contact with the ground on the over-run, a few yards short of the runway markers. He said that he instinctively attempted to advance the throttle, which he found already full open. The aircraft hit the ground hard and bounced. As the aircraft settled to the ground again, the IP "chopped the power because the student had the aircraft in the proper landing attitude and apparently under directional control."

On the landing roll, the student shouted to the IP that the left

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***The Gray Hair Department** is prepared by the* ARMY AVIATION DIGEST *staff with information obtained from the files of the Army Aviation Safety Board. The views expressed in this department are not necessarily those of the Department of the Army or of The Army Aviation School.—The Editor*

brake had gone out, and the IP told him to cut the switches. The aircraft continued down the center of the runway until its right wing struck aircraft "A's" left wing where it extended out into the runway. (Note illustration.)

It is not the purpose of The Gray Hair Department or an accident investigation board to find an individual guilty of erring. The purpose here, as with the board, is to determine what factors led to and caused an aircraft accident so that they may be eliminated in future operations. This particular accident was caused as much by what was not done as by the incorrect action which was taken and it vividly illustrates "safety is everyone's business."

Let us consider some of the contributing factors. Where was the traffic control? Because no control was provided or directed (radio or biscuit gun), supervisory error enters as a factor from the beginning. Although he is the individual most directly responsible for lack of traffic control, should we place the full responsibility on him? Why did not the pilots maintain a listening watch on tower frequency or arrange radio contact between aircraft before takeoff? This would have provided control. This is only one of the factors. There are many others.

Why did not the student pilot in aircraft "B" see aircraft "A" on the runway? From the evidence, it is obvious that he was having too much trouble fiying the traffic pattern to be fully aware of activities on the ground. His flight records showed that he had no night flying experience except that which he received in The Army Aviation School four months previously. As this was his first night flight since completing flight training, he was undoubtedly under some psychological pressure and was probably having difficulty keeping his head out of the cockpit. Also, it is possible that the haze which he reported diffused his landing light beam enough so that he did not know that he was looking at two aircraft on the ground, particularly since they were close together. Further, after the hard landing and on the landing roll, aircraft "A" probably blocked his view of aircraft "C" causing him to mistake "A" for "C". This is conjecture, of course, since it is impossible to determine exactly what his thoughts were. Frequently, the individual concerned cannot clearly recall his thoughts.

Four errors were committed by the IP and the student in "B". The student pilot (1) did not properly clear the runway visually and (2) did not maintain control of his aircraft, allowing it to partially stall and "mush" into the ground short of the runway. The IP (1)

did not clear the runway visually and (2) did not take corrective action soon enough to avert the hard landing. Further, the IP knew that aircraft "C" was blocking the exit from the runway and should have realized that "A" might not clear the active before his student touched down. These are obvious errors, but what of the other individuals involved?

Why did not the pilot in aircraft "A" use his landing light while moving to the side of the runway? He should have realized that pilot "B" might not be aware of his presence on the runway.

Why did aircraft "C" hold stubbornly to his position, blocking the exit? The accident report does not consider "C's" effect on the accident. But it should have been obvious to "C" that with an aircraft on final, landing light on, and another aircraft trying to get off the runway, that he should have immediately moved to clear the exit. By their failure to take action, the occupants of "C" added another error to the accident-factor pyramid. Taking no action is often as bad as taking the wrong action.

Obviously, any one of the three student pilots or the three IP's could have taken some action to prevent this accident, but each appeared to be intent on looking after himself and not worrying about the others.

This "every-man-for-himself" attitude which occurs all too frequently, contributes to accidents. Aircraft "A" went around the pattern and landed before aircraft "C" had an opportunity to take the active. Aircraft "B" also insisted on landing before "C" could take off. Aircraft "C" insisted on holding his position and blocking the taxiway. If the aircraft in the pattern continued shooting touch-and-go landings, aircraft "C" would have had to wait until one of the others left traffic before he could taxi up to takeoff position. But did this action justify "C" blocking the exit?

What was the cause of this accident? Too often our investigating boards only determine the errors which the flyers involved in an accident made in their flight technique. These errors must be determined but in many cases there is more involved than elementary bad flight technique. Someone fails, as in this accident, to make safety for all his business.

Straight and Level

TO: Editor-in-Chief

I have a complaint but believe that it can be considered constructive criticism. I appreciate the fact that we have a magazine for Army aviation but so far have not gotten very enthused about the contents.

Why can't we have more material of interest to the troops in the field? You carry articles on omnigation, yet how many Army aircraft in a division have omni radios? You discuss a lot of helicopter accidents, but how many Army aviators are helicopter qualified? You print articles on Army tactical traffic control, an interesting article, but how can those of us in the lower ranks immediately apply the information in it? In other words, how about giving us something which we are directly concerned with *now*?

Most of your regular features, such as "UER Highlights," are good. I don't want to complain too much, but think that you should print more for us in the L-19's.

CLAY L. ROBERTS
1/Lt, Infantry
USAR

See "The Commandant's Column," December 1955, ARMY AVIATION DIGEST.—The Editor

TO: Editor-in-Chief

Reference TM 1-1L-19A-1, dated January 1955, page 23.

Under the paragraph "Minimum Run Landing (Landplane)" it states: "Upon contact with ground apply full brakes, releasing gradually as speed decreases."

If this is true, I will have to change my procedures when landing the L-19. Your comments please.

PETER L. STRENNEN
Major, Infantry
Korea

You have a point. A literal interpretation of "full brakes" could cause an accident. Obviously, the statement is intended to convey the meaning of "maximum brakes allowable and as required." The landing surface, of course, is the controlling factor. On sandy soil, such as the river beds in Korea and many of the strips at Fort Rucker, it is apparently much easier than many aviators realize to execute the first half of an outside loop by putting on excessive brake pressure.—The Editor

TO: Editor-in-Chief

I am a bit late commenting on it but I like your new orange and black cover. I was wondering what you would do after using all of the Army aircraft and found out on your December and March covers. I liked them; however, I have a request. Why not run pictures of all our Army aircraft on the covers, including the L-5, L-16, etc., so that we can have a complete set?

DONALD CAULDWELL
Capt, Artillery
USAEUR

Letters of constructive criticism are welcomed by the ARMY AVIATION DIGEST. To appear in this column they must be signed.—The Editor

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MFSS (5), PMG Sch (10), QM Sch (10),
Trans Sch (150), WAC Sch (None),
Southwestern Sig Sch (None)
Specialist Sch (CONUS) (5) except
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Army Med Svc Grad Sch (1),
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Hygiene Sch (None)
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AFIS (10)
MDW (25)
TC Cen (25)
Sig C Army Avn Cen (5)
Arty Cen (50)
Mil Dist (10)

NG: State AG (10)

USAR: None

For explanation of abbreviations used see SR 320-50-1.

ARMY AVIATION SCHOOL CREST

When reproduced in full color, the colors red, blue, and yellow are used in the crest to indicate representation of all branches of the Army in The Army Aviation School. The school's aviation training mission is symbolized by the perched falcon denoting the art of falconry with its patient training of swift, keen birds for hunting. The mailed fist depicts the military ground arm which exercises the control, training, and direction of the flight.