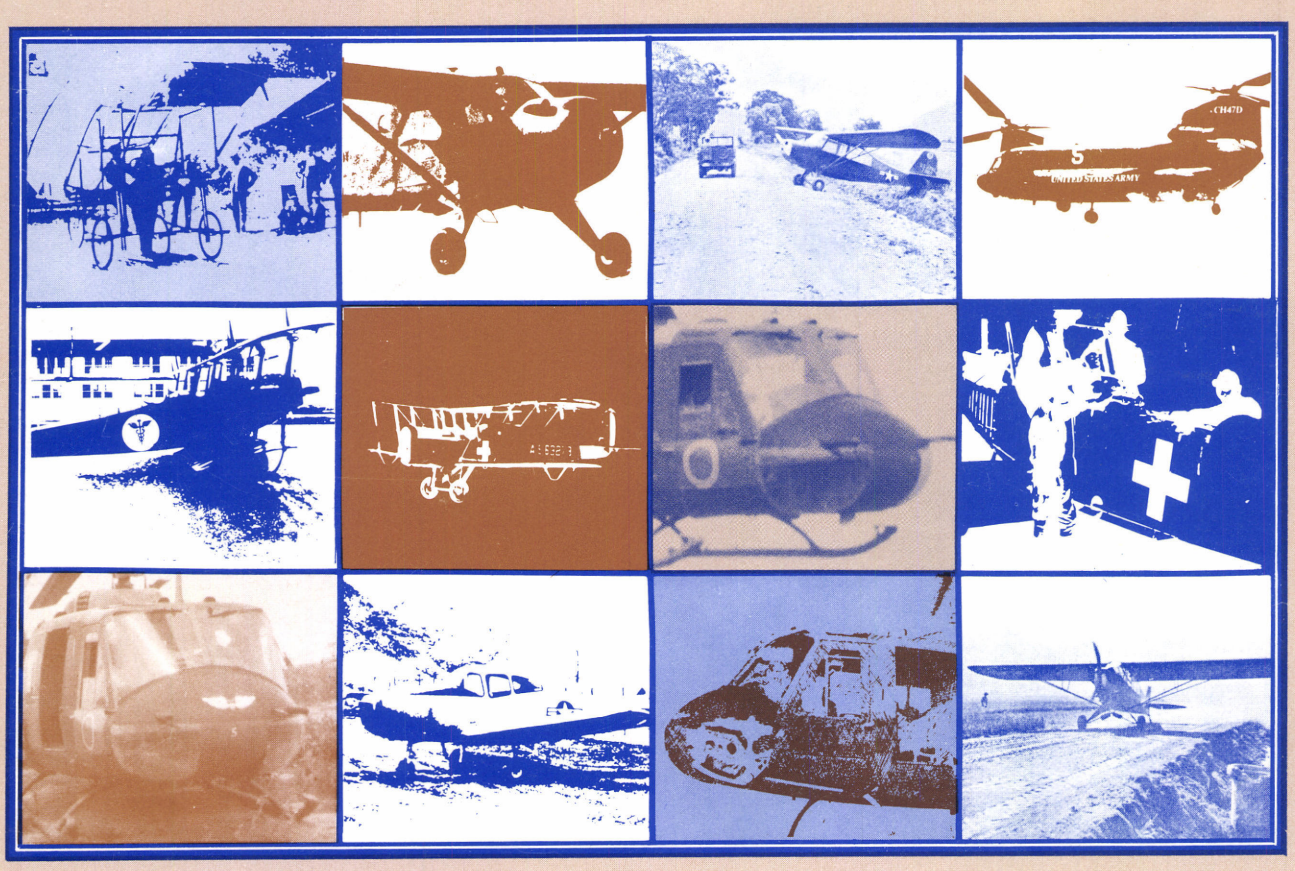
USAARL
SCI SUPPORT CENTER
P.O. BOX 620577
FORT RUCKER, AL 36362-0577

UNITED STATES ARMY
AVIATION DIGEST
JUNE 1981



History Issue

U.S. Army Aviation's 39th Birthday

JUNE 1981 • VOLUME 27 • NUMBER 6

★
Brigadier General Richard D. Kenyon
Army Aviation Officer
ODCSOPS, Headquarters,
Department of the Army

★★
Major General Carl H. McNair Jr.
Commander
U.S. Army Aviation Center
Fort Rucker, Alabama

Colonel Kenneth J. Burton
Acting Assistant Commandant
U.S. Army Aviation Center
Fort Rucker, Alabama

page 2

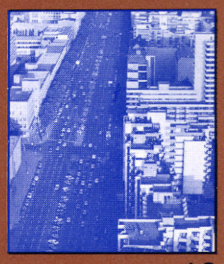
page 7

2 **Keep Army Aviation On The Right Track: Train! Train! Train!** Betty J. Goodson
7 **Operation Dragonfly,** CW3 Sun B. Park
10 **Hueys In Vietnam,** SFC Mike Kelley
15 **Teamwork For Tradition,** Robert K. Wright Jr.
17 **What Happens When A Chinook Goes On The Warpath?** Betty J. Goodson
18 **Berlin Case Study: Aircraft Survivability In MOUT,** MAJ Paul C. Hollowell and MAJ Charles J. Campbell
26 **Aviation Personnel Notes,** LTC Richard L. Naughton
27 **Reporting Final**
30 **Do You Have Normal Night Vision?** CPT Michael A. Hill
32 **PEARL's**
34 **Views From Readers**
36 **DES Report To The Field: Fixed Wing ATMs**
37 **Threat: Good News . . . Bad News,** MAJ Frank E. Babiasz
40 **Hangar Talk: Environmental Flying,** CW2 Gary B. Weiland
41 **From Balloon To Black Hawk—Part I: The Origins,** LTC David M. Lam, M.D.

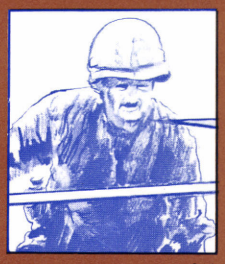
Inside Back Cover: **ATC Action Line: Jive Talk, Joel Hamm**

Cover: **6 June 1942 is the official birthday of Army Aviation. But as the montage of aircraft on the cover reflects, the U.S. Army's involvement with aircraft can be traced back through many years**

page 10



page 18



page 41

Richard K. Tierney
Editor

The mission of the ***U.S. Army Aviation Digest (USPS 415-350)*** is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

The ***Digest*** is an official Department of the Army periodical published monthly under the supervision of the Commanding General, U.S. Army Aviation Center. Views expressed herein are not necessarily those of the Department of the Army nor the U.S. Army Aviation Center. Photos are U.S. Army unless otherwise specified. Use of the masculine pronoun is intended to include both genders unless otherwise stated. Material may be reprinted provided credit is given to the ***Digest*** and to the author, unless otherwise indicated.

Articles, photos and items of interest on Army Aviation are invited. Direct communication is authorized to: Editor, ***U.S. Army Aviation Digest,*** P.O. Drawer P, Fort Rucker, AL 36362. Manuscripts returned upon request.

This publication has been approved by The Adjutant General, Headquarters, Department of the Army, 25 April 1980, in accordance with Army Regulation 310-1.

Active Army units receive distribution under the pinpoint distribution system as outlined in AR 310-1. Complete DA Form 12-5 and send directly to CDR, AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220. For any change in distribution requirements, initiate a revised DA Form 12-5.

National Guard and Army Reserve units under pinpoint distribution also should submit DA Form 12-5. Other National Guard units should submit requests through their state adjutant general.

Those not eligible for official distribution or who desire personal copies of the ***Digest*** can order the magazine from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Annual subscription rates are $20.00 domestic and $25.00 overseas.

ON 6 JUNE 1981 Army Aviation reached the magic age of 39—but unlike the famous comedian who rested at that plateau for so long, this decade of the eighties and our fortieth year usher in some unprecedented advances in organization, equipment, training and personnel management for Army Aviation. ACAB, AH-64, AHIP, Multitrack IERW, SC-15 and warrant officer career initiatives are only a few. In retrospect and in a traditional perspective, the ***Aviation Digest*** highlights each June some historical material that chronicles the growth and phenomenal development of Army Aviation.

Ideas, ingenuity and initiatives of all the people who have been a part of Army Aviation since its inception in June 1942 have been the taproot for this growth. Talent, dedication, valor and a resolute spirit have been required and freely given to change the brainchild of a few persons who believed the Army's artillery would be better served by organic aviation to today's status as the newest of combat arms, now totally integrated into the combined arms team.

Our last retiring liaison pilot, Major General James C. Smith, made numerous contributions during his distinguished career, with a primary one being his efforts to strengthen the aviation training program. "Train, Train, Train"—that is the thesis of his interview in the lead article which begins on the following page. He draws great credibility and on-the-job support from his extensive experiences and espouses the very wise belief that Army Aviation personnel must be trained to "the zenith of their ability" if their full potential as a fighting force is to be realized.

Looking back to an earlier era, fixed wing aircraft operations of the 24th Infantry Division Aviation Section during the Korean War are described by Chief Warrant Officer, CW3, Sun B. Park in "Operation Dragonfly." What occurred in the initial days of the Korean conflict provided a clear delineation of the fighting effectiveness that would come from Army Aviation.

How "Hueys in Vietnam" were used by the 1st of the 9th Cavalry, 1st Cavalry Division (Airmobile), to further improve the combat effectiveness of our ground forces in Southeast Asia is well documented by Sergeant First Class Mike Kelley. His description of UH-1 helicopter combat applications in Vietnam will doubtlessly bring back memories to many who may have forgotten some of the details about those combat proven workhorses.

A long standing and critical mission in our aviation field, that of forward area aeromedical evacuation, is covered in depth by Lieutenant Colonel David M. Lam, M.D. This material will be covered by the ***Aviation Digest*** in four parts, with the first presented in this issue going back to March 1784 for the origins of the lifesaving evacuation concept. LTC Lam's intensive research and outstanding writing skill make "From Balloon to Black Hawk" a most worthwhile reading experience.

"Teamwork for Tradition" by historian Robert K. Wright Jr. describes the unique services offered aviation units by the Army Center for Military History, including the means to record lineage, honors, events, individual heroism or other significant factors which should be retained for the posterity of our units.

The selections mentioned above and all the others in this special "Happy 39th Birthday" ***Digest*** should make it an issue you will want to hold for collection purposes in your own professional library. As you read about the past battles and preparations for possible future conflicts, I invite you to join with me in a prayer that our force will continue to be strengthened to meet the challenges and the threats which may lie ahead—so that the history made in our time will be as bright and filled with success as that of those who have gone before us. Can we do less for them and for those who will follow us? **Soldier On!**

Major General Carl H. McNair Jr.
Commander, U.S. Army Aviation Center
Fort Rucker, AL

KEEP ARMY AVIATION ON THE RIGHT TRACK: TRAIN! TRAIN! TRAIN!

Major General James C. Smith was director of training, Office of the Deputy Chief of Staff for Operations and Plans, Department of the Army, Washington, DC, when he retired from the Army in February (see that month's *Aviation Digest*, page 46). He came to the Army Aviation Center, Ft. Rucker, AL, for the retirement ceremony; and while there, he gave the following interview.

Betty J. Goodson Staff Writer

THE STUFF OF life has become increasingly complex since 1942, and Army Aviation's equipment, tactics and doctrine have kept pace. One area which has not altered, however, is the need to have the people who use that equipment and practice those tactics and doctrine trained to the zenith of their ability.

In fact, Major General James C. Smith (U.S. Army, Retired) maintains that if such training is not accomplished, the value of the advanced technology and methodology is severely diminished. His advocacy of that belief has been a major contribution to Army Aviation, in that it has increased the understanding of training's importance, especially at the unit level.

He said: "I was probably in only one or two units in my almost 39 years of military service in which the troops were trained up to the capability of the equipment in their hands at the time. That is why I have oftentimes tried to deemphasize this eternal emphasis on looking for new equipment when we cannot effectively operate that which we already have. For instance, if you have a helicopter weapon system that is engineered so it is capable of knocking out a tank 95 percent of the time, and if the crew is 50 to 75 percent qualified to use that system, I think it is easy to see how the weapon's effectiveness is going to be downgraded."

Two areas of training that General Smith has particularly stressed are night operations and tactical instruments, and he has experiences from his own career that depict the need of those skills:

NIGHT OPERATIONS

"In 1955 the 3d Infantry Division at Ft. Benning, GA, had been designated as the Atomic Test Field Army Division. A separate and specific test as a part of the division test was the consolidation of all the division's aviation elements into one company; and that was the first formal Department of the Army recognition of such a consolidation. I was the commander of that 3d Infantry Division Aviation Company.

"Major General Haydon L. Boatner, the division commander, put out a memorandum that all units would emphasize night training. That perfectly coincided with my feelings about Army units needing to be very capable at night, so I developed a schedule which caused us to train at least three nights a week as an aviation company. In addition, we supported the other division units in their field training, to include nights, all during that period.

"Well, the point I am making is that was in 1955, almost 26 years ago, and we were doing night training in that aviation company—to include minimally lighted strips and landing zones.

"To come to a more recent time: When I arrived at Ft. Rucker, AL, in 1976 from Korea to take command (General Smith was commanding general of the Army Aviation Center from 1976 to 1978), one of the areas I said we definitely had to move ahead on was our ability to operate at night because that is an essential part of Army Aviation's

continuing support to the ground commander at all hours. We then significantly increased our night training in the program.

"In some units today there is a lot of very effective night training going on. However, the night training in others is essentially the traffic pattern, fixed base type operation; and that will never get the individuals in such an aviation unit prepared to support ground tactical commanders in an operational environment.

"We have had some few outstanding examples of the results of good aviation unit training programs for night. One is the way the 101st Airborne Division (Air Assault) pressed night tactical training before it deployed to REFORGER (Return of Forces to Germany) in 1976. I went to Germany to observe that exercise, so I know the 101st did some outstanding flying all through the period. The special time I'm talking about, though, was one night when the division aviation was required to move a number of infantry units forward into positions as a prelude to relieving the division which was going to withdraw through the 101st that night. The weather became very, very marginal. The rain clouds were down on the hills, making it necessary for the helicopters to operate only in the draws and valleys between the hills in order to stay VMC (visual meteorological conditions), and even then there was rain on the windshields. In spite of all that, the 101st Aviation Group moved those units forward that night. I think there was one battalion they had to land short of the prescribed landing zone because the weather went right down to the ground.

"I don't know of another large-scale night activity—except one—in which a division's aviation has done that type of support which I feel is so important to the ground tactical commander.

"That one exception happened in December 1966. I was a brigade commander in the 1st Cavalry Division (Airmobile) in Vietnam, and one of my firebases was attacked right at midnight by a force which later was identified as an entire North Vietnamese Army (NVA) regiment. All three battalions of that regiment hit the wire at the same time in a coordinated attack. We had one understrength rifle company securing two artillery batteries on that firebase; all communications with the outside world were immediately lost; it was what we called monsoon weather, meaning that as the day ended the rainshowers would come in and ceilings would come down as would the visibility.

"I was at another firebase; and at the same time that I launched myself with my crew, I alerted a unit of the air cavalry squadron which was in support of my brigade to stand by for commitment; and I also alerted a standby rifle company from one of the infantry battalions. In the course of putting in all kinds of fires with all the support we could provide, I got a radio call from division which told me that the outfit attacking the firebase was a unit I knew from having worked against them 20 miles to the north a number of times. That meant the NVA regiment had moved out of its customary area for this attack, and that was the first time in our known intelligence that such had happened.

"As soon as I knew the regiment's identity, I guessed what its withdrawal routes from the attacked firebase would be. Starting about an hour after I received that call, I moved every rifle company of the battalions in my brigade, except the artillery firebase security companies, putting them in blocking positions along those suspected routes. The companies were moved and emplaced between the hours of 0200 to 0500.

"Soon after daylight, the withdrawing enemy force ran into my units; we hit them and hung onto that NVA regiment for several days. That was virtually unknown in the history of the war. Normally you would have an encounter with a North Vietnamese Army unit and as soon as darkness came, it would disappear into the jungles and contact would be lost.

"In this case we made what would otherwise have been a very, very unfortunate battle situation come out in our favor. We lost a number of Soldiers at the firebase; but by hanging onto that regiment, we were able to reduce it to a level of ineffectiveness in a 4- or 5-day period.

"That success was possible because the supporting aviation was able to move my infantry companies from all over the area of operations and get them on the withdrawal routes the enemy was going to use to the north. The aviation elements knew they were going to have to support me at night whenever I called on them. They did it that night without an accident, without an aircraft being shot down. By the way, the 101st did not have an accident in that tactical move in Germany in 1976, either, because they were so well prepared.

"I am saying, of course, that all Army Aviation units on a routine basis must be able to perform the kind of missions I've related that the 101st did in Germany and the 1st Cav did in Vietnam. Because if we try to maneuver against the Soviets or any other enemy force only in the daylight hours, then we reduce what should be our superior tactical mobility to his level. He maintains the initiative with his larger force. I hold from my experience that the mobility factor is the most important. We can point to historical examples from many wars that the guy who has the mobility can be smaller and have less firepower; but as long as he is at the right place at the right time, with whatever force he has—and that's mobility—then he can be the victor. So, I am not talking about anything that is new in concept; I'm talking about using Army Aviation as a very important ingredient in attaining and keeping superiority in mobility.

Illustration by SP4 James Hardy

MUTUAL RESPECT

"Before Army Aviation can be used in that manner, however, the ground commander has to be convinced that it is capable of supplying the needed support. The aviation force has to have proved its capability for a ground tactical commander to expect and program for that kind of aid.

"A large part of whether aviation units can do their job at night, or any time, is related to two factors: the aviation personnel and the ground force commander having the needed state of mind, and the units having the ability that comes from thorough training. You cannot bring such a capability up just overnight; you have to have been training over the years in order to accomplish both things, the state of mind and the actual ability.

"In fact, there has to be a mutual respect between the Soldiers on the ground and in the air to produce the total force capability. And I want to be very specific about this, so that it will be understood. Let's go back to the Vietnam War because I think the example is clear there.

TACTICAL INSTRUMENTS

"There were few of us during that war who were actually fully qualified for instrument flight operations. You will remember that we trained most pilots only with the tactical ticket which we gave to the typical aviator going through flight training who came to Vietnam. Now, I know of many times over there when the lack of an aviation unit with instrument capability meant that not only were certain missions that had been requested not flown, but many of those missions were never requested. The ground force commanders over time had become aware that the supporting aviation units were not capable of performing them.

"Army Aviation could have been of even greater support if it could have flown the mission profiles fully. But if I'm an aviation unit commander, and I only have two or three people who are actually instrument qualified, then I cannot plan a unit mission that requires instrument capability. I just don't plan it, and then over a time I have to tell my supporting force commander my unit is not capable of flying such missions.

"Can you see the state of mind this created? There are these inhibiting factors that have unfortunately reduced the total force capabilities significantly. I just don't believe we can afford to get ready for the next war and have a comparable capability to that of the Vietnam War. We have to do better than that. Unless the training program is developed in its integral parts so as to bring the total personnel capability of the unit up to the level of the equipment in its hands, then our Army is going to be operating far less effectively than it could and must.

"Well, I have strayed somewhat from my topic of the necessity of having Army aviators fully trained in tactical instruments. Like the ability to operate fully at night, that instrument ability will help compensate for our fewer numbers in tomorrows' battles because in some areas of the world where we may well have to function in a combat arena, the weather is minimal much of the time. In Germany, for instance, we estimate there will be 10 to 15

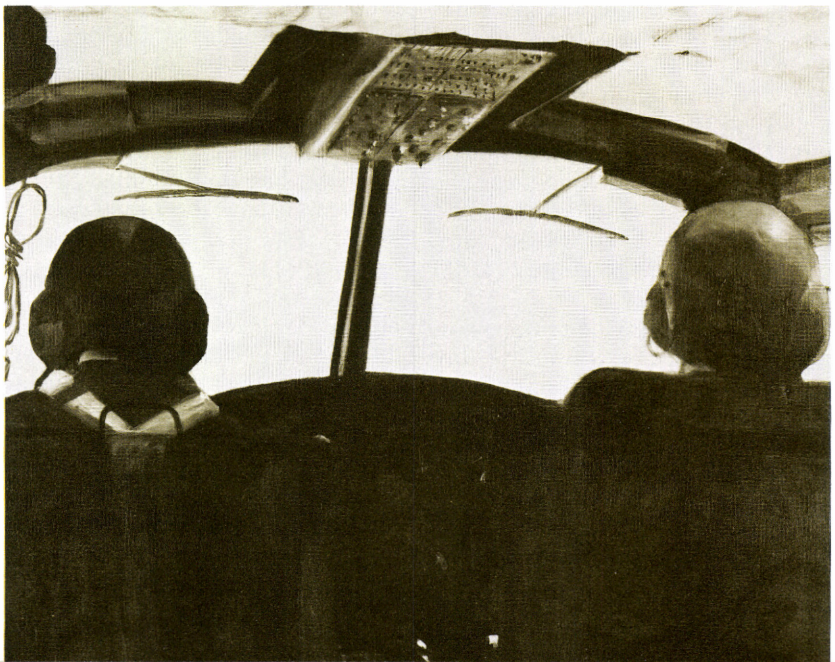


Illustration by SP4 Robertson

percent of certain operational hours in which the weather is going to be minimal VFR (visual flight rules), at best.

"If the weather is considered too marginal for a given aviation unit, the chances are that unit will not plan a mission because it does not have the capability to operate in such weather. But the chances are equally as good that the ground force component has to go and will do so without aviation support; and that is going to lead that ground commander and his people to have the same state of mind about aviation units that we were talking about earlier with respect to night operations.

"The answer, of course, is to have people trained to operate in even the most difficult weather conditions in daylight or darkness. That is what we need for the future. Some people were killed in Vietnam because they were willing to go on missions that were beyond their capability; but they could have flown them safely, most likely, had they been trained properly.

CAN-DO ATTITUDE

"I mentioned a willingness to go, to exceed what was really expected. I want to tell you about one such incident in Vietnam: The day I took the duties as assistant commander of the 101st Airborne Division in 1969, I was given the job by the division commander to direct the conversion of the 101st to be the Army's second airmobile division. One of the chores I set for myself was to overwatch, where possible, every combat assault made by the division units. I wanted to do that so we could at least critique the key people involved and learn from the lessons.

"One day I was watching an assault helicopter element that was moving a rifle company a distance of about 5 miles into a single-ship landing zone. As usual, I had all my radios tuned so I could hear everything that was going on, from ground force right on through the aviation unit channels.

"A first lieutenant was flying lead for the five aircraft. After he went in and dropped his people off, he came out saying, 'Six on the ground, taking fire.' That meant a hot LZ (landing zone).

"Well, now get this: Six Soldiers on the ground taking fire from the immediate vicinity of the landing zone. Six Soldiers, big jungle, triple canopy, single-ship LZ. Nobody knows how much of the enemy is down there. Well, I held my breath, just watched and listened. That flight leader had to make a decision, you see, about the rest of the troops coming behind him in the other aircraft. And usually when you have a one-ship LZ, the ships are staggered in trail to let one get in and get out, then the next one comes in.

"Then I heard the leader say to the rest of the flight, 'The troops on the ground are in contact; let's get the rest of the company in there.' We wound up with three helicopters shot down around that LZ, but they put that rifle company on the ground. Yet, nobody could have faulted that young lieutenant if he had decided to just back off because it was a hot LZ.

"I had that lieutenant fly as my copilot later, after he finished his tour in that lift company, because he had shown me something. He was an Infantry officer. He had come over as an Infantry platoon leader and as an aviator. After being a platoon leader for 6 months, he had requested assignment to a supporting aviation unit.

"Now, I don't know that in the future environment, if we get our aviators too far removed from the ground units, that we will have the kind of can-do supportive instinct that lieutenant had. I don't think that feeling comes from reading a book or listening to a classroom lecture. We are going to have the intellectual capability but may well lack the emotional element that comes from working with Soldiers on the ground. That is a major concern to me today—my fear that we are going to cut off the bulk of the commissioned pilots from having that nitty-gritty, person-to-person, officer-to-soldier experience. That is needed, you know, because there is a mutuality, a confidence that transcends one individual and encompasses others. I have seen people now in three wars, 'scared to death,' but they stayed because they were part of a unit. Even though they as an individual might have had problems staying, they buoyed each other. We make up for each other's deficiencies, and that is what builds unit esprit de corps. Each time we are successful, even just a little bit, that confidence builds; and in this business—I'm not just talking about combat, either—every unit needs to do things well often enough so that confidence and unit esprit develop.

ABOVE AND BEYOND

"Let me tell you about one individual who embodied such spirit: In 1966 when I commanded the 1st of the 9th Cavalry, the air cavalry squadron of the 1st Cavalry Division, we were involved one day in a harum-scarum fight that was so close I could not get an air ambulance in during the early part of the fighting. I was flying a (UH-1) C-model gunship; and when low on ammunition and fuel, I called the troop commander on the ground and told him that I would carry some of the most seriously wounded out as I went back for ammo and fuel. He should tell me an LZ where I could get close in.

"The commander directed me to an LZ; and after I landed, I dismounted to help them load the wounded because a C-model gunship has ammunition racks all over the floor, a poor place to put wounded. But if that is all you have, then you can lay them out on the racks. Well, one of the first individuals I saw was Sergeant Dixon, one of the

squad leaders; and I'm not trying to be gory about it, but the right side of his face, including the eye, had been taken off by a round. We finally decided that the only way we could transport him was to set him up across the back bulkhead of the chopper. I stacked ammunition boxes on both sides of him so he wouldn't fall over and choke. Before we took off, I turned around and gave him the thumbs-up sign. He returned it! I nearly fell out of my seat!

"That doesn't end the story. In September 1967, about a year later, I arrived at the Army War College in Carlisle Barracks, PA. Soon after I was settled in, I went to Valley Forge General Hospital to see if there was anyone there I knew that I could visit. I was walking to the admission office when I heard someone call, 'Colonel Smith.' I turned around and saw Sergeant Dixon. Of course, we threw our arms around each other; and he started telling me about the 14 plastic surgery operations he had undergone which had done a remarkable job of restoration on him. We went on into the hospital, and it turned out that he knew everyone in there who was from the 1st Cav and spent much of his time visiting them, just as we did that Saturday and Sunday.

"Before I left Valley Forge, I asked Sergeant Dixon what he wanted to do when he was finished at the hospital. His answer: 'I'm without a right eye now, but I know that I can learn to shoot lefthanded; so I am trying to convince the doctor to put me back to duty—if I can return to the 1st of the 9th. With my knowledge and experience, I will be more effective there than if they put me somewhere else.' Of course, they retired him rather than returning him to duty. But you see, his attitude came from pride in his unit and in his contribution to that unit.

"That same weekend, I visited with one of my warrant officer scout pilots who had been wounded while flying an H-13 in combat and had lost his left foot. I also asked him what his future plans were, and he said: 'Number one, I want to go back to flying; and number two, I don't want to stay here in the states with just a typical aviation unit—I want to go back to the 1st of the 9th.'

"You have to have that kind of pride, that kind of attitude, if you are going to fight successfully. How are people in the future going to develop that before the first shot is fired? You have to train that into them in peacetime if you are going to be successful on the first day of the war.

TRAIN! TRAIN! TRAIN!

"Well, I have sort of wrapped together several things here—night operations and tactical instruments. Both are necessary for the development of unit capabilities so that missions can be performed at any hour and in any weather in support of the ground commander. That can come only by training on a sustained basis, day by day, mission by mission, person by person. Such training also produces the state of mind, the attitude that is woven into all I've talked about here.

"You know, it takes intestinal fortitude, steel in the backbone, for an aviation unit commander to cause his outfit to train hard in order to be the best. It is difficult for a commander to cause his unit to work harder than the one alongside. But if he is that kind of leader, pretty soon the entire unit is going to be the type to inspire the kind of feeling that the sergeant and warrant officer expressed about the 1st of the 9th. It all has to be a basic part of the unit's routine training, not just written down as factors on a chart in the classroom.

"At the base of the leadership and training and spirit and everything else I've mentioned is the willingness to do more than is really expected. But to avoid the kind of sacrifices that willingness brought about more than once in Vietnam, the people have to be trained. From the top general in Department of the Army to the Soldier who polices the airfield, the state of mind to do the best job possible is vital. And I maintain, here at the end of my military career as I have all through it, that the better a person is trained, the better his or her state of mind to fight and win wars is going to be."

The Army's high award for exceptionally meritorious service, the Distinguished Service Medal, first Oak Leaf Cluster, is presented to Major General James C. Smith at his Ft. Rucker retirement ceremony by General Robert M. Shoemaker, commanding general, Army Forces Command. It marked the end of General Smith's military career of more than 38 years

photo by SP4 Denise Starr

MONTHLY WRITING AWARD

CW3 Sun B. Park
CW3 Park wrote this article while attending the Warrant Officer Senior Course, Ft. Rucker, AL. He is now assigned to the 1st SOTAS Detachment, APO New York 09165

Operation DRAGONFLY

During the Korean War, Army Aviation acted "Above The Best" in Operation Dragonfly. It provided invaluable aerial reconnaissance for ground units, directed and assisted visiting jets and bombers and became a factor in turning the battle situation in our favor

KOREANS CALL THE helicopter a "Dragonfly plane" because of the resemblance. But *Operation Dragonfly* meant something far different to those dedicated fixed wing Army aviators of the 24th Infantry Division Aviation Section during the Korean War.

On Sunday morning, 25 June 1950, without warning or a declaration of war, masses of North Korean troops, spearheaded with Russian-made T-34 tanks, crossed the 38th Parallel and swept down upon unprepared South Korea.

The first report of the North Korean aggression reached General Douglas MacArthur's office (in Japan) at 0925 hours:

OPERATIONAL IMMEDIATE
SEOUL 0925 25 JUNE 1950
FROM MILITARY ATTACHE U. S. EMBASSY SEOUL KOREA
FOR ASSISTANT CHIEF OF STAFF, INTELLIGENCE, DA, WASHINGTON, D.C.
INFOR COPY TO G2 HQ FAR EAST COMMAND, TOKYO
AT 0400 HOURS THIS MORNING NORTH KOREAN FORCES, AFTER AN ARTILLERY BARRAGE, INVADED SOUTH KOREA. SEQUENCE OF ATTACK IS APPARENTLY WESTWARD FROM ONGJIN PENINSULA...MORE FOLLOWS.

OPERATIONAL IMMEDIATE
FOR COMMANDING GENERAL U. S. AIR FORCE FAR EAST TOKYO
FROM COMMANDER U. S. AIR FORCE KIMPO AIR BASE SEOUL KOREA
THERE IS FIGHTING IN VICINITY 38TH PARALLEL. BELIEVE THIS IS MORE THAN BORDER VIOLATION. INVESTIGATING. MORE FOLLOWS...

At 0945, Chief Warrant Officer (CWO) Donald Nichols, commander of District 8, Office of Special Investigation (OSI) telephoned the news to the operations duty officer of the Far East Air Force. The 24th Infantry Division Aviation Section was alerted for movement to Korea on 29 June. Gas tanks were stripped from jeeps and installed in the rear seats of L-4 Cubs (figure 1) for the flight across the Sea of Japan.

On 5 July, Captain James C. Goode of the 24th Infantry Division flew an L-4 across the Sea of Japan only to find the Korean coast closed in by weather. Because he had the auxiliary fuel tank, Captain Goode was able to return to Brady Field, Japan.

A few days later when the weather improved, a group of L-5 Sentinels (figure 2) and L-17 Navions (figure 3) arrived in Korea from Japan and conducted their operations without assistance from ground crews. The missions flown by the 24th Division Aviation Section soon were dubbed *Operation Dragonfly.*

When the 24th Infantry Division made first contact with North Korean units south of Suwon, the L-17's directed Air Force fighters armed with napalm bombs to enemy tank columns. The L-17 was the only VHF (very high frequency) radio-equipped Army aircraft at the time which had radio communications with Air Force aircraft.

The L-17 was a low wing multipassenger plane designed principally for transporting people and some cargo. It was not particularly suited for directing air strikes. Visibility was limited for both pilot and observer, and it was hazardous to maneuver at low altitude to pick up obscure targets. This was a case of making maximum use of available equipment until later when L-4s and L-5s with VHF radios joined the Operation Dragonfly team.

Most of the Air Force fighter planes were operating out of southern Japan. When they flew missions to Korea to support ground troops, they had a limited amount of time in the target area, making it essential that they be directed to the targets as quickly as possible. That's where Army Aviation came into the picture. Army aviators would swiftly pinpoint exact locations of targets enabling the jets to conduct more effective air strikes. However, problems began to develop as more and more United Nations troops were thrown into the fight. The battle situations began changing rapidly and became increasingly fluid. Many times the whole tactical situation would change between the time the Air Force pilots were briefed in Japan on their mission and their arrival over Korea. The target area would often have changed completely, necessitating a new briefing on the spot.

The obvious solution was to establish a system of airborne control which could be used to brief, direct and make final visual adjustments of Air Force strikes. To make such a system work, people familiar with current ground tactical situations had to be available and they had to be equipped with a means to transmit this information to the Air Force jets. As a result, Army officers thoroughly briefed by G3 were placed in L-17s to support Operation Dragonfly.

To make the situation even worse, navigators on bombers were confused with the names of Korean towns. For example, Pyongyang was the capital of North Korea; Pyonggang was the site of an advanced enemy airfield just north of the 38th Parallel; and Pyongyong was a town of no special importance on the railway north of Pusan. Alternate names appeared on different maps. The airfield on the southeastern coast of Korea was variously called Geijitsu Bay, Yongilman, Pohang-dong, Pohang-man or Pohang. It was so confusing that the Far East Air Force had to demand that all names of towns and villages be accompanied by geographical coordinates, and early in July a K-site number was assigned to each airfield in Korea to ensure exact identification. This designation is still in use for airfields throughout South Korea (figure 4).

FIGURE 1: A Korean farmer watches an L-4 landing

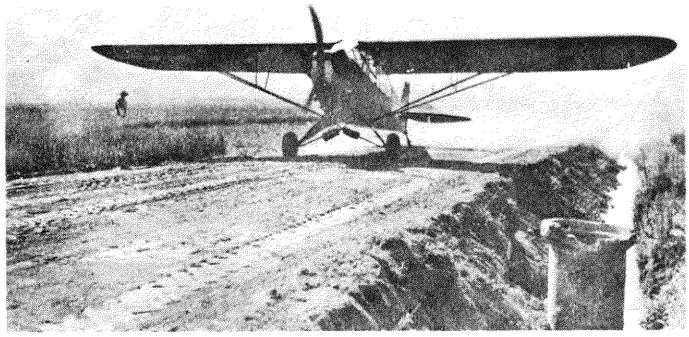


FIGURE 2: Aviator performs preflight check of L-5

Operation Dragonfly had its tolls too. Late in the afternoon on 7 July, Lieutenant Arvin O. Munson took off on a mission from the airstrip in Taejon (K-5). Lieutenant Munson did not return. He was shot down by enemy machinegun fire and became the first Army aviator casualty in the Korean War.

On 9 July, Lieutenant George Rogers wrecked the aircraft he was flying when he hit a pole in the road on which he was landing. This was the first aircraft wrecked through noncombat action.

On 10 July, the Eighth Army Aviation Section arrived from Japan to begin its operations from Taegu (K-2). Operation Dragonfly had expanded considerably, and the Air Force was determined to try its own hand at fighter-bomber direction from light planes. Four days later, Air Force pilots and their L-5s arrived in Korea to be indoctrinated by the 24th Division Aviation Section in the conduct of such missions. Their operation was dubbed Mosquito and the Air Force pilots used Army observers. The L-5 was later supplanted by the T-6 Texan (figure 5).

After weeks of unofficial trial operations, the Air Force on 1 August organized the Mosquito unit as the 6147th Tactical Control Squadron (Airborne). Throughout the remainder of 1950, the significance of the Mosquito's role in air-ground operations became more obvious and tactical planners began to include airborne forward air controllers in preparation for ground operations.

In a war that lasted 3 years, the initial, immediate involvement of the 24th Infantry Division Aviation Section proved that when the ground troops are in combat, Army Aviation is there to do its share. In the Korean War those Army Aviation people who participated in Operation Dragonfly truly acted Above the Best.

FIGURE 5: An Air Force T-6 overflies Korean village

FIGURE 4: Airfields with K-site designations

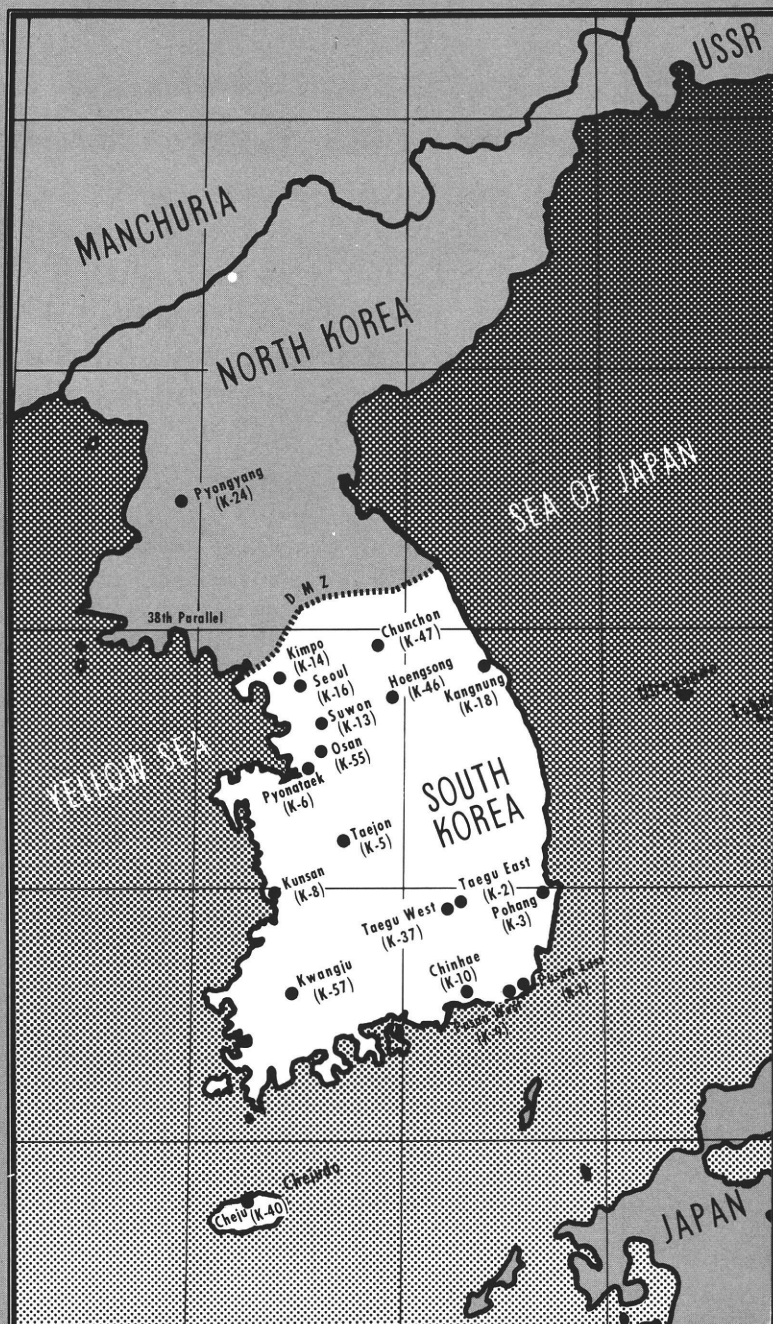


FIGURE 3: L-17 parked at K-37 (now A-805) airfield

Hueys in Vietnam

Story and photos by
SFC Mike Kelley, USAR

During the Vietnam War hundreds of military units used the UH-1 Huey helicopter. This article concerns itself with one of those units—the 1st Squadron, 9th Cavalry, of the 1st Cavalry Division (Airmobile), with emphasis on Troop C

THE 1ST OF THE 9th Cavalry Division (Airmobile) arrived in Vietnam in August 1965. The unit began to establish itself in the An Khe area and began combat patrol activity immediately. It would eventually be responsible for recon of the wide open Central Highlands from Cambodia to the South China Sea.

The 1/9 was known as the "Eyes and Ears" of the division, for it performed visual air reconnaissance for all three of the division's brigades, and was on call 24 hours a day. It was a unique unit, unlike any other in the 1st Cav. It was battalion size, 100 percent mobile with transport, including almost 100 helicopters. The division itself had more than 400 helicopters. The 1/9 was made up of three Air Cav Troops, A, B and C. Each had an aero scout platoon (OH-13 Sioux helicopters), a weapons platoon (UH-1B gunships) and an aero rifle platoon (UH-1Ds that carried troops and supplies). In addition a headquarters troop provided administrative, logistical and maintenance support to the troops, and a ground recon troop, Troop D, used three platoons of M151 jeeps equipped with both 106 millimeter (mm) recoilless rifles and M-60 7.62 mm machineguns, plus a platoon of heavy mortars.

The first major operation for the 1/9 was Operation Shiny Bayonet in October 1965, and although action was constant, only small bands of Viet Cong were engaged. However, in late October, the 1/9 became the first unit in the division to engage and capture North Vietnamese Army (NVA) Regulars when it moved into Pleiku Province for combat operations. Troop C took three NVA prisoners on 30 October. Later, Troop C aero scouts spotted 34 NVAs and the infantry of Troop B were sent in to engage them.

The 1/9 went on to participate in every major campaign in which the 1st Cavalry was involved, earning many decorations, including the Presidential Unit Citation.

In late 1965 and early 1966, Troop C was commanded by Major Billie Nave, a career Army Aviation officer. The major was a soft-spoken man who personally led his men into action and was himself a highly skilled UH-1B gunship pilot. On one mission in Binh Dinh Province (Bong Son) the major came under withering crossfire from hidden Viet Cong snipers, and had his Huey shot out from under him. But his skill and

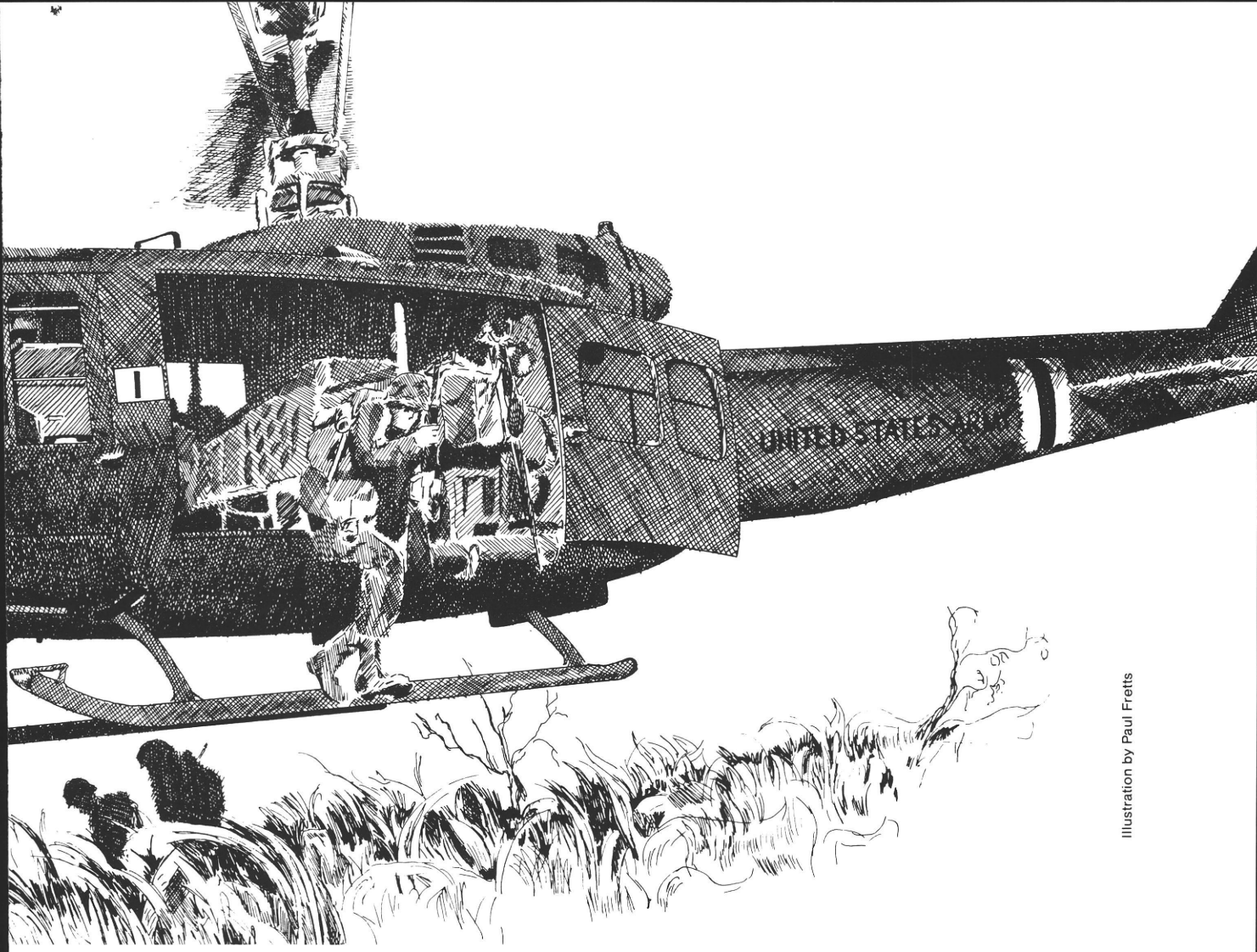


Illustration by Paul Fretts

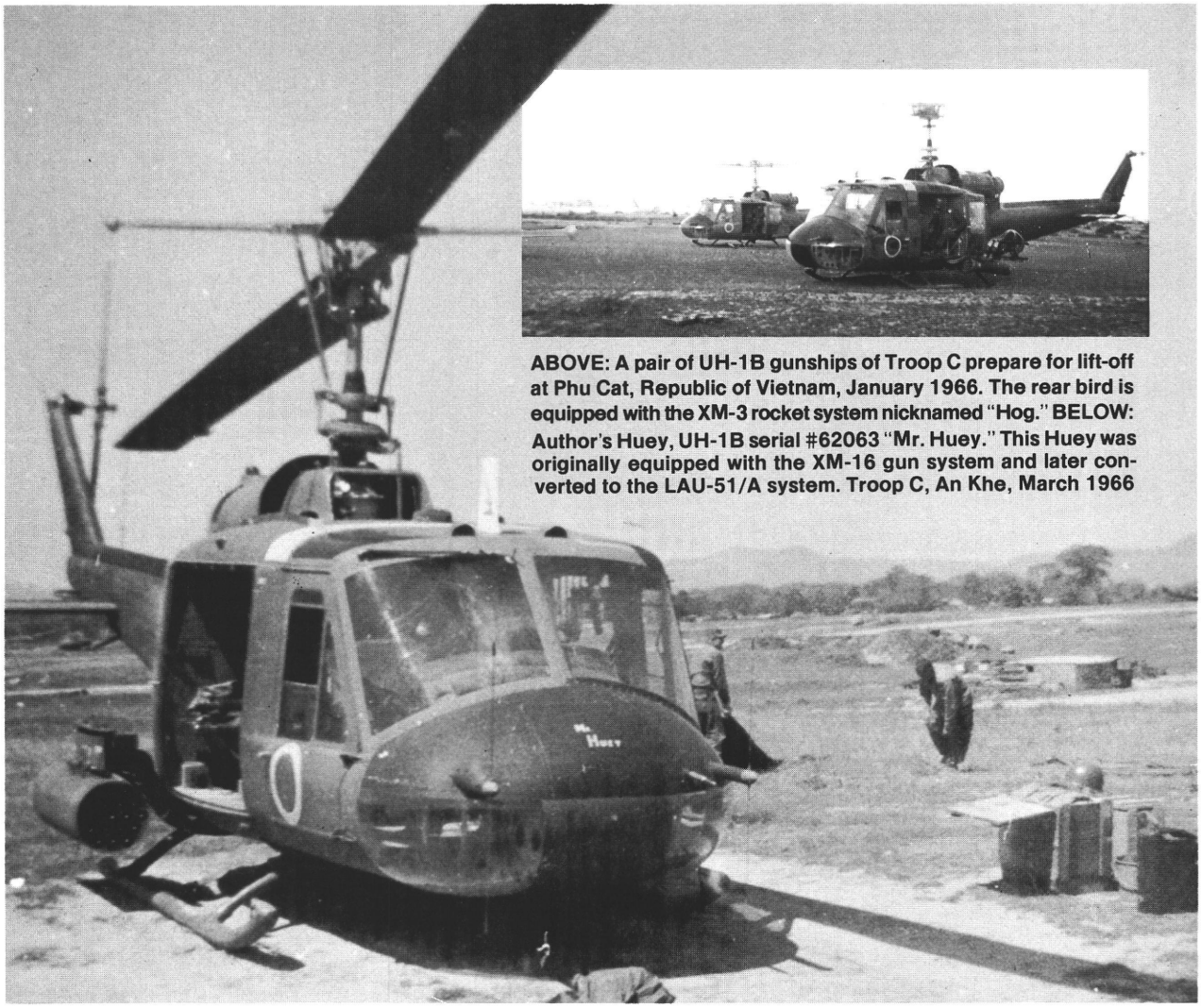
coolness enabled him to bring in his bird for an emergency landing, allowing the crew to escape in time as the chopper caught fire and burned. Unfortunately, Major Nave was later killed while operating at Tuy Hoa—a great loss to his men—but Troop C managed to carry on its mission despite this tragedy.

The mission was carried out as follows: Scouts flew in pairs and searched at treetop level for signs of enemy activity. The UH-1B gunships of the weapons platoon, also in pairs (lead ship and chase ship) followed along in support. When the scouts located anything, they would mark the spot by dropping a smoke canister, usually yellow or white. After making visual confirmation, they and the gunships would engage the target with suppressive fire to either destroy the enemy or contain them until a platoon of infantry (Blues) could be flown out to the target by the aero rifle platoon's UH-1Ds. The Blues would then assault the enemy and if the force was found to be larger than expected, the troop would engage the enemy until a relief force arrived by air assault.

The UH-1B gunships came equipped in two versions. Some were armed with the XM-16 subsystem consisting of four (two per side) 7.62 mm M-60C machineguns (MGs) and two (one per side) rocket pods. Others were equipped with the XM-3 subsystem, consisting of 2 (1 per side) rocket pods with a total of 48 rockets.

The XM-16 system/quad 7.62 mm MGs mounted on Emerson Electric pylons were fed by ammunition chutes that flexed from the guns to storage cans inside the aircraft cabin, operated by the copilot using a Mark VI Flex-sight. After aiming the sight on target, the pilot could move a handle and flex the outboard guns downward 75 degrees or 82 degrees upward.

The M-60C machineguns could be fired at 600 to 700 rounds per minute with a maximum range of 3,500 yards. The two "Mighty Mouse" rocket pods varied in size; some used six 2.75 inch folding fin aerial rockets (FFAR) while others used eight. This gave a total firepower to the aircraft of either 12 or 16 rockets. These were fired by either the pilot or copilot through cyclic control stick trigger switches. A Mark VIII Sight was used to aim the system on target. The rockets could be fired in spreads of twos, fours and so on, by setting a selector



ABOVE: A pair of UH-1B gunships of Troop C prepare for lift-off at Phu Cat, Republic of Vietnam, January 1966. The rear bird is equipped with the XM-3 rocket system nicknamed "Hog." BELOW: Author's Huey, UH-1B serial #62063 "Mr. Huey." This Huey was originally equipped with the XM-16 gun system and later converted to the LAU-51/A system. Troop C, An Khe, March 1966

switch. They had an effective range of up to 3,000 meters.

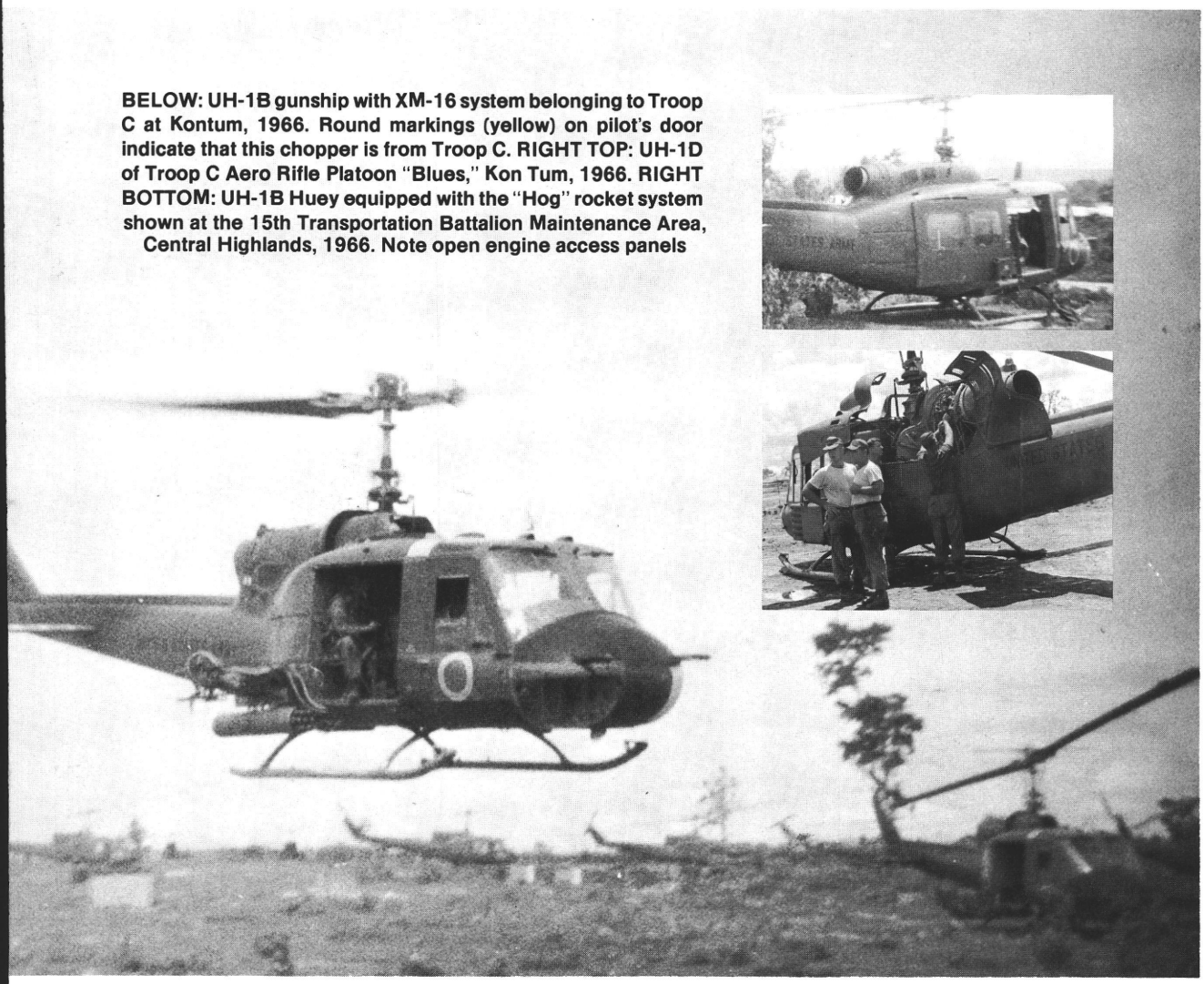
A few of the aircraft were specially fitted later with the M-5, which consisted of one M-75, 40 mm grenade launcher mounted on the nose of the aircraft. It was set in a swivelling turret, which could fire up to 480 rounds of ammo with an effective range of 2,000 meters.

The XM-3's 2.75 inch rockets were fired by using cyclic control trigger switches and aiming through a Mark VIII Sight. The big rockets had a maximum range of 10,000 meters, effective from 500 to 2,000 meters. This system was nicknamed the "Hog." The rockets also could be fired with an advantage in spreads.

Color Schemes. The UH-1s were painted overall olive drab (Federal Standard 595/#34087) with all numbers and U.S. Army markings in flat black (FS 595/#37038). UH-1Bs of Troop C were painted with special yellow markings on cabin roofs, tail stabilizers, exhaust cowls, rotor tips, landing skid tips and doors for unit identification purposes (color #13538).

Personnel Equipment. Pilots were issued flight helmets, aviator sunglasses, survival kits, flack vests, and 45 caliber automatic pistols or 38 caliber revolvers. Crewchiefs received flight helmets, flack vests, survival kits, 45 caliber automatic pistols, M-79 grenade launchers or M-16 rifles, mechanics aircraft tool sets and M-60 machineguns. Door gunners were equipped with flight helmets, flack vests, survival kits, M-16 rifles, aircraft armament toolkits and M-60 machineguns.

The M-60 machineguns (7.62 mm) had a rate of fire of 550 rounds per minute with a maximum range of 4,100 yards, effective to 1,100 yards. In flight, the crewchief served as a door gunner. On the ground, he maintained the aircraft, performed light maintenance and assisted the door gunner who pulled preventive maintenance on the aircraft weapons



BELOW: UH-1B gunship with XM-16 system belonging to Troop C at Kontum, 1966. Round markings (yellow) on pilot's door indicate that this chopper is from Troop C. RIGHT TOP: UH-1D of Troop C Aero Rifle Platoon "Blues," Kon Tum, 1966. RIGHT BOTTOM: UH-1B Huey equipped with the "Hog" rocket system shown at the 15th Transportation Battalion Maintenance Area, Central Highlands, 1966. Note open engine access panels

systems. In turn, the gunner helped the crewchief pull maintenance on the aircraft, a buddy system. Pilots were rotated from day to day.

Seating Arrangements. Front left seat—copilot. Front right—pilot (aircraft commander). Rear cabin area UH-1B: Usually left side crewchief and right side door gunner (varied). UH-1D: Again, crewchief sat on left side, also (varied) while an infantryman used spare M-60D on opposite side going in and exiting landing zones.

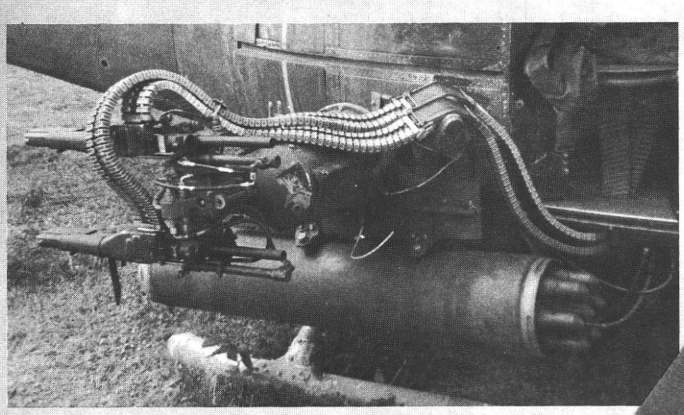
Duties of Enlisted Crewmembers In Flight. The crew assisted in visual reconnaissance of enemy terrain, dropped smoke markers on targets, fired weapons for delivery of suppressive fire, defensive fire and diversionary fire.

They also kept a sharp watch for hazards of immediate danger to their aircraft—like other aircraft too close, or natural obstacles such as trees, vines, poles, etc., to avoid accidents.

Flight Characteristics. Normal flight for recon missions was from treetop level up to 500 feet. Some missions were at longer range; in such cases the aircraft flew to and from the area at a normal height of around 2,500 feet. Cruise speed was kept between 75 to 90 knots for low level recon (varied).

Unit Insignia And Emblems. The UH-1B gunships of Troop C did not share a standard unit emblem on the nose area as did many of the chopper units in Vietnam. Instead, each crewchief was left to do what he wanted on his aircraft. Only a few gunships had nose emblems. One UH-1B had a picture of a pink panther with a cigar in its mouth holding a submachinegun. Another had a horseshoe magnet on a light green background with magnetic rays drawing ground fire to it. My aircraft, #62063, had the words "MR. HUEY" in light green on its nose.

The UH-1D aircraft, however, were more uniform, and sported a picture of a green snake's head with



ABOVE: Excellent detail shot of the XM-16 weapons system aboard a UH-1B of Troop C. Note that the barrels of the M-60C machineguns have been removed. BELOW: UH-1D of Aero Rifle Platoon "Blues," Troop C. This "Slick" was fitted with two M-60D machineguns. Note nose emblem, green snakehead with white wings, word "BUSHMASTERS" added later under emblem. Kontum, South Vietnam, June 1966

BELOW: Flight line, An Khe base camp, December 1965 (Monsoon Season). UH-1B gunships of Troop C. Rocket packing cases in foreground. BOTTOM: Cockpit of a UH-1B gunship in flight. This is "Mr. Huey" aircraft. Pilot is CWO "Pappy" Green. Note copilot/gunner's flexible Mark VI gunsight for use with XM-16 weapon system

white lips, red fangs, red eyeballs and white wings. At a later date, the word "BUSHMASTERS" was added in yellow under the emblem. Also, each aircraft's flight number was centered between the two front nose glass domes.

Almost all aircraft had the division's cavalry emblem on the tail fin, a yellow patch with a diagonal black slash and with a forward facing horsehead, also in black.

The Interiors. *Floor,* light gray. *Seat frames,* light gray. *Seat cushions and rear jump seats,* red.

Rear bulkhead, gray. *Dashboard,* black hood with gray panel. *Center console,* black with gray sides. *Cyclic and collective controls,* black. *Overhead roof and windows,* transparent green. *Seat belts,* gray.

Editor's note: The ***Aviation Digest*** *welcomes historical articles such as Sergeant Kelley's. We also wish to thank* ***The Quarterly,*** *a periodical of the International Plastic Modelers Society, for permission to reprint this article. Anyone desiring more information about the International Plastic Modelers Society should write to Mr. Gary Davidson, 2024 Schuyler Ave., Lafayette, IN 47904*

General Specifications of UH-1B Gunship
Engine—Lycoming Turbine Model #T53-L-5
Power rating—960 shaft horsepower (shp)
Cruise speed—85 knots (armed)
Crew—Two pilots and two crewmen (door gunners)

General Specifications of UH-1D Transport
Engine—Lycoming Turbine Model #T53-L-9A and T53-L-11
Power rating—1,100 shp
Cruise speed—110 knots
Crew—2 pilots and 1 crewchief and 10 troops

Note—Later UH-1Bs received updated T53-L-9 engine (1,100 shp)

Robert K. Wright Jr.
U.S. Army Center of Military History
Washington DC

YOUR AVIATION unit has a proud and distinguished history. You know this, and you know that this history can be an important factor in developing unit esprit de corps. Did you also know that there exists an office in the U.S. Army Center of Military History whose function is to assist in fostering the development of esprit through the use of history? The Organizational History Branch (OHB) of the Center provides unit commanders and unit historians with a wide range of service's related to the history of the individual unit. Your unit's Lineage and Honors Certificate, OHB's basic product, is probably on display in your unit area, but it represents only the tip of the iceburg of services available to you from OHB.

The Lineage and Honors Certificate is governed by the provisions of paragraph 10, Army Regulation (AR) 870-5. It is a legal document which functions as both a "birth certificate" of the unit and as its "deed" to historical records and organizational properties. In format, the certificate is a concise skeletal history of the unit from the time it was first placed on the rolls of the U.S. Army (constituted), through its various changes in status and designation, down to the present. It is not a detailed combat narrative, for that function is reserved for the unit itself or an interested private party, but it is the definitive statement of the unit's battle honors (credits for participation in official campaigns and recognized American and foreign unit awards). Every unit organized under a table of organization and equipment (TOE) is entitled to a certificate if it is authorized a flag, color or guidon and is not an organic element of a higher organization. The certificate itself is printed on high-quality stock, signed by The Adjutant General, and sent directly to the unit along with a number of letter-sized reproductions. Separate TOE units with fewer than 30 personnel assigned are issued a Statement of Service in lieu of a certificate. The statement contains the same information but is typed on bond paper and is unsigned.

The Lineage and Honors Certificate serves the unit commander as a prime morale builder through its display function as well as in a number of less obvious ways. The legal nature of the certificate enables the unit commander to reclaim any historical properties which may be in storage at the Pueblo Army Depot, CO, and to trace unit records which are in the custody

of the General Services Administration. The latter is particularly important in compiling a unit history and in maintaining the organizational history file (file 2-05) required under paragraph 9, AR 870-5. The Institute of Heraldry uses the certificate when designing unit emblems, crests and other heraldic items to which the unit may be entitled. The facts verified by the certificate are thus translated into the appropriate symbolism. On the basis of the verification provided by the honors portion of the certificate, streamers and campaign silver bands are issued to the unit by the U.S. Army Support Activity, Philadelphia, PA. Certificates suitable for framing are available from the Awards Branch of the U.S. Army Military Personnel Center for the unit awards listed. Using the certificate and AR 672-5-1 the unit commander also is able to determine which awards are authorized for temporary wear by the unit.

Other products of OHB which are geared to foster unit esprit are less widely known. These include the Unit Day, Special Designation and Memorial Award Certificates, all of which are signed by the Secretary of the Army and are suitable for framing. Paragraph 9, AR 870-5 describes the procedures involved in obtaining these items. Care in the selection of such certificates will enable the unit commander to strengthen the unit's sense of identity by pinpointing events of particular importance to its history and by highlighting former members of the unit who contributed significantly to its performance.

A Unit Day is selected by the unit commander for annual celebration in ceremonies and special activities, and therefore should reflect a noteworthy event in the life of the organization. A request to OHB for official certification of the commander's selection, together with a statement of the significance of the date selected, will result in the preparation of a Unit Day Certificate. While many units such as Headquarters and Headquarters Company (HHC), 210th Aviation Battalion or the 179th Aviation Company have selected the date of their initial activation, other units have sought to commemorate a noteworthy combat action. Thus Headquarters and Headquarters Company, 214th Aviation Battalion celebrates its entry into combat in Vietnam in 1967 on 24 April each year, and the 114th Aviation Company commemorates 26 June as the anniversary of an engagement at Tra Vinh, Vietnam in 1964 for which it was awarded a Valorous Unit Award. Lieutenant Colonel John U. D. Page, a Medal of Honor recipient and former battalion member, is honored each year on 11 December by Headquarters and Headquarters Company, 52d Aviation Battalion on the anniversary of his death (1950) in action near the Manchurian Border.

Unit special designations are the "nicknames" of the units and come in two varieties. Traditional Designations are those such as "The Old Guard" (3d Infantry) which have been associated with the unit for at least 30 years. Distinctive Designations, for which most aviation units qualify, are nicknames less than 30 years old. As in the case of Unit Days, the unit itself must select a nickname in conformity with the standards of AR 870-5, and then register it with OHB. Two criteria must be met to justify a selection: it must be unique and it must not reflect discredit on the U.S. Army. Many aviation units have selected the radio call signs they used in Vietnam: examples include the "Red Barons" (201st Aviation Company) and the "Flying Dragons" (HHC, 52d Aviation Battalion). Other units, such as "Freight Train" (243d Aviation Company) and "Hornets" (116th Aviation Company) chose a name which reflects the pocket patches they wore in Vietnam. "Delta Devils" identifies the 235th Aviation Company as having served in the Mekong Delta. The 121st Aviation Company chose "Soc Trang Tigers" to reflect the Presidential Unit Citation (Army) which they earned in a battle at that village on 5 December 1964. Headquarters and Headquarters Company, 269th Aviation Battalion commemorates Lieutenant Colonel Roger A. Waterbury, their first combat casualty, through its choice of "The Black Barons."

Units also may choose to establish an annual individual award within the unit to be presented to the unit member adjudged to be of outstanding character and accomplishment. This award may be named either for an outstanding former unit member who contributed significantly to the unit, or for a battle or campaign in which the unit participated. Paragraph 9-11, AR 870-5 explains the details of the procedures required in establishing such an award. OHB distributes on request a pamphlet entitled "Organizational History: Its Preparation and Use" which is designed as a guide for the unit commander and unit historian. This pamphlet addresses itself to the resources available in unit history preparation and can be of help in developing a troop orientation program. OHB assistance, in conjunction with the U.S. Army Military History Research Collection at Carlisle Barracks, PA, also is available in compiling bibliographic references about your unit. It should be noted, however, that many aviation units have never had histories published.

If your unit lacks any of these certificates, or wishes assistance on a particular historical point, it should contact OHB by writing to The U.S. Army Center of Military History, ATTN: DAMH-HSO, Forrestal Building, Washington, DC 20314. Telephone assistance also is available on either commercial (202-693-5041) or AUTOVON (285-0307/0308) lines. OHB exists solely to assist the units of the U.S. Army; together with a concerned unit commander it can function as part of a team to develop unit pride and traditions.

What Happens When A Chinook Goes On The Warpath?

Betty J. Goodson
Staff Writer

CW3 Smith
photo by SP4 Eugenio P. Redmond

PUT YOUR IMAGINATION to work: Picture a 30,000-pound helicopter that measures 99 feet from turning rotor tip to rotor tip. Then visualize that same aircraft pitching its nose up and down about 50 degrees, either while on the ground or at a 50 to 60-foot altitude.

Any resemblance to those imagined movements and what happened to Chief Warrant Officer, CW3, Thomas B. Smith sometime ago in a CH-47 Chinook helicopter at Ft. Rucker, AL, is totally accurate.

An instructor and development test pilot with the U.S. Army Aviation Development Test Activity (USAADTA) at Ft. Rucker, CW3 Smith was in the "D" model prototype of the modernized Chinook which has been at the USAADTA since December 1979. While the flight was a test, it was also a training period for Harry Miller, a test pilot of the maintenance contractor, Northrop Worldwide Aircraft Services. Others onboard were Staff Sergeant Bobby Bell, flight engineer, and three technicians who were observing various aspects of the aircraft's operation. As it turned out, they got to observe more than they had counted on!

CW3 Smith recalled: "We were working out of Highfalls Stagefield and were preparing for a takeoff. I told Mr. Miller to turn on the advance flight control system (AFCS) which is controlled by two onboard computers; and when he did, the forward rotor blades began to tilt down. I immediately switched the AFCS off and then initiated an increase in the thrust to get us airborne so the blades would not strike the ground.

"Then the AFCS was turned back on, and the pitching became really bad. One witness said the helicopter appeared to be perpendicular to the ground part of the time. I was putting in the full cyclic, 5½ inches aft and 7½ inches forward, in an attempt to control it. That compares with the normally required cyclic applications of one-fourth to one-half inch to make the Chinook respond."

After about 8 minutes the bucking eased off enough for CW3 Smith to land. Operations personnel had advised that the aircraft should be abandoned, but CW3 Smith elected not to do so. SSG Bell and Mr. Miller also chose to stay.

"I just couldn't see leaving it," CW3 Smith said. "That is an $11 to $13 million aircraft; and I knew if I let it go it would beat itself to death. So I decided as long as there was a chance to save it, I would keep trying."

During all of this time, SSG Bell, whom CW3 Smith called an "extraordinary flight engineer," was checking the wiring and other systems in an effort to find a way to tame the Chinook. Nothing seemed to work.

Suddenly, everything was "up in the air" again as the nose started moving skyward. That ride was as wild as the earlier one and lasted longer, about 12 minutes. Once it was back on the ground, CW3 Smith said the helicopter yawed to the right five times in 10-degree increments, without any pilot input.

Maintenance technicians were able to get onboard and disconnect the electrical power to the system. Once that was done, all problems ceased.

There was no damage to the "D" model prototype Chinook!

The cause of the near-catastrophe was determined to be the failure of the advance flight control system computers. They have since been redesigned by the manufacturer, according to CW3 Smith. Another good result is that recording equipment has been installed to make the investigation of future incidents more revealing.

For his mastery of the convulsive CH-47, CW3 Smith was awarded the Broken Wing, the Army's means of recognizing aviators who are able to land a malfunctioning aircraft without damage to it nor injury to personnel.

That is the third Broken Wing the Senior Army Aviator has received.

The others were presented to him in 1972 and 1974 when he was stationed at Ft. McClellan, AL. In those two incidents, he landed OH-58s after their engines had failed, each time in areas where it should not have been possible to land safely because of slopes, ditches and trees.

Not all of his flying career which started with his graduation from aviation school in January 1970 has been so eventful, of course; but CW3 Smith does feel that the 3,000 accident-free flight hours he has logged are attributable to the training he received.

"No one can train pilots like the Army does," he declared. "Everything I have done so far and the ability I have to do it with were taught to me by some excellent aviators. They deserve the credit for my being able to handle that Chinook."

He figures, however, that he and all of his instructors have enough of that credit to last their collective lifetime!

BERLIN CASE STUDY

SURVIVABILITY ON the modern battlefield—for Army Aviation units, no subject could be more vital. The massive array of weapons in the Warsaw Pact armies of today threatens Army aircraft in a number of ways: not just the traditional antiaircraft weapons, but also artillery, small arms, antitank guided missiles, chemical warfare and electronic warfare. The dearth of aviation military operations in urban terrain (MOUT) how-to-fight literature has induced the Berlin Aviation Detachment to develop concepts, procedures and tactics in light of the ominous Warsaw Pact threat. The "David and Goliath" proposition dictates that planning must be prudent, resourceful and imaginative because we will be isolated, outnumbered and outgunned.

The UH-1 Huey helicopters of the Berlin Aviation Detachment provide the Berlin Brigade, in addition to the British and French Allies, an airmobile capability; moving antitank teams about the city; extending ground observation; and facilitating command, control and communications. Considering the Brigade's situation, these capabilities are critically important for training and planning in the Berlin MOUT environment. Consequently, aviation operations play a significant role in U.S. and Allied field training exercises throughout the year. The imposing threat and active airmobile operations, together, serve as the catalyst for aviation MOUT doctrine development.

The key question, however, is how long can these operations be sustained should mid to high intensity combat take place in Berlin? The Berlin Aviation Detachment normally is stationed at Tempelhof Central Airport (figure 1) which provides excellent hangar and maintenance facilities (figure 2), but which is marked on all city maps, and is within direct support artillery range of East Germany and East Berlin from the north, east and south. Clearly, the detachment must plan to deploy in order to survive.

FIGURE 1 (above): Tempelhof Central Airport, home of Berlin Brigade Aviation Section, is located in the American sector of West Berlin

FIGURE 2 (right): Built-in maintenance capabilities are excellent; difficult to duplicate

USAF photographs by Thomas Farr Templehof AFB

The remainder of this article discusses the Berlin Aviation Detachment's deployment considerations in the hope that it may be useful to other aviation units. The example of a deployment location used in

the article is not a real one, but another suitable location in West Berlin. The planning sequence, of course, would apply in any city.

In searching for a suitable deployment site, the same basic considerations apply as in the establishment of a forward arming and refueling point. The aviation unit commander must consider possible command relationships, mutual support and security requirements, as well as the usual factors of mission, enemy, terrain and troops available. In addition, the site chosen must accommodate frontline maintenance, refuel and troop support requirements. The problem is one of choosing locations which maximize protection while permitting the most extensive operations.

Using the "hide concept," numerous sites throughout the city were extensively reconnoitered and evaluated. The following features were considered essential to a deployment site:

- Overhead protection—i.e., a hangar or garage-like facility big enough for an aircraft.
- Minimum requirement for improvement by engineers.

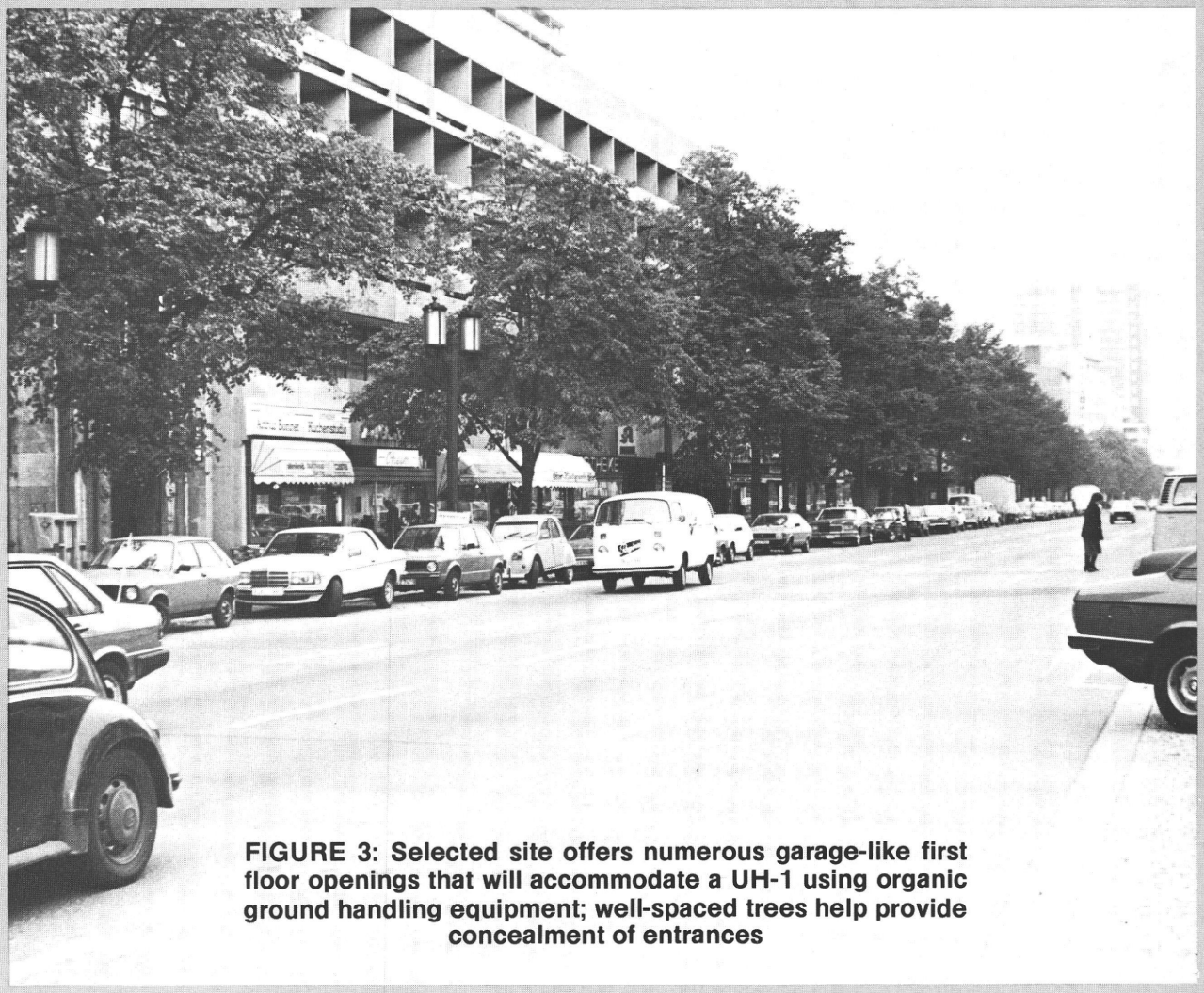
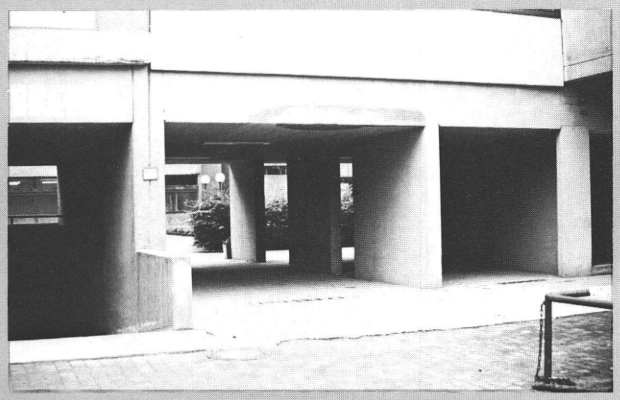


FIGURE 3: Selected site offers numerous garage-like first floor openings that will accommodate a UH-1 using organic ground handling equipment; well-spaced trees help provide concealment of entrances

- Nearby gas stations for fuel storage.
- Maximum cover and concealment, both for the site itself and for air and ground approaches.
- An adjacent highway which can be used for short takeoff and landing (STOL) fixed wing operations.
- Locations which permit other friendly



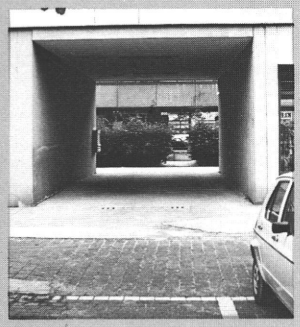


FIGURE 4: Street-level garages and underpasses of the modern building selected are large enough to provide "hardened" hangar and maintenance area for helicopters, with minimal engineer effort. Building construction would not tend to create rubble

forces to provide local security.

- Protected working and troop billeting area for crews and maintenance personnel.
- Minimum requirement for special ground handling equipment.
- Frame or slab construction, rather than brick or cement block, to minimize the problem of rubble.

A number of sites were selected and evaluated. By way of illustration, one site is used as an example of the evaluation process in this article (figure 3). To begin with, this site offers numerous garage like openings which are big enough for a UH-1 (figure 4). Aircraft can be moved into these openings using organic ground handling equipment without special adaptations. The concrete slab construction reduces the danger of rubble.

The long boulevard adjacent to the building can be converted into a STOL runway with minimal engineer support (figure 5). By reducing the requirement for engineer work in the area, the location of the site should not be revealed. The tall buildings on either side of the relatively wide streets permit nap-of-the-earth flight along routes which are masked from enemy radar detection (figures 5 and 6).

Nearby, there is also a gasoline station which can be used to store fuel and related equipment (figure 7). Concealed ground routes to these facilities, reconnoitered by the detachment's maintenance personnel, permit secure deployment and operation of these elements. Reconnaissance of alternate routes, to include subway routes, also is vital for coordination and resupply.

On the back side of the buildings used as UH-1 hangars, a parking garage provides covered location in which to house helicopter maintenance areas. These are protected by the buildings themselves and, because of the nature of parking garage construction, provide good overhead protection (figure 8).

Hangars for fixed wing aircraft are harder to find. But, with some work, a number of the building underpasses are large enough to accommodate small fixed wing aircraft if required (figure 9).

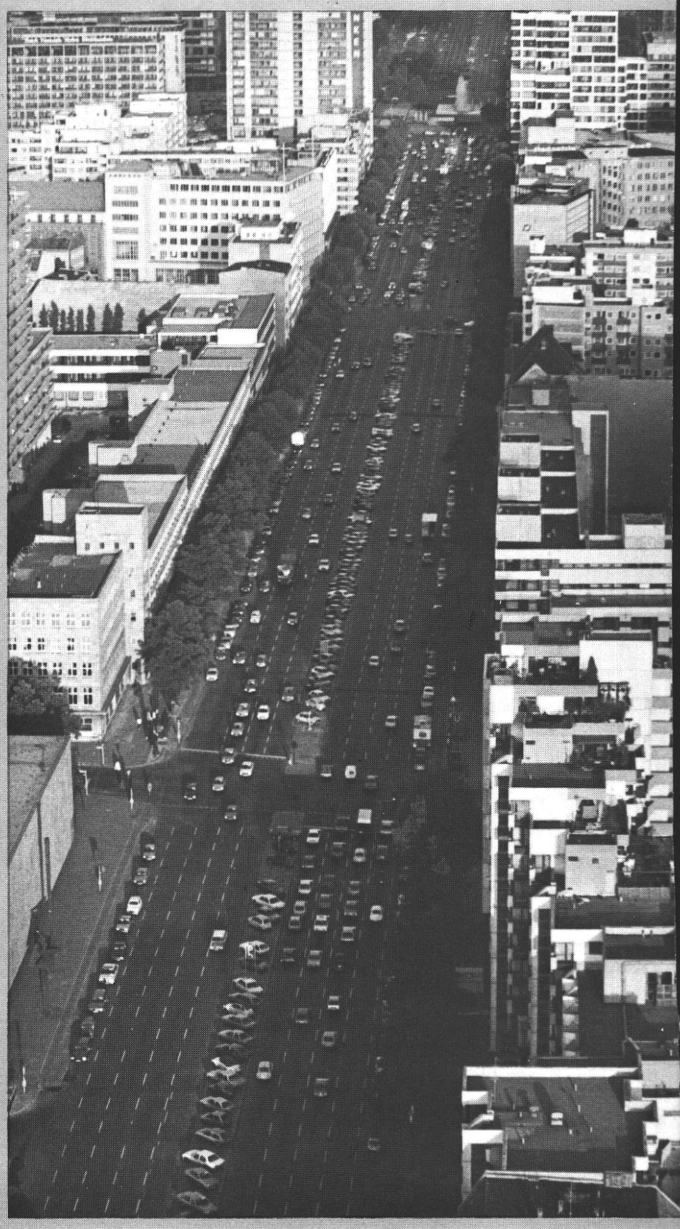
Use of the existing telephone lines for routine communication in the deployment site will greatly reduce its electronic signature, further enhancing concealment. Remoted radios used for flight control will help to conceal the site's true location.

A word about air defense is in order here. Most of the air defense measures taken to secure these deployment sites are passive (concealment, overhead cover, etc.) but should short-range air defense systems be made available at these sites, they should be employed in tall buildings which dominate the air avenues of approach, thereby providing an "overwatch" capability to protect friendly aircraft operating in the vicinity of the deployment site.

A map of the site, showing the various facilities, is at figure 10. All the facilities are conveniently located, protected by the buildings and concealed. A number of these deployment sites, reconnoitered and planned throughout the city, should greatly enhance the ability of Berlin's Aviation Detachment to support the brigade for extended periods.

Having identified deployment sites, the Aviation Detachment has planned a deployment checklist as a part of the unit battlebook. It is important that each member of the detachment understand his or her individual role once the decision is made to deploy. The following are some of the items included in the deployment sequence:

- Warning order issued.
- Repair parts, tools, organizational and individual equipment loaded in accordance with unit load plans.



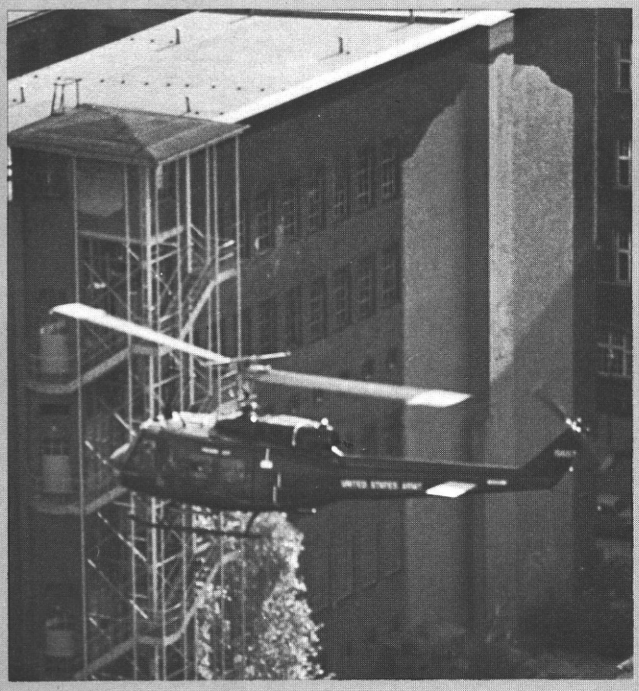


FIGURE 5 (far left): Adjacent boulevard is a suitable runway for STOL aircraft; tall structures combined with wide streets permit NOE flight and protection from enemy radar

FIGURE 6 (left, above): UH-1 NOE in city

FIGURE 7 (left, below): Nearby gasoline station can provide alternate source of fuel, as well as underground storage capability. U-Bahn/Subway provides alternate, protected line of communications

FIGURE 8 (above): View of courtyard in back of site shows more clearly the street-level garages easily adapted to helicopter maintenance areas and well-protected by the building structure itself

FIGURE 9: Many street-level building underpasses are large enough to provide cover for small fixed wing aircraft (with minor engineer support)

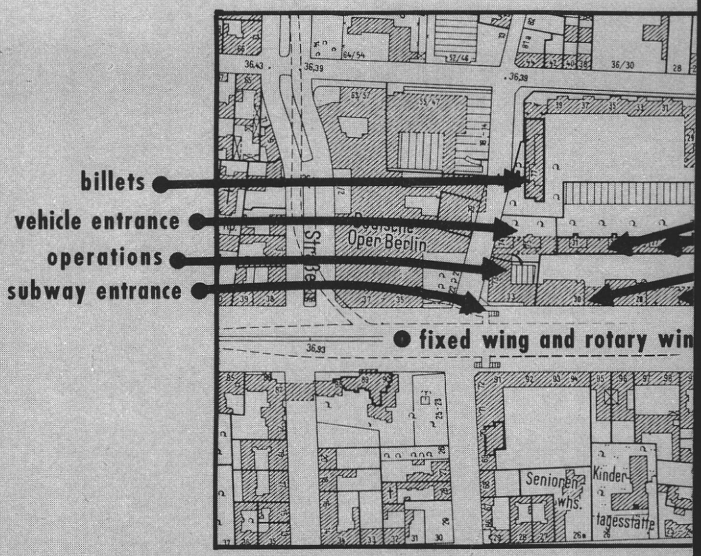
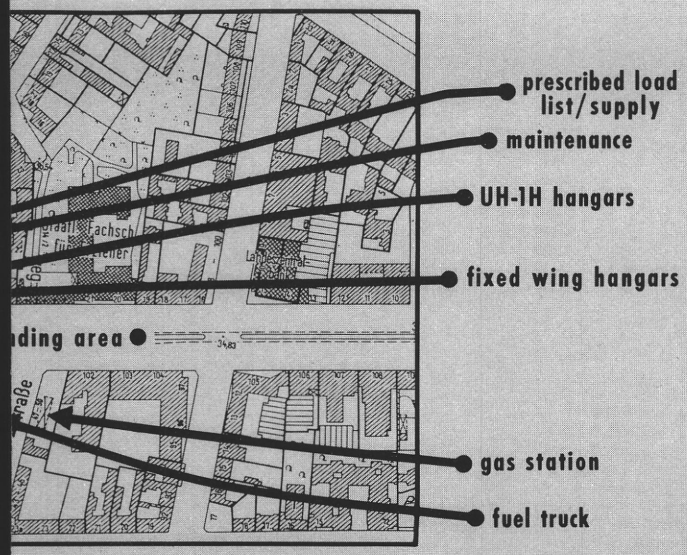


FIGURE 10: Map of deployment site sh might be used. All equipment and airc level, while operations and troop bille additional protection; underground alte the use of the gas station adjacent to th subway entrance for use as alternate; coordination and resupply

- Advance party departs to new location.
- Communications from new site established.
- Engineer tasks executed (streetlights demolished, etc., as necessary).
- Order to deploy issued.
- Ground elements deploy.
- Jump command post established.
- Aircraft deploy.
- Mission support continues.

The Berlin case study points out the opportunity for increased flexibility and survivability of Army aircraft in the urban environment. Additionally, and more impor-



s how the entire building complex
maintenance areas are at street
may occupy basement rooms for
e fuel storage is available through
nding area. Note the proximity of
ected line of communications for

tantly, the Berlin example provides a starting point for further doctrine development for airmobility in MOUT.

ABOUT THE AUTHORS

Major Paul C. Hollowell at the time of the writing of this article was the commander of the Berlin Army Aviation Detachment. He has commanded both ground and air cavalry troops, served as S3 and executive officer of 1/17th Cavalry, 82d Airborne Division, G3 plans officer at the 5th Corps and in addition to other troop and staff experience, served 2 years with the Armor Agency of Combat Developments Command. A 1975 graduate of Command and General Staff College, Major Hollowell is a dual rated Senior Army Aviator with more than 3,000 flight hours. He is currently assigned to Office, Deputy Chief of Staff for Research, Development and Acquisition, the Pentagon.

Major Charles J. Campbell is the G3 plans officer, Berlin Brigade. A 1968 Penn State graduate, he received a master of science degree from Troy State University in 1979. His military career includes duty in Republic of Vietnam, company commander and staff officer, 2d Armored Cavalry Regiment, Night Hawk/night vision goggles instructor pilot and operations officer, Ft. Rucker, and executive officer/operations officer, Berlin Brigade Aviation Detachment.

AVIATION PERSONNEL NOTES

LTC Richard L. Naughton
Chief, Transportation/Aviation/Maintenance Branch
U.S. Army Military Personnel Center

IT'S TIME TO fill out a Department of the Army (DA) Form 2635 (Preference Sheet) again. But where are the assignments? Where is your military occupational specialty (MOS) authorized in continental United States (CONUS)? Not all CONUS installations have large aviation related populations, but most have at least a small flight detachment with some support personnel. It would be best if your DA Form 2635 was filled out noting installation preferences that were authorized your MOS. All too often, Branch receives the DA Form 2635 indicating locations that cannot support an MOS, resulting in a Soldier being assigned to a location far removed from his/her choice.

In order to give you an indication where your MOS is available, I have listed several locations with the corresponding MOSs that are available. I did not list every location that supports aviation, but the locations listed are authorized at least five personnel in the particular aviation MOS. If a location is not listed and you are interested in finding out whether or not your MOS is authorized, give Branch a call at AUTOVON 221-7700/01/02. The information in this article is current but subject to change as CONUS authorizations are added or deleted. Hope this list helps to fill out your preference sheet.

Redstone Arsenal, AL/ **67G, 67N**

Ft. Rucker, AL/ **67G, 67N, 67T, 67U, 67V, 67W, 67Y, 67Z, 68F, 68J, 68M, 71P**

Ft. Ord, CA/ **67N, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68H, 68J, 68K, 68M, 71P**

Ft. Carson, CO/ **67G, 67N. 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68H, 68J, 68K, 68M, 71P**

Ft. Benning, GA/ **67N, 67V, 68B, 68F, 71P**

Ft. Riley, KS/ **67G, 67N, 67V, 67W, 67Y, 68B, 68D, 68F, 68H, 68J, 68M, 71P**

Ft. Campbell, KY/ **67G, 67N, 67T, 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68N, 68J, 68K, 68M, 71P**

Ft. Knox, KY/ **67N, 67G, 67V**

Ft. Polk, LA/ **67N, 67V, 67W, 67Y, 67Z, 68B, 68J, 68M, 71P**

Ft. Devens, MA/ **67N**

Ft. Bragg, NC/ **ALL**

Ft. Sill, OK/ **67G, 67N, 67U, 67V, 71P**

Ft. Bliss, TX/ **67V, 67Y, 68M, 71P**

Ft. Hood, TX/ **67G, 67N, 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68H, 68J, 68K, 68M, 71P**

Ft. Sam Houston, TX/ **67G, 67N, 71P**

Military District of Washington/ **67G, 67N, 71P**

Ft. Eustis, VA/ **67G, 67N, 67T, 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68J, 68K, 68M, 71P**

Ft. Monroe, VA/ **67G**

Ft. Lewis, WA/ **67N, 67G, 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68H, 68J, 68K, 68M, 71P**

Ft. McPherson, GA/ **67N, 67G**

Ft. Stewart, GA/ **67N, 67G, 67U, 67V, 67W, 67Y, 67Z, 68B, 68D, 68F, 68G, 68H, 68J, 68K, 68M, 71P**

Ft. Meade, MD/ **67G, 67W, 71P**

Presidio of San Francisco, CA/ **67G, 67N**

Ft. Irwin, CA/ **67N**

REPORTING FINAL

Late News From Army Aviation Activities

FROM MARYLAND

Reassignment. Major General Emmett Paige Jr. assumed command 6 May of the Army Electronics Research and Development Command in Adelphi. He succeeds Major General Albert N. Stubblebine III who will command the Army Intelligence and Security Command, Arlington Hall, VA. **(PAO)**

FROM TRADOC

New Periodical. The Army Training Support Center is starting a new publication aimed at helping to train the Army's trainers.

THE ARMY TRAINER will be published quarterly and is targeted to trainers in grades E5 through 03 as well as training developers. Articles dealing with unit/collective training, experience with new training methods/devices, and feature articles on trainers are solicited. For further information, contact:

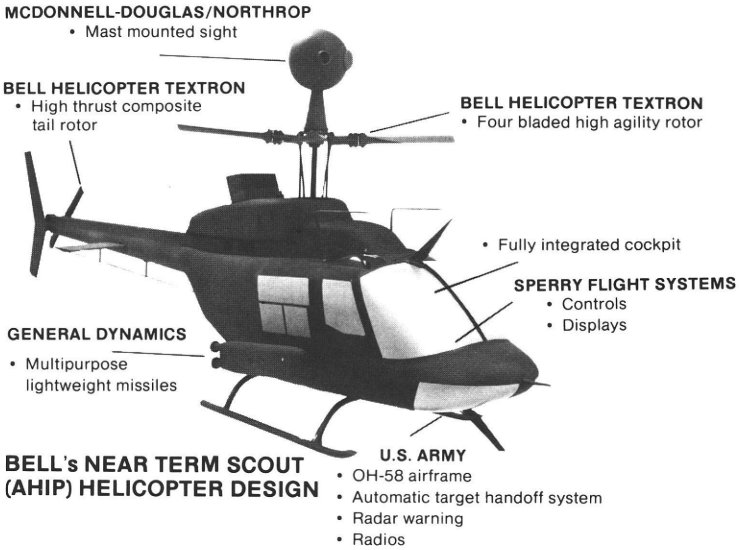
Editor, ***THE ARMY TRAINER***, Army Training Support Center, ATTN: ATIC-AET, Ft. Eustis, VA 23604; AUTOVON 927-4587/4605; commercial 804-878-4587/4605. **(TRADOC PA)**

Fund Drive. The Transportation Corps Museum Foundation has begun a fund raising campaign to build an aircraft pavilion to the Army Transportation Museum. Colonel Tom Eustis (Retired) is the overall drive chairman. **(PAO)**

Fuel Fire Protection. Of all the combat risks faced by Army Aviation, in-flight fire or explosion from a fuel tank hit is among the most dreaded. Furthermore, vulnerability estimates indicate that helicopter conventional fuel tanks can be easily ignited by weapons used to support enemy infantry and armor. But techniques are being developed by the Applied Technology Laboratory, Army Research and Technology Laboratories, that will prevent such fuel fires through a new concept of powder-filled structural panels. These provide a significant measure of fire protection; furthermore, the weight of the composite powder-filled panels is several pounds less than that of the metal panel now in use. **(Charles M. Pedriani)**

FROM AIRCRAFT MANUFACTURERS

Bell Helicopter Textron. The major design features of Bell's Near Term Scout helicopter, the Model 406, which is entered in the Army Helicopter Improvement Program, were revealed at



BELL's NEAR TERM SCOUT (AHIP) HELICOPTER DESIGN

the Army Aviation Association of America's annual convention in Washington, DC in April. Those include mast mounted sight; four bladed, soft-in-plane composite main rotor; larger, slower turning tail rotor; and power matched drive train.

Boeing Vertol Company. The Army has awarded Boeing a follow-on contract of $32.8 million for the continued production of fiberglass rotor blades and modification kits to retrofit Boeing Vertol-built CH-47C helicopters. Additional production rate tooling was also included in the contract. This will allow the Army to take advantage of the life cycle costs and operational benefits of fiberglass rotor blades, prior to the induction in the late 1980s of the CH-47C aircraft into the CH-47 Modernization Program.

FROM FORT RUCKER

Implementing the AirLand Battle Now. The Combined Arms Center (CAC) is now moving to complete the briefing cycle for the AirLand Battle Contact Team by July 1981. The knowledge and

understanding gained by the team will enable the faculty at Ft. Leavenworth to introduce the key AirLand Battle concepts into Command and General Staff College instruction. Concurrently, these concepts are being incorporated in FM 100-5, "Operations," in support of the overall Army doctrinal effort. Furthermore each proponent school to include CAC and the Aviation Center will publish articles on the subject that will complement the article "Extended Battlefield," by General Donn Starry, commander of the Training and Doctrine Command, in the March 1981 issue of ***Military Review***. Look for the Aviation Center's AirLand Battle article in next month's issue of the ***Aviation Digest***. And for those who have not yet read General Starry's article in the ***Military Review*** it is commended to you as an excellent overview which provides a great insight into the Extended Battlefield concept.

(DCD-USAAVNC)

Graduation Speakers. Major General John W. McEnery, chief of staff, Army Forces Command, Ft. McPherson, GA, told recent graduating flight students that one of their biggest jobs would be to continue to sell Army Aviation. "Your way of selling . . . is by being the most professional aviator that you personally can be . . . . Do exactly what you're supposed to do when and where you're supposed to do it . . . ."

Brigadier General Leo A. Brooks, commanding general, Army Troop Support Agency, Ft. Lee, VA, was speaker at a graduation ceremony for the Aviation Warrant Officer Advanced Course. He urged his audience to think about what they can do as individuals to increase the strength in individuals who work for them.

(USAAVNC PAO)

ATC Training Material. A conference was held in January to discuss air traffic control (ATC) training for Army National Guard and Reserve personnel. It was attended by 25 representatives from the Reserve Readiness Region, National Guard, Army Air Traffic Control Activity at Ft. Huachuca, AZ, and trainers from the Army Aviation Center.

One of the problems identified during the conference was the apparent need for updated information concerning the Army Correspondence Course Program (ACCP) and Training Extension Courses (TEC) for air traffic control personnel. As a result, the following information is provided:

ACCP

There are seven correspondence courses for ATC personnel. The courses are designed to train critical tasks for post-advanced individual training (AIT) levels; i.e., skill level 2 courses qualify personnel to perform in pay grade E5, skill level 3 in pay grade E6, skill level 4 in pay grade E7, and skill level 5 in pay grades E8 and E9.

DA Form 145 is used for ACCP enrollment. You can obtain this form through your unit or by ordering it through AG Publications. Completed applications should be forwarded to: The Army Institute for Professional Development; U.S. Army Training Support Center; Newport News, VA 23628.

In addition to individual enrollment, there are provisions for group enrollment. The group leader may adapt materials used in the correspondence courses to classroom instruction for group study. Certificates are awarded for successful completion. Regular Army personnel in grades E5 and below also receive 1 promotion point for each 5 credit hours completed. National Guard and Army Reserve personnel receive service school credit and acquire retirement points. For further information, refer to Army Pamphlet 351-20-3, "U.S. Army Aviation Center Correspondence Course Catalog," or contact the ACCP Liaison Officer, P.O. Box J, Ft. Rucker, AL 36362 (AUTOVON 558-3703/3668).

Correspondence Courses

Title	Course Number	Skill Level	Credit Hours	Number of Subcourses
Air Operations Primary Technical Course (MOS 93H)	R14	2	45	8
Air Operations Primary Technical Course (MOS 93J)	R34	2	31	8
Air Operations Basic Technical Course (MOS 93H)	R17	3	36	6
Air Operations Basic Technical Course (MOS 93J)	R37	3	42	7
Air Operations NCO Advanced Course (MOS 93H and 93J)	S12	4	178	32
Air Operations NCO Senior Course (CMF-64) (MOS 93J) (Radar Option)	T02	5	72	13
Air Operations NCO Senior Course (CMF-64) (MOS 93J) (Tower Option)	T03	5	66	11

TEC

Most lessons are presented in audiovisual format using the Beseler Cue/See (Q/C) projector. The film and sound are programed to stop automatically to permit the student to answer questions, or perform a task, after which the Soldier can continue the lesson by pressing the "proceed" button. A single Q/C may be used to train from 1

to 15 Soldiers. Eight Q/C's are normally issued to each battalion size unit with lesser amounts to separate companies or detachments.

Audio tape lessons are used for situations in the field and motor pools where "hands-on" performance is required. The Soldier listens to the tape on a standard portable cassette player as it "talks through" the task.

The third form of TEC lesson is the programed text which contains instructions, questions and answers in a step-by-step format.

Distribution of TEC lessons is handled through a computer-coded process whereby account holders automatically receive lessons appropriate to their mission, MOS makeup and equipment authorizations. In the case of Reserve Component units, the materials are distributed to a training facility for use by all personnel/units assigned to that facility. The senior command in the facility is normally designated the extension training material (ETM) custodian, and it is his responsibility to establish an SOP governing the operation of the ETM library/learning center.

For further information refer to the ETM Status List, published quarterly by the: Army Training Extension Course Program; U.S. Army Training Support Center; Fort Eustis, VA 23604 (AUTOVON 927-4868).

Seven of the Flight Operations Specialist (MOS 71P) TEC lessons can be used to train air traffic controllers—MOS 93H and 93J. These are listed below and are shown in the ETM Status List (31 December 1980) as currently available with numbers 517-011-XXXX-X. The last character is a letter which identifies the type of lesson—A is printed material, F is audiovisual and J is job performance aid.

Hourly Weather Sequence Reports, Part 1 ..... **6005-A**
Part 2 ..... **6006-A**
Part 3 ..... **6007-A**
Part 4 ..... **6008-A**
Part 5 ..... **6009-A**
METAR (Meteorological Terminal Aviation Report),
Part 1 ..... **6010-A**
Part 2 ..... **6011-A**

The remaining TEC lessons for air traffic control training are numbered 222-011-XXXX-X. Sixteen (listed below) are shown in the ETM Status List (31 December 1980) as being currently available.

Control Information Symbols, Part 1 ..... **6201-A**
Part 2 ..... **6202-A**
Clearance Abbreviations **6203-A**
Miscellaneous Abbreviations **6204-A**
Numbers Usage **6215-F**
Facility Identification **6216-F**
Aircraft Identification, Part 1 ..... **6217-F**
Part 2 ..... **6218-F**
Radio and Interphone Usage **6219-F**
Control Taxiing VFR Aircraft **6221-A**
Control Departing VFR Aircraft **6222-A**
Control Arrival Aircraft (VFR) **6225-A**
Solicit, Record, Disseminate PIREP Information **6226-A**
Issue Airport Condition Advisories **6227-A**
Request and Deliver IFR ATC Clearances **6228-A**
Request and Deliver Special VFR Clearances **6229-A**

Thirty-four more TEC lessons, expected to be available by 1 July 1981, are listed below.

IFR Shorthand **6205-F**
SCATANA Procedures **6208-F**
Introduction to Flight Progress Strips **6209-F**
VFR Arrival and Departure Strips **6210-F**
SVFR Arrival and Departure Strips **6211-F**
IFR Arrival and Departure Strips **6212-F**
Clearance Transmission from Flight Progress Strips **6213-F**
Flight Progress Procedures **6214-F**
Provide Emergency Assistance **6220-F**
Provide Emergency Assistance **6220-J**
Provide VFR Departure Separation **6223-F**
Provide VFR Arrival Separation **6224-F**
Operator's Maintenance on Power Unit PU-619 ..... **6230-F**
Perform Operator Maintenance on Power Unit PU-619 ..... **6230-J**
Load/Unload Shelter and Remove Transit Skid AN/TSQ-71A **6231-F**
Position and Unpack Radar R/T Group Trailer, AN/TSQ-71A **6232-F**
Assemble Radar R/T Group, AN/TSQ-71A **6233-F**
Install Shelter to Trailer Cables, IFF Antenna, and PU-678/G, AN/TSQ-71A **6234-F**
Install Shelter Mounted VHF/UHF Antenna, AN/TSQ-71A **6235-F**
Install Shelter Mounted FM Antenna, Shelter Sunshield and Vestibule **6236-F**
Shelter and Install Telephone Lines and Miscellaneous Shelter Component and Ground Equipment **6237-F**
Install Checks, AN/TSQ-71A **6238-F**
Perform Operator Maintenance on Aircraft Control Central AN/TSQ-70A **6241-A**
Perform Operator Maintenance on Aircraft Control Central AN/TSQ-70A (JPA) **6241-J**
Install Aircraft Control Central AN/TSQ-70A,
Part I **6245-F**
Part II **6246-F**
Part III **6247-F**
Part IV **6248-F**
Facility Training, Part 1 ..... **6250-A**
Part 2 ..... **6251-A**
Maintain Training Records, Part 1 ..... **6252-A**
Part 2 ..... **6253-A**
Starting and Stopping the PU-619/M **6255-F**
Operational Hazard Report Procedures **6256-A**

(Roland Weldon, USAAVNC-DTD)

Do you have normal night

IF YOU BELIEVE you have normal night vision based on annual eye tests as part of your flight physical, you could be mistaken, because the Army presently does not have a routine program for testing the night vision of its aviators in the field. True, the medical specialist who administers the eye portion of your physical is supposed to ask about your night vision and whether you have experienced any problems seeing at night. If you state you have no problems, NIBH (Not Indicated by History) is automatically entered on your medical examination report. Therefore, the Army doesn't know whether you have normal night vision, and probably most of you don't either.

The paradox is that while the Army does not test the ability of aviators to see at night, it has over the last few years required that aviators fly an ever increasing number of hours at night at ever decreasing ambient light levels. For example, 40 percent of an Air Cavalry Troop's Level One Army Readiness Training Evaluation Program (ARTEP) involves night operations. Also, most of the Aircrew Training Manual (ATM) maneuvers require that one out of every four iterations be performed at night. These requirements to fly safely at night in tactical flight modes necessitate that we be aware of our

Captain Michael A. Hill

U.S. ARMY SAFETY CENTER

vision?

individual abilities to see at night. Therefore, night vision using our unaided eyes is the baseline upon which we should plan low-light-level tactical flight training.

True, we have night vision goggles, and even more sophisticated night vision equipment is coming. But when this equipment fails, when the supply system takes 60 days to deliver batteries for our goggles, or when our crew chiefs are unable to maintain these complex gadgets in a field environment, we will have to fall back on our ability to see and fly in the dark.

Many of the problems associated with night vision are easily correctable, but they must first be identified. A simple technique available to all pilots is to compare your vision with that of others. For instance, when you're flying, occasionally ask the copilot to tell you when he/she clearly sees a particular object while, at the same time, noting when you see the object. After about 6 to 10 iterations with different individuals, you will notice whether you see as well as they do at night. This same technique also can be used at night while driving if the objects selected are far enough away from the road so they are not brightly illuminated by your headlights. Although this comparison technique is not an accurate test of your night vision, it could lead you to pursue the matter with the flight surgeon if you think you have a problem.

Furthermore, if you're stationed at or on TDY at Fort Rucker, Alabama, and time permits, ask the flight surgeon to refer you to the U.S. Army Aeromedical Research Laboratories (USAARL) to have your night vision tested.

Commanders should become familiar with the various possible night vision problems that can affect their aviators and should not immediately assume pilots are trying to avoid night flying when they complain of being uncomfortable. Despite the 20/20 vision which may be recorded on an aviator's flight physical record, nearsightedness at night and poor night vision could be the reason for the uncomfortable feeling.

Operations officers should understand night vision disfunctions to prevent pairing two 40-year-old pilots for a night low-light-level training mission, despite their 20/20 daytime vision due to elevated night vision threshold levels.

Commanders should enlist the support of their local flight surgeons as a part of their unit's night training program. The flight surgeon could, as a minimum, check each aviator for retinitis pigmentosa and vitamin A deficiency and gain some indication of possible night vision problems using the Landolt C night vision tester. Such a program could also begin placing demands on the medical community for a better and more frequent night vision testing program.

As a potential member of a mishap investigation board, as an aviation safety officer, or as an aviation unit commander, you should insist that any time an aviation mishap occurs at night the night vision of the pilots be tested and made a part of the mishap report when feasible. Since this information has not been recorded in the past, there presently is no data base at the Army Safety Center concerning poor night vision as a cause factor in night mishaps.

Until the Army develops and fields a night vision test for aviators, the responsibility rests with each of us to ensure our night vision adequacy and our safety.

This article was adapted from a lesson plan prepared by the author while he was attending the Aviation Safety Officer Course. The views expressed in this article are those of the author and not necessarily those of the Department of the Army or the Army Safety Center.

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Debbie Bacle photograph by Tom Greene

ALSE Activities

Fifth U.S. Army will hold its next aviation life support equipment (ALSE) workshop from 31 August to 4 September 1981 at the Sheraton Inn in San Antonio, TX. This workshop will provide instruction to about 80 personnel in such areas as maintenance of ALSE items, supply, publications, and forms and records. Point of contact for further information is Mr. Al Cargen, Safety Office, Hq Fifth U.S. Army, AUTOVON 471-4663.

Thermal Stress

Now that summer is nearly upon us, it is time once again to consider the hazards of warm weather flight operations. We no longer have to be concerned (at least until next winter) with icy ramps, blowing snow and windchill factors. Now our enemies become heat and humidity. The following article is reprinted from the August 1980 issue of ***Aerospace Safety*** and should be reprinted every year for all aircrews, regardless of branch of service.

The flight line is getting hotter and hotter and the cockpit is becoming a regular Dante's Inferno. All that heat generated by the summer months can affect you to the point where it becomes dangerous. Exhaustion can set in causing fatigue and mental confusion. Symptoms are moist skin, profuse sweating, increased pulse, slightly decreased blood pressure and shortness of breath. In some cases, cramps or even a stroke could occur. In order to avoid these dangerous and sometimes fatal results of thermal stress, there are several things you can do.

First, slow down. Don't try and keep the same pace you're used to. Give yourself extra time to accomplish a slow preflight. Also, avoid sitting in the cockpit with the canopy closed for a long period of time. Be extra careful if you . . . spend more time than usual on the ramp. That extra time . . . can sneak up on you and dangerously affect your performance in the cockpit. Equally important is the accumulation of ramp time during two or three turns in one day. All this extra time could lead to over-exposure.

Just as important as overexposure is dehydration caused by sweating and evaporation. To avoid this, drink plenty of water. You should drink a minimum of 2 or 3 quarts of water per day. It doesn't increase sweating and as long as you're thirsty, you will not overhydrate.

A proper diet is another consideration. If you eat a normal diet, salting your food is much better than taking salt tablets. If you think additional salt is required, see your flight surgeon. Protein can cause an increase in your heat production and can contribute to thermal stress, so a low protein diet is best.

Finally, don't press! Heed your body's warning signs. If you feel you're overdoing it, call it quits. Seek a cool place to rest and drink additional fluids. If you really feel bad, see the Doc!

Your body can become used to the heat providing you take it slow initially and avoid overdoing it. It will normally take 2 to 3 weeks but, if the above steps are followed, it should help your body to become fully acclimatized in a safe manner.

(MAJ Brower, HQ ATC/IGF)

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-3307 or Commercial 314-263-3307

Ear Plugs

The small formable earplug has made an appearance in many life support shops and in many unit and flight facility operations sections. These formable earplugs are not intended to totally replace the molded type provided by medical personnel, but rather are to be used by those individuals who cannot be fitted with the molded type. They should not be used by aircrew personnel, but are ideal for issue to passengers.

The Air Force lists three approved formable ear plugs. They are the following:

Description	National Stock Number (NSN)
E-A-R (foam, disposable)	6515-00-137-6345
Flents (wax-impregnated, disposable)	6515-00-721-9092
Propp-O-Plast, U.S. Mil Configuration (disposable)	6515-01-071-2515

The E-A-R plug is cylindrical, made of vinyl polymer foam which is compressed by the user and placed in the ear canal. It must be held in place (20 seconds to 1 minute) while it expands enough to become firmly seated. If released too soon, the plug tends to work itself partly out of the ear canal so that much of its protective value is lost.

Flents are made of a wax-impregnated cellular material which can be handmolded into a conical shape and inserted in the ear canal. *They are a single-use item.*

The military configuration Propp-O-Plast is a conically-shaped preformed insert plug made of spun mineral fibers and covered with a nonperforated vinyl sheath. It is inserted snugly in the ear canal and *discarded after one use.*

The reuseable E-A-R plugs must be kept clean. They should be washed in lukewarm water using hand soap, rinsed in clean water and dried thoroughly before reuse. (Extracted from Life Sciences, the ***USAF Safety Journal,*** April 1981.)

Radio For Training

The Air Force has informed us that there is a training version of the AN/PRC-90 survival radio available. The radio, survival training, PRC-90, can be ordered "off-line" from FPZ under NSN 5820-00-469-5658LS. This training radio is equipped with frequencies of 251.9 in the voice/beacon mode and 236.0 in the alternate voice mode, rather than the customary 243.0 and 282.8, so that it may be used liberally for training. (Thanks to SGT Michael Carroll, Base Life Support Shop, Scott AFB, IL, for this info.)

Ski Mask II

In the Question and Answer section of the February 1981 edition of PEARL, we told you that there was no ski mask currently available in the Army inventory which could be used by aircrew personnel. In this we did not err; however, we have been subsequently informed that the Air Force does have such an item available for its flyers. The hood, winter, knit wool, can be ordered off-line from S9T under NSN 8415-00-543-7131 (size medium) at a cost of $4.59 each. By description, this item seems to be quite suitable for Army aircrew personnel as well. (Thanks to John Scannell, NJARNG ASF, Mercer County Airport, West Trenton, NJ, for this info.)

Questions and Answers

We need to replace the springs in the battery caps on several of our PRC-90 radios. However, it seems that the only way to obtain the spring is by ordering the battery cap and retainer together under NSN 5820-00-113-3635, as listed in TM 11-5820-800-12, "Operator's and Organization Maintenance Manual, Radio Set, AN/PRC-90." This seems like a terrible waste of money, since we don't really need to replace the caps and the cap and retainer together cost $7.25. Does the spring have a separate part number or NSN so that we can order only the part we need? (Bill Kassinos, 83d ARCOM Aviation Support Facility (33), Columbus, OH)

Since TM 11-5820-800-12 seemed to be of little assistance in this case, we decided to check USAF TO 12R2-2PRC90-4, "Illustrated Parts Breakdown, Radio Set AN/PRC-90 and Radio Test Set AN/PRM-32." This publication lists the spring, conical under PN 77-524781-1. Cross-referencing the part number yields an NSN of 5360-00-151-5903. To be certain, we contacted the USAF Logistics Command at Kelly AFB, TX, which verified that NSN as correct. The spring must be ordered off-line from S9I at a cost of $1.72.

SC 1680-00-CL-A02 for the survival kit, hot climate, lists the NSN for the sunburn ointment as 8510-00-162-5658. TC 1-62 lists the new NSN for the same item as 6508-01-037-8636LS. Every time we order under this latter stock number, our requisitions come back cancelled. Is the NSN in the TC correct? If not, should we order under the old NSN in the SC? (CW2 Art Doyal, 3498th Medical Company, Ft. Stewart, GA)

The NSN in TC 1-62 is unfortunately *not* correct. The correct NSN is 650**5**-01-037-8636, and no LS suffix is necessary, since the item is listed in the Army Master Data File (AMDF). By the way, we noted that the nomenclature for this item is "Aminobenzoic Acid" according to the AMDF. Not being chemists, we decided to check and see if you, we and the AMDF were all talking about the same thing. So we contacted a chemist at the Directorate for Medical Materiel, Defense Personnel Support Center, Philadelphia, which manages the sunburn cream. He confirmed that Aminobenzoic Acid is the sunburn cream and that 6505-01-037-8636 is the correct stock number.

VIEWS FROM READERS

Editor:

The article on "Cockpit Heat Stress in the AH-1G Cobra Helicopter" in the January issue was well worth reading. At Natick, this problem had been identified many years ago and considerable work has been done in the development of a microclimate cooling system with this application in mind.

With the emergence of CB warfare, the heat stress developed on individuals in combat vehicles assumes even greater proportions. Less than 6 months ago, we were able, for the first time, to demonstrate this microclimate cooling system in the XM-1 vehicle. A team from Natick Research and Development Laboratories and U.S. Army Institute of Environmental Medicine ran the test and clearly demonstrated both the magnitude of the problem and the potential solution. Without the cooling system, crewmembers became adversely affected in less than 2 hours. With the new cooling system, the subjects remained comfortable for 4 hours and could have gone on quite a bit longer.

This emphasizes the point we have been trying to make for some time: at the early stages in weapons systems development, the requirements must address the individual life support equipment needs and assign the same priority to fulfilling these needs as is assigned to development of the system; otherwise the operational capability of the system will prove to be limited by lack of adequate life support clothing and equipment systems.

John V. E. Hansen
Director, Clothing, Equipment and Materials Engineering Laboratory
U.S. Army Natick Research and Development Laboratories
Natick, MA 01760

Editor:

Current SQT testing procedures are not giving a true representation of the level of proficiency which has been attained by the individual Soldier in career management field 67.

Initially, starting with an individual Soldier's first day in AIT, and continuing on throughout the Soldier's entire military career, he is indoctrinated with what is considered the most important point in his entire training. This point being: NEVER ATTEMPT TO MEMORIZE MAINTENANCE PROCEDURES. This theme is reinforced during his tenure, i.e. use your PMD checklist, never work on your aircraft without the manual open to the appropriate page, etc.

Now taking this same individual Soldier, come SQT time, he is handed a 100 plus question examination and is expected to attain a passable score without benefit or access to reference material. What we have effectively done is identify those Soldiers with excellent memories and not those Soldiers who are proficient in their jobs.

Aviators are administered their own version of the SQT: Annual Writ (Written Component), −10 Test (Performance Certification Component) and Standardization Checkride (Hands-on Component). In all instances the examinee is allowed access to all relevant material pertinent to the accomplishment of his job.

The same consideration should be given when administering the SQT to CMF 67, or to all career fields for that matter. If the individual Soldier is administered the SQT and allowed access to all applicable reference material and does not come up with a satisfactory score, then there is no reason at all why the results could not be used as promotion criteria, position placement or even elimination from the service.

MSG William C. Baril
Chief Enlisted Advisor
185th Trans Co (AVIM)
NAS, Glenview, IL 60025

• **The *Aviation Digest* has received the following comments from the U.S. Army Transportation School:**

Over the past several months there has been an increasing dialogue concerning the perception that Soldiers taking the SQT in CMF 67 do not have access to technical manuals (TMs). I would like to take this opportunity to discuss the policy of the United States Army Transportation School on how manuals should be used in the test.

The use of TMs in the skill component (SC) of the skill qualification test (SQT) is determined by two factors. Soldiers were taught to use the TM when they were trained and this procedure should carry over to the field. However, there is a limit to how much a Soldier must refer to the TM. While there will always be some reference to the TM, a Soldier who is mastering the job is able to refer to the TM less as common procedures and knowledge become second nature. This is a legitimate measure of competence appropriate to testing.

All of the TMs referenced could not possibly be distributed or gathered together for all the different SQTs in CMF 67 because of the wide range of tasks the SQTs cover. Since we cannot give every Soldier a TM, we take pertinent pages from the TM and place them in SQTs to make the information available. These are referred to as extracts. This means that no Soldier takes an SQT without essential TM information available.

The crucial question is, "How much

Articles from the *Aviation Digest* requested in these letters have been mailed. Readers can obtain copies of material printed in any issue by writing to: Editor, *U.S. Army Aviation Digest*, P.O. Drawer P, Ft. Rucker, AL 36362

TM information should be supplied?" Too few TM extracts create a situation where Soldiers believe they are not given a fair chance to pass the test and test Soldiers on their ability to recall information rather than on job performance. Too many TM extracts result in a reading test that tells us little about what a Soldier can do.

In 1979 when the first CMF 67 SQT was tested many Soldiers perceived this test as unfair because they believed there were too few extracts. In 1980 we added some more references, but again some believed that the test was unfair because there were too few extracts.

Here is how we determine what extracts should be placed in the SQT. Before we write the test, we analyze the job. Data is collected on the use of TMs, and observations are made of Soldiers working in the field. The decision of when and what extracts to use is a judgment and has been largely subjective. The people who make the judgment are NCO subject matter experts, and they make the judgment from years of experience doing the job on which the test is based. With the 1981 SQT, we conducted a tryout of the test to a sample of field Soldiers. If the test meets their expectations, it must be considered valid and fair.

COL John E. St. John
Director of Training Developments
U.S. Army Transportation School
Ft. Eustis, VA

Editor:

This Military Attache's Office would like to subscribe and receive the publication that you edit. In the event that there should be any charges connected with it, we would ask you to bill us in the usual manner, c.o. of our Finance Department.

We look forward to receiving your publication.

LTC Francisco E. Machinandiarena
Assistant Military Attache
Argentine Embassy

• **Annual subscriptions are available by sending a remittance of $20.00 (domestic) or $25.00 (overseas) to: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.**

Editor:

My thanks to Captain Bowers for his article, "Altitude Planning" in your October 1980 issue. It shows me that someone else is concerned about the feasibility and practicality of the future actual application of the currently indorsed training doctrine for tactical instrument flight. Although his article represents a perspective more enlightened than I have seen expressed previously, it still does not fully address the problem.

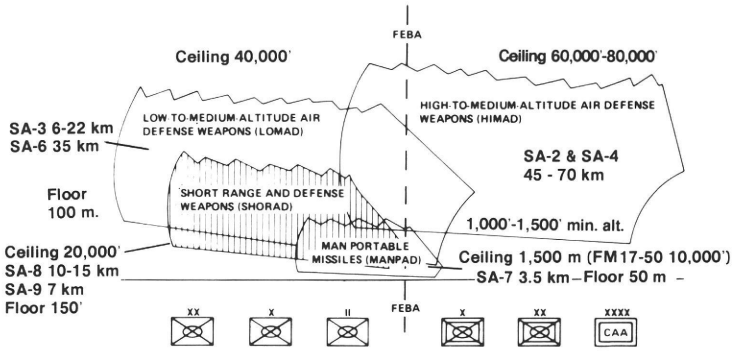
There are several areas of concern about the practicality of tactical instrument flight that I have not seen mentioned. The first has many facets but it comes down to "combat pilots" will not use it. If you use data about THREAT antiaircraft capability (the accompanying chart illustrates range and altitude capabilities of THREAT antiaircraft) from FM 1-2 and FM 17-50, it is apparent that aircraft survivability is not good at altitudes above 150 feet within 15 kilometers or 100 meters (328 ft altitude) within 35 kilometers of the FEBA. Add to this the questions of accuracy of tactical maps, reliability of weather forecasting and reporting, allowable altimeter error of 70 feet, ability of most pilots to only maintain altitude within 100 feet in turbulent air, the questionable reliability of tactical radio beacons, and THREAT Meaconing techniques. Considering all of the above, I don't mind telling you that it's terrain and nap-of-the-earth flight for me; you can keep your tactical instruments.

To consider this subject from another angle, let us look at the practicality of the training itself. Few units have any functional tactical beacons. Most realistic training must be conducted in the synthetic flight simulator. This valuable time could more appropriately be used for emergency procedures training because many real emergencies will occur in combat where bullets could make engines, tail rotors, etc., stop functioning. The time also could be better spent on FAA (Federal Aviation Administration) style instrument flight. If you practice IMC (instrument meteorological conditions) flight and then if *someone* in the Army sees the value of directing aviators to go out and do it in the clouds, that experience alone will raise your chances of survival in inadvertent IMC. It really is different actually being in the clouds.

I am a professional instructor and I have tried diligently to motivate myself about tactical instruments but the more I study and consider, the more negative I feel about it. I am compelled to support a training program I cannot believe in.

Michael M. Mullenix
Technician Flight Instructor
Texas Army National Guard

Surface-to-air missiles compel the helicopters to terrain flight altitudes as far back from the FEBA as the division rear



ZPU-4	1,400 m range	14.5 mm	
S-60	4,000-6,000 m	57 mm	AA
ZU-23	2,500 m	23 mm	AA
ZSU-23-4	2,500-3,000 m	23 mm	AA
ZSU-57-2	4,000 m	57 mm	AA

Effective AA weapons for low altitude engagement. Most may be employed at or near FEBA

Directorate of Evaluation/Standardization

REPORT TO THE FIELD

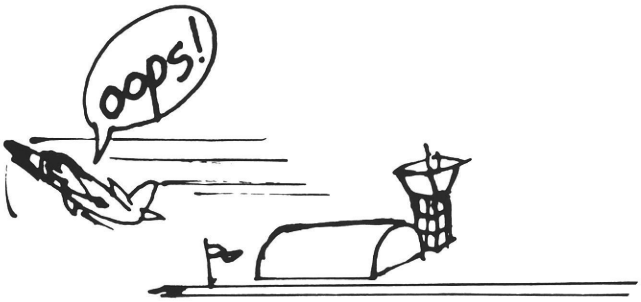
U.S. ARMY AVIATION STANDARDIZATION

FIXED WING ATMs

THE AIRCREW Training Manuals (ATMs), Training Circular (TC) 1-144 and TC 1-145, have been placed in initial distribution and should now be in the user's hands. If your unit has not received these manuals, it is time to notify your publications point of contact so a tracer can be started and/or a reorder initiated.

Recent field trips have indicated that some changes in these manuals are being overlooked. The changes are not marked, so it will be necessary to compare old and new manuals to determine the exact changes.

Below are two examples of problem areas that are being found during evaluations conducted in the field.



TASK 3502.

When complying with NOTE 1 of this task, the airspeed may be too fast, which can cause the aircraft to float when in the landing attitude. If you are having trouble meeting the standards because of the note, let us hear from you.

TASK 4001.

This is changed from instructor pilot (IP) demonstration to a pilot manuever with an IP.

Questions have been raised concerning what the minimum airspeed is that an intentional engine out can be made. The answer is located on page B-2 of the ATM under Vsse (velocity safe single engine).

In the back of each ATM, there is a questionnaire to be filled out. This will provide Directorate of Training Developments and Directorate of Evaluation/Standardization with your opinions about the training circular. Filling out the questionnaire is the most effective means of correcting or changing this publication.

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

THREAT

Major Frank E. Babiasz
Threat Branch
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL

Good News . . . Bad News

ALMOST EVERYONE has heard a joke at one time or another that contained good news or bad news. In the past, threat articles have carried the "bad news" side of Soviet weapons systems, and rightfully so. There is, however, a "good news" side of the story. This side is the vulnerabilities or limitations that could be exploited on the battlefield of the future. These limitations, outlined in Combined Arms Combat Development Activity Handbook 550-2, are even more important to the individual Soldier than system capabilities. So, to understand both sides of the story read on for the good news and the bad news.

T-62 TANK

The good news is . . . The T-62 has a cramped, four-man crew compartment, thin armor and most versions have crude gun controls. When the main gun is fired, the tube must go into detent for cartridge ejection. This requires manual traverse of the turret, as the power traverse is inoperable during this time. Additionally, to use the 12.7 millimeter (mm) antiaircraft gun, the loader must leave his main gun loading duties.

The bad news is . . . The T-62 medium tank has a 115 mm main gun which fires a hypervelocity armor piercing fin stabilized discarding sabot (APFSDS) round with a muzzle velocity of 1,600 meters per second. Located on the turret are the 7.62 mm coaxial machinegun (MG) and a 12.7 mm antiaircraft MG with a range of 2,000 meters. It also has the capability of snorkeling underwater, self-generating smoke screen, and nuclear, biological, chemical (NBC) protection.

T-64/T-72 TANK

The good news is . . . The low profile of the T-64/72 turret offers little inside room for the crew, and the armored skirt plates mounted over the track afford little protection against APFSDS rounds.

The bad news is . . . The T-64/72 offers better mobility and armor protection than the T-62. It also has an upgraded 125 mm main gun with an automatic loading system and has an effective range of at least 2,000 meters. Additionally, the T-80 tank, successor to the T-72, will probably have upgraded armor and mobility, and may be deployed in the early 1980s.

BMP

The good news is . . . The armor of the Russian infantry combat vehicle, or BMP, provides protection against .50 caliber armor-piercing rounds only over the 60-degree frontal areas and it is extremely vulnerable to antitank systems. The 73 mm main gun has a limited capability to fire from a hull-down position and cannot be fired while moving over rough terrain. Additionally, the SAGGER or SPIGOT antitank guided missiles (ATGM) must be fired from the halt and cannot be reloaded under NBC conditions.

The bad news is . . . The BMP is a highly mobile troop carrier with more than adequate firepower provided by a 73 mm main gun, AT-3 or AT-4 ATGM and a 7.62 mm coaxial machinegun. It also has firing ports in the sides and rear troop compartment, NBC protection, an infrared searchlight and a self-generating smoke capability.

BTR-60 PB

The good news is . . . The BTR-60 PB is the standardized armored personnel carrier in motorized rifle units. It's an eight-wheel drive vehicle and its tires are vulnerable to puncture. The BTR-60 has a crew of two and can carry eight combat troops, but they must dismount through top hatches which exposes them to enemy fire. Additionally, its armor is relatively thin and the vehicle offers no NBC protection.

The bad news is . . . The BTR-60 PB is armed with turret-mounted 14.5 mm and 7.62 mm machineguns and has three firing ports on each side of the troop compartment. The boatshaped hull of the vehicle gives it excellent swimming capabilities and it has a searchlight and infrared (IR) equipment for night operations.

SA-7 GRAIL

The good news is . . . As the SA-7 is a man-portable, shoulder-fired missile system, the firer is susceptible to suppressive fire and the need for line-of-sight to the target during target acquisition and firing may cause the gunner to be exposed in open terrain. The IR guidance system on the older A models can be countered with flares and, of course, battlefield obscuration will drastically reduce its capabilities.

The bad news is . . . The SA-7, with its high explosive (HE) warhead system, has a slant range of 4.8 kilometers (km) and a ceiling of about 4,500 meters and travels at about 580 meters per second. New versions have been modified to assist in screening out decoys.

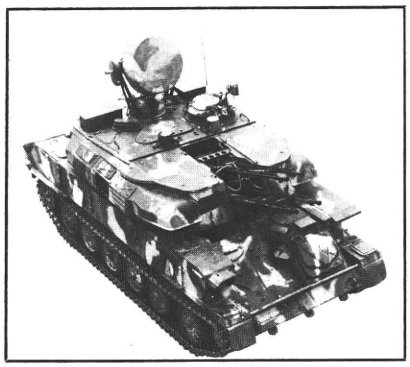
SA-9 GASKIN

The good news is . . . The SA-9 air defense system must depend on external sources for information on targets before they are visually acquired. Because it lacks radar, its capability to acquire hovering helicopters at long ranges is very limited. Additionally, the GASKIN missiles are mounted on a modified BRDM-2 chassis, offering limited armor protection and are extremely susceptible to suppressive fires.

The bad news is . . . Sixteen GASKIN systems are standard in all Soviet maneuver divisions, each mounting four air defense missiles with four additional missiles carried inside the vehicle. The SA-9 is employed with the ZSU-23-4 and has a slant range of 6 km and a kill zone up to 5,000 meters altitude.

ZSU-23-4

The good news is . . . The four-barreled ZSU-23-4 was first introduced more than 15 years ago. The system is very vulnerable to electronic countermeasures and its thin armor makes it vulnerable to a variety of systems. Additionally, the Gundish radar can be penetrated by HE fragmentation.

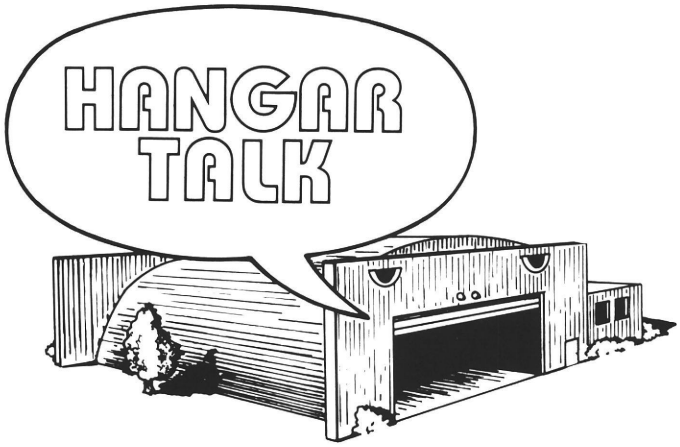


The bad news is . . . This low altitude, radar-directed air defense system has an effective range of 3,000 meters, and each of the 4 barrels has a cyclic rate of fire of 1,000 rounds per minute. The ZSU is normally employed 400 meters behind the leading elements and has the capability to fire on the move. A platoon of 4 is assigned to each maneuver regiment, for a total of 16 per division.

HIND-E

The good news is . . . The HIND helicopter, because of its size and conventional rotor head, is probably not as maneuverable as U.S. attack helicopters. Using present day ATGMs and current close air support doctrine, the HIND must remain exposed until the missile hits the target, leaving it vulnerable to antiaircraft systems.

The bad news is . . . The Mi-24 HIND is an extremely sophisticated and versatile helicopter combining the troop lift capability of the new U.S. UH-60 Black Hawk and the firepower of the AH-64 advanced attack helicopter. It is armed with 128 rockets, 4 ATGMs and a nose-mounted Gatling gun. Further, it has retractable landing gear and is much faster than any helicopter in the U.S. inventory.



"Hangar Talk" is a quiz containing questions based on publications applicable to Army Aviation. The answers are at the bottom of the page. If you did not do well, perhaps you should get out the publication and look it over.

Environmental Flying TC 1-10, TC 1-12, TC 1-13

CW2 Gary R. Weiland
Directorate of Training Developments
U.S. Army Aviation Center
Fort Rucker, AL

1. To alleviate problems associated with blowing sand and reduced lift in a hot desert environment, if possible aviators should perform:

   A. Approach and takeoff to/from the ground
   B. Maximum performance takeoff and steep approach
   C. Running takeoffs and landings

2. What type of air is more dense (heavier) and contributes more to aircraft performance?

   A. Warm—dry air
   B. Cold—dry air
   C. Warm—moist air
   D. Cold—moist air

3. A rise in ambient air temperature causes a decrease in fuel density and the total usable fuel quantity in aircraft will be:

   A. Reduced
   B. Increased
   C. No change

4. As altitude increases, the accuracy of aircraft pressure instruments:

   A. Increases
   B. Decreases
   C. Is not affected

5. While flying over an unprotected body of water you notice whitecaps on the waves. The wind velocity is at least (miles per hour):

   A. 10
   B. 15
   C. 20

6. When flying in mountainous areas, a natural tendency is to judge your airspeed and altitude as:

   A. Airspeed too fast—altitude too low
   B. Airspeed too fast—altitude too high
   C. Airspeed too slow—altitude too high

7. What percent of your body heat can be lost on a cold day (-15 degrees C) if your head is not protected?

   A. 25
   B. 56
   C. 75

8. When freezing rain is encountered, and it is not possible to land, aviators should:

   A. Execute a 180-degree turn
   B. Climb
   C. Descend

9. While conducting terrain flight over snow, aviators can reduce the aircraft signature and minimize the effects of rotorwash on loose snow if they maintain an airspeed (knots) of at least:

   A. 20
   B. 40
   C. 60

10. If you have to battery start an aircraft in cold weather, it is a good idea to turn on the searchlight for a few seconds prior to attempting the start.

   A. True
   B. False

ANSWERS

1. C TC 1-13, pages 11 and 27
2. B TC 1-13, page 18
3. A TC 1-13, page 26
4. B TC 1-10, page 15
5. C TC 1-10, page 45
6. C TC 1-10, page 32
7. C TC 1-12, page 3
8. B TC 1-12, page 12
9. B TC 1-12, page 20
10. A TC 1-12, page 25

FROM BALLOON TO BLACK HAWK

The Army Forward Aeromedical Evacuation Story

Lieutenant Colonel David M. Lam, M.D.
Commander, MEDDAC Medical Department Activity Fort Irwin, CA

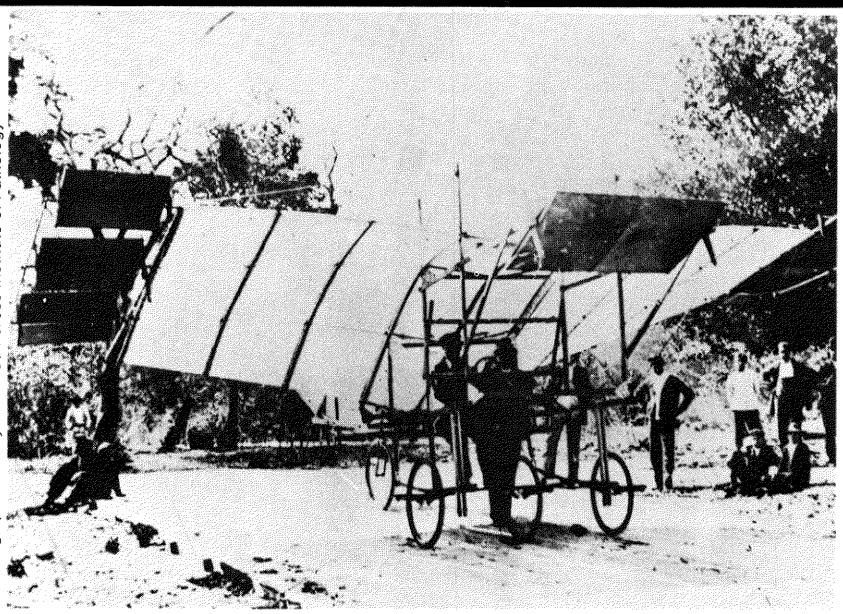
PART I: THE ORIGINS

This month the *Aviation Digest* begins a four part series covering the U.S. Army's role in the development of forward aeromedical evacuation. Part I, The Origins, picks up in 1784 with balloon flight demonstrations of aeromedical evacuation and traces its development through World War I to World War II. Part II will cover World War II; Part III the Korean War; and Part IV the Vietnam War.

ALTHOUGH aeromedical evacuation has been most recently brought to public attention as a result of its massive use during the war in Vietnam, it is not a new concept; in fact, its use predates the first heavier-than-air powered flight by the Wright Brothers in 1903!

As early as March 1784, following the balloon flight demonstrations of the Montgolfier brothers before the Medical Faculty of Montpelier, physicians began to consider the benefits their patients could gain from flight. Jean-Francois Picot edited the results of this first medical investigation into flight, theorizing that not only could patients tolerate flight, but they also would in fact benefit from the purer air encountered. Apparently no practical use was made of this novel theory for nearly a century. In 1870, during Bismarck's siege of Paris, there was a 4-month period during which the Parisians maintained communications with the outside world by means of free-flying hot air balloons. Along with messengers and military observers, the balloons evacuated more than 160 sick and wounded.

For the next 40 years, little was accomplished in the realm of air



photograph courtesy of Armed Forces Institute of Pathology

FIGURE 1: Gosman-Rhodes aircraft (1909)

evacuation, but in late 1909, the concept took a great step forward, both in theory and practice. Captain George H. R. Gosman, a medical officer of the U.S. Army stationed at Ft. Barrancas, FL, conceived of a heavier-than-air aircraft specifically designed to carry patients. With the assistance of Lieutenant Albert Rhodes of the Coast Artillery Corps, he designed and constructed an aircraft (figure 1). Although this design required the patient to lie without protection on the lower wing alongside the seat of the physician-pilot, it was a practical development. In January 1910, without an engine installed, the aircraft made a satisfactory first flight when towed aloft by a ground vehicle. An engine was installed, and the aircraft was successfully flown. Unfortunately, for widespread acceptance of the concept, this first powered flight ended when an oil line broke, and the plane crashed into a tree. Although they lacked funds to rebuild the airplane and continue testing it, Captain Gosman and Lieutenant Rhodes felt that they had proved their point that aircraft could be built to carry patients.

Captain Gosman, firm in his belief that air evacuation was the wave of the future, went to Washington to present his theory to the War Department. He took the plans of his tested airplane and also plans he had drawn for a larger, more advanced plane. He claimed, "I clearly see that thousands of hours and ultimately thousands of patients would be saved through the use of airplanes in Air Evacuation." But he was unsuccessful in gaining acceptance of the concept of air evacuation from a War Department staff which with trepidation had purchased its first aircraft in August of 1909, and which was not to purchase another until 1911.

The issue would not die, and in 1912 the Office of the Surgeon General recommended without success to the War Department that the use of aircraft as ambulances be reexamined. Then, on 15 October, a retired Army Medical Corps officer, Colonel A. W. Williams, convinced the prestigious Association of Military Surgeons of the United States to support the concept. The Committee on Transportation of the Wounded in War passed a resolution recommending that the War Department develop the airplane for the purpose of transporting wounded directly from the battlefield to a field hospital. The War Department's reaction was much like that of the ***Baltimore Sun*** which strongly denounced the idea, claiming, "The hazard of being severely wounded was sufficient without the additional hazard of transportation by airplane." In the United States, then, the matter rested until late in World War I.

In spite of the disapproval of most major governments, European proponents of air ambulances continued to plan. The Chief of the Dutch Medical Service, M. de Moy, had proposed in 1910 that patients could be transported from the battlefield by means of a large platform raised by a captive balloon, and pulled by a horseman. This impractical concept was never tested. However, through the efforts of Dr. de Moy's assistant, Mlle. Marvingt, a French medical student and aviator, the concept of military aeromedical evacuation was brought to the attention of the French medical community, which was destined to bring it to fruition.

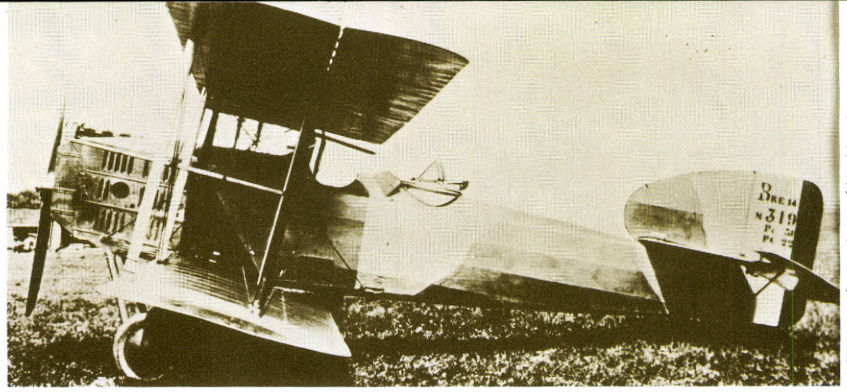
France took "L'aviation Sanitaire," as air ambulances were called, to its heart, and led the world in the development of the system for the next four decades. In February 1912, Dr. Duchaussoy spoke to the French Women's Society ("L'Association des Dames Francaises") and proposed that both dirigibles and airplanes could be used for two purposes: searching battlefields to locate the wounded and carrying the wounded from the battlefield. The organization donated several thousand francs to support experimental efforts, and Dr. Duchaussoy commissioned Helen Dutrieux to design an air ambulance for testing. Following more meetings with both aviation and military experts, the society on 23 May 1912 sent a letter to the Minister of War recommending not only an experiment in air evacuation, but actual construction of large numbers of aircraft for this purpose and the assignment of the aircraft to the Army.

The Ministry of War was not convinced in toto, but was willing to begin some experiments, and Senator Emile Reymond, a physician, aviator and staunch supporter of *l'aviation sanitaire,* was given permission to take part in the 1912 French Army maneuvers. Due to the lack of an aircraft suitable for actually carrying casualties, he restricted his efforts during the maneu-

vers to locating the wounded and maintaining liaison with the supporting medical facilities, who would then go out and recover the wounded by more conventional means. He officially reported that the airplane could, as expected, play a great role in the location of wounded, the carriage of medical supplies and medical liaison. Since he did not actually attempt to transport wounded, he could only predict, "In the future, it would be possible to construct aeroplanes for the transport of wounded men." However the Minister of War did not deem this practical, "for the moment at least."

Others were not so content to wait. Foreseeing the battles soon to come, and decrying the lack of progress in air evacuation, a French military medical officer, M. Gautier, declared in October 1913, "We shall revolutionize war surgery if the aeroplane can be adapted as a means of transport for the wounded." This view was echoed on the other side of the English Channel by Captain R. H. Cordner of the Royal Army Medical Corps, who urged the development of air ambulances in an article in the journal of the Royal Army Medical Corps in 1913.

Nevertheless that which the French Ministry of War, the United States War Department and the British Army had rejected as impractical was soon presented as a fait accompli (accomplished fact). In November 1915, during the disastrous retreat of the Serbian Army from Albania, it was impossible to evacuate the sick and wounded of the French Expeditionary Force by normal means, and it was unthinkable to abandon the injured. Although the only aircraft available were six French fighter aircraft (Farman F-Vb) in poor condition, the decision was made to attempt evacuation by air. *The first heavier-than-air air evacuation in history* took place on 16 November, when Lieutenant Stefanik of the Serbian Air Force, who was ill and vomiting blood, was flown 80 kilometres from Mitrovitza to Prizrend by Captain Dangelzer of the French Escadrille; Lieutenant Stefanik was later flown 250 kilometres from Prizrend to Vallona. Still later in the month, five other pilots of the Escadrille evacuated another 12 wounded. Since most of these flights took place from frontline, poorly prepared airstrips, often within rifle shot of the attacking troops, they certainly qualify as forward air evacuation, and the second transportation of Lieutenant Stefanik from Prizrend to Vallona is the first recorded example of theatre evacuation.



photograph courtesy of Lackland AFB Museum

FIGURE 2: French Breguet Type 14 (the parent type from which the first ambulance conversions were made, 1917-1918)

Using the evacuation from Albania as an example, Dr. Chassaing, a French military surgeon and a member of the Chamber of Deputies, earnestly petitioned the French Government for funds to develop a true air ambulance. In a comment strangely reminiscent of the attitude reflected in Baltimore 4 years earlier, one opponent of this expenditure demanded to know, "Are there not enough dead in France today without killing the wounded in airplanes?" Finally, after much debate, Dr. Chassaing received permission to convert an old combat aircraft, a Dorand A. R. II, into a two-stretcher air ambulance with patients to be carried inside the hollow fuselage. In September 1917, he carried out trials at Villacoublay, himself playing the part of the seriously wounded patient.

These trials were such a success that Dr. Chassaing was authorized to fly evacuation missions in combat in the Soissons sector, which he did with great success. On 6 November, he evacuated casualties from the Aisne front, making a flight of 6 kilometres in 25 minutes. Subsequently, six airplanes of the same type were converted and placed under his command. In April 1918, he had two of these aircraft in operation during the evacuation of Flanders, but due to the intensity of the fighting, the French Government withdrew his permission to be in the sector and the aircraft were withdrawn. Late in 1918, in acknowledgement of the potential demonstrated by his ambulances, Dr. Chassaing was allocated 60 Breguet Type 14 aircraft (figure 2) for conversion into air ambulances.

In the United States, continuing pressure existed to produce air ambulances, but the military establishment was adamant in refusing to allocate scarce funds and equipment for an unproven theory. Colonel Williams, as a member of the Army's Ambulance Board of the Surgeon General's Office, continued to advocate the air ambulance, but reported that, "Unfortunately for the Medical Department, all airplanes were needed for combat purposes."

During 1918, however, events conspired to force the development of ambulance aircraft. The U.S. entry into World War I necessitated the rapid expansion of pilot training programs, and numerous training fields were established, mostly in areas with poor roads. It often took several hours before a student pilot injured in a crash could be brought to a hospital, if he could be reached by a ground vehicle at all. In the early months of the expanded training program, flight surgeons began to maintain crash response aircraft,

FIGURE 3 (above): JN-4 Jennie ambulance conversion

FIGURE 4 (below): Hospital ship, Scott Field, Belleville, IL, showing turtle back in place

FIGURE 5 (above right) and FIGURE 6 (below right): JN-4 ambulance (1919-1920), Ellington Field, TX

official U.S. Air Force photograph

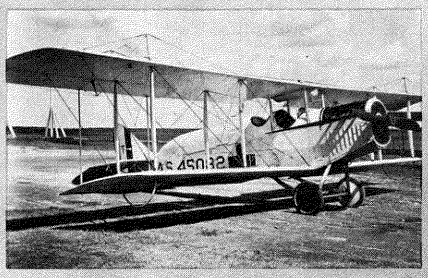
which allowed the physician to respond to a crash site and provide lifesaving care while waiting for the ground ambulance to arrive to take the injured pilot to the hospital. It was soon apparent that this procedure was less than satisfactory.

At Gerstner Field, LA, Captain William Ocker of the Air Service discerned in early 1918 the need for an air ambulance capable of carrying the injured pilot back to the base hospital. Receiving no encouragement from the base commander, he was unable to progress with his plans until the assignment to the base of a new surgeon, Major Nelson E. Driver. Immediately upon his arrival, Dr. Driver impressed upon the base commander the benefits to be gained by such a conversion, and in February 1918 permission was granted to convert an old JN-4 airplane into an air ambulance. The conversion, completed within a month, consisted of changing the rear cockpit to allow the accommodation of the patient in a special litter. *These two men are due the credit for the first air transportation of a patient in the United States.*

The converted "Jennie" was accepted immediately by the aviators and the physicians who supported them. Ellington Field, TX, commissioned a converted JN-4D based on the Gerstner Field modifications on 1 April 1918, and on 6 July 1918 converted a JN-4H model, which was the first conversion able to carry the standard Army litter (figures 3 through 6). Numerous other bases immediately requested permission from the Office of the Director of the Air Service, to convert aircraft. On 23 July 1918 all airfields were directed to convert a service aircraft to an ambulance. Unfortunately, these modifications were locally designed and produced, usually without any supervision or consultation with other bases or with the Air Service's Engineering Division at McCook Field, OH. The net result was that, although most fields rapidly had their air ambulances, a confusing hodgepodge of types was produced, none of which was totally satisfactory, and several of which were impractical. Even so, the conversions were a great improvement over the motor ambulances used previously, and the commanding officer of Ellington Field reported, "So much use was made of the airplane ambulance in Ellington Field that we considered it as necessary to have the airplane ambulance in condition as we did to have the motor ambulance in condition."

Realizing the great utility of air ambulances for crash-rescue service (there was apparently no thought given to actual combat use at this time), the Chief Surgeon of the Air Service, Colonel Albert Truby, late in 1919 obtained reports of all the

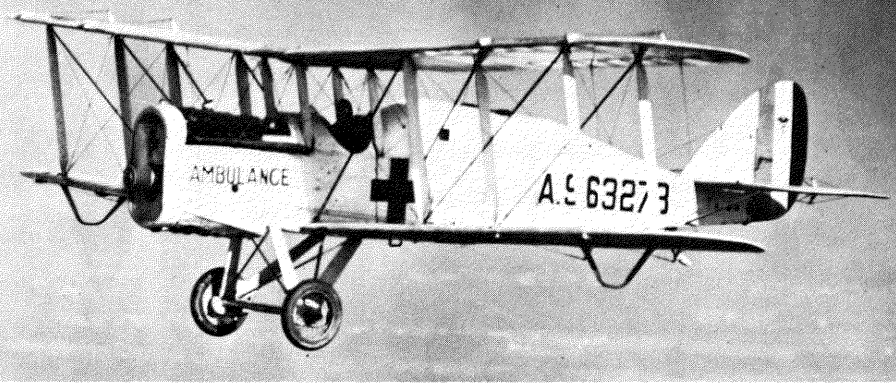
photograph courtesy of Brooks AFB Museum



photograph courtesy of the History Office, Military Airlift Command, Scott AFB, IL

FIGURE 7 (left): De Havilland DH-4 ambulance conversion (1923), Brooks Field, TX

FIGURE 8 (below): DH-4 ambulance, Langley Field, VA

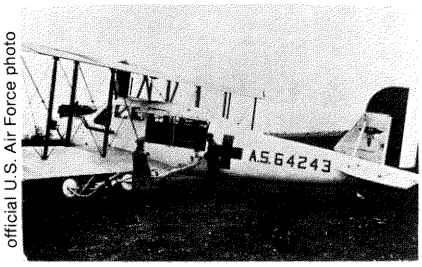


official U.S. Air Force photograph

modifications that had been locally constructed. He determined that none of the designs were truly satisfactory and requested the Engineering Division of the Air Service at McCook Field to design an aircraft that would meet certain requirements. The de Havilland DH-4 had proved to be a poor combat aircraft during the war, so there was little opposition when A. V. Verville, an Engineering Division engineer, used a DH-4 as the basis for his design for an air ambulance (figures 7 and 8).

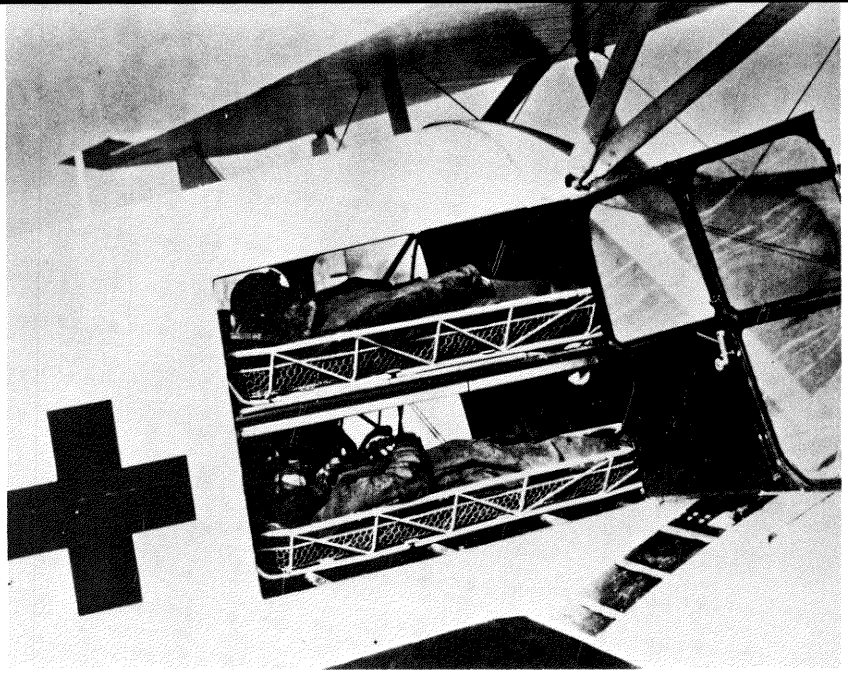
The fuselage was modified to accommodate either one or two patients in Stokes litters or a physician sitting in a modified rear cockpit, but was unable to carry both the physician and patient. Although the airplanes so designed were a great improvement over the converted Jennies, and were used to a limited extent for evacuation in the southwest, they were a failure in the crash-rescue role. Since most crashes occurred in areas where there was limited landing space, it was soon realized that a frontline rescue aircraft must have a slow landing speed as well as a rapid rate of climb. In the opinion of the Chief of the Air Service, the DH-4 met neither requirement, and early in 1921 he recommended the design of an aircraft specifically for crash rescue.

It was assumed in the United States that any aircraft, suitably converted, could function in the crash-rescue role. Therefore, late in 1920, a Curtis Eagle (figures 9 and 10) was converted at McCook Field to an ambulance capable of transporting two sitting and four litter patients, plus a physician. But this aircraft was totally unsuited for the forward air evacuation role, due to its requirements for higher landing speeds, prepared runways and longer takeoff runs. Therefore, it was recommended by the Surgeon General, Major General M. W. Ireland, with the support of the Assistant Chief of the Air Service, Brigadier General William "Billy" Mitchell, that the Eagle be used routinely for patient transfer between Bolling Field and Washington, DC. Although the medical community had embraced the concept of air evacuation, as exemplified by the *New York Medical Journal,* which proclaimed, "The ambulance ship has come to stay—its usefulness is beyond question . . . ." This enthusiasm was not widespread in military circles. The proposal was rejected by the War Department on 11 May 1921, with a letter stating that, "In case of accident, the use of airplanes for the transportation of sick and wounded Soldiers, when other safer means of transportation is available, could not be justified."



official U.S. Air Force photo

FIGURES 9 and 10: Curtis Eagle hospital ship (1921)



photograph courtesy of the History Office, Military Airlift Command, Scott AFB, IL

photograph courtesy of Brooks AFB Museum

This pessimism seemed to be visionary when, on 28 May 1921, the Curtis Eagle crashed during a severe storm, killing seven people.

Undaunted by this misfortune, the proponents of air evacuation continued their efforts. In a paper written in 1922, Colonel Truby noted the necessary differences in the types of aircraft suitable for the various air evacuation roles. Of importance is the fact that in addition to the crash-rescue and interhospital transport roles, he foresaw their use "at the front in time of war in transporting seriously wounded to hospitals . . . ." Due to stringent fund limitations, the Air Service felt unable to sponsor development of both crash-rescue/frontline and long-haul air ambulances. In a conference attended by both medical and line planners, it was agreed that the major effort of development would be placed on the crash-rescue/frontline aircraft, and that when needed the long-haul aircraft could be converted on a temporary basis from transports already in service.

For the next several years, engineers at McCook Field attempted to design an aircraft which would meet the Air Service requirements. The low priority placed on this aspect of aviation can be seen in that it was not until April 1924 that funds were made available for the construction of two experimental aircraft. It appears evident that even these funds would not have been made available except for the fact that the JN-4 and DH-4 conversions, which had continued in service, were obsolete and no longer economically repairable. In June, the contract was let to the Cox-Klemin Aircraft Corporation for the construction of these aircraft, to be designated the XA-1 (figures 11 and 12). The aircraft were delivered in 1925 and 1926 and assigned to Kelly Field, TX, and France Field, Panama Canal Zone.

These two aircraft rapidly proved their worth. The airplane at Kelly was active not only in crash rescue, but also played a role in the evacuation of civilians from the surrounding areas to hospitals in San Antonio. In April 1927, the Kelly Field ship gained nationwide news coverage as it provided medical care and evacuation to the civilian victims of a tornado at Rocksprings, TX, leading to the official comment, "The necessity for more ambulance airplanes is obvious . . . ." Although the XA-1s were oustanding rescue aircraft and incorporated all the factors considered essential for an ideal aircraft of this type, economic factors prohibited the Air Service from increasing their numbers. In fact, financial considerations even prevented repairing the two operational aircraft. In 1927 the Surgeon General reported, "The ambulance airplane assigned to France Field was damaged during a test flight in March 1926 and was not replaced in service until April 1927." With constant usage, often under nearly impossible conditions, the XA-1s spent more and more time undergoing repairs and maintenance, and in 1929 the airplane at France Field was destroyed in an accident, as was the Kelly Field aircraft little more than a year later.

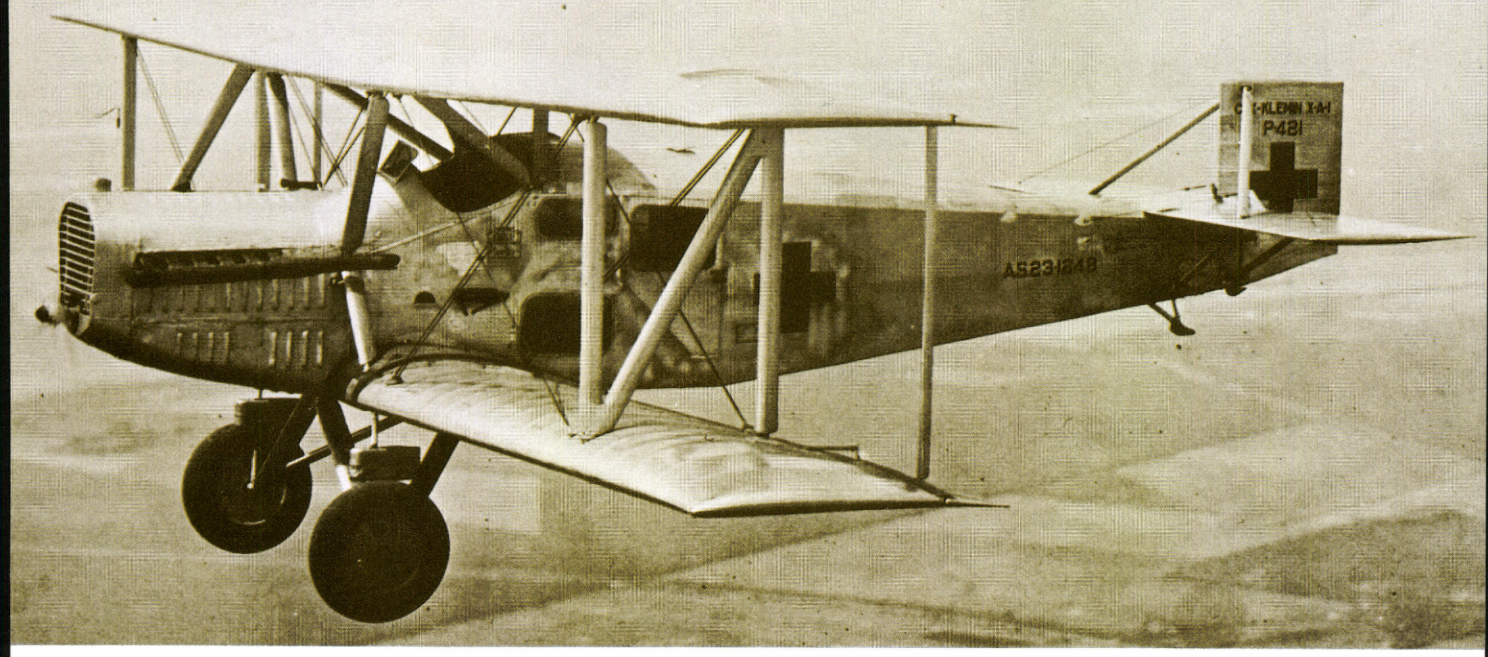
After World War I, the U.S. was at peace, and there was little emphasis on the combat potential of frontline air ambulances. Even with the example provided by the U.S. Marines, who in the 1927 and 1928 fighting in Nicaragua used service aircraft to evacuate their wounded from jungle outposts, the actual combat use of forward air evacuation did not seem to be a real potential need to the War Department. Therefore, the development of forward air evacuation aircraft was deferred, in favor of the development of theatre air evacuation aircraft, by conversion of cargo aircraft to an ambulance configuration. Numerous models were constructed, as a rule in numbers of only one or two for demonstration purposes, after which they were usually returned to their cargo configurations.

The shortsighted nature of this policy was vigorously opposed by many medical officers. Colonel L. M. Hathaway, the Chief of the Medical Division of the Army Air Corps, reminded the War Department that the forward air ambulance was "thoroughly demonstrated and universally accepted . . . as a means

official U.S. Air Force photograph

FIGURE 11 (below): Cox-Klemin A-1 air ambulance (1922)

FIGURE 12 (left): Unloading Rocksprings, TX, tornado victim from Cox-Klemin A-1



of evacuation of battle casualties." Captain Robert K. Simpson, of the Army Medical Department, pointed out forcefully that widespread use of forward air ambulances was feasible, and would greatly contribute to the combat posture of a division engaging the enemy.

Following the maneuvers of the 1st Air Division in May 1931, Major C. L. Beaven, who acted as surgeon in the maneuvers, recommended that both large and small air ambulances be procured, since the maneuvers had demonstrated conclusively that the large aircraft could not serve in the forward evacuation role. He also apparently was one of the first to realize the potential of the autogiro (figure 13) as a forward area evacuation aircraft, and recommended it be tested.

Lieutenant Colonel T. E. Darby, Medical Corps, wrote in 1932 that adequate use of air ambulances could so reduce the time en route of casualties that widespread air evacuation could reduce the Army Medical Service by eliminating the need for 10 surgical hospitals, 8 of its 12 evacuation hospitals, and 2 of its 4 medical regiments. He also joined Major Beaven in recommending that autogiros be used in the evacuation role, although he did not visualize them functioning within 4 to 6 miles of the front lines.

In September 1931, the Air Corps Materiel Division and the Chief of the Air Corps agreed with their medical advisors that both types of air ambulances were necessary. But, due to lack of funds, no developmental work took place on the forward air ambulance. Four old Y1C-24 aircraft in poor condition were allocated for conversion to this role, and served only adequately as crash-rescue airplanes until 1936. Major Beaven continued to agitate for the development of forward air ambulances to replace the decrepit Y1C-24s, and Lieutenant Colonel David N. W. Grant (later to become the Surgeon General of the Air Force) strongly supported users, which seemed ideal for the role of forward air evacuation.

The autogiro fundamentally was an early development of the helicopter, combined with the wings of a conventional fixed wing airplane. Due to the extra lift provided by the rotating wings on top, the autogiro was able to land and takeoff in shorter distances and at slower

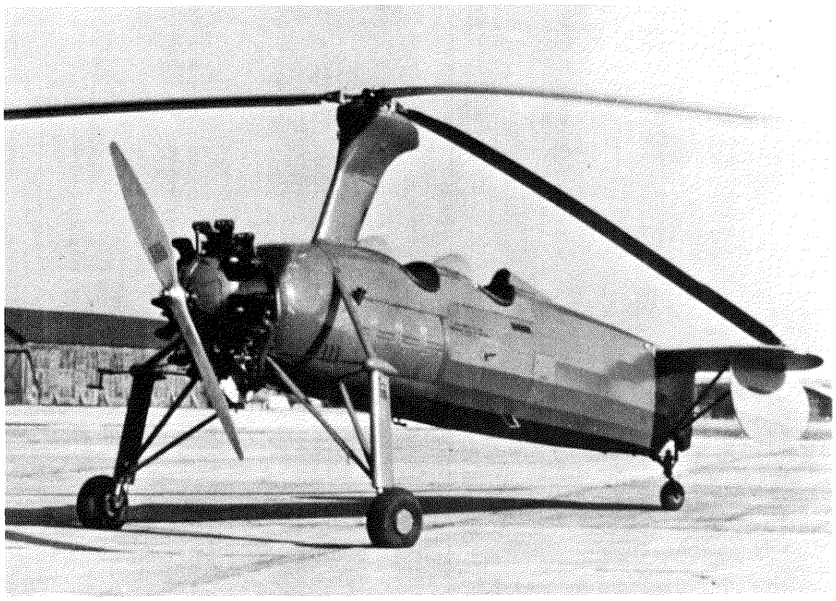


FIGURE 13: The autogiro

speeds than conventional aircraft. The Navy rather than the Army Air Corps was the first service to test the autogiro in service, and one of the tests involved the evacuation of wounded. In the spring of 1932, a Pitcairn XOP-1 autogiro was sent to Nicaragua, where the Marines were engaged in combat. In competitive testing against a Marine Vought O2U-1, the autogiro came out a very poor second, due primarily to its being extremely underpowered with respect to the O2U-1.

Undaunted, autogiro advocates pressed their case. Lieutenant Colonel G. P. Lawrence and Major Robert K. Simpson, both foresaw the widespread use of this type of evacuation from "well forward in the area occupied by an Infantry division." Their enthusiasm helped prompt the Medical Field Service School at Carlisle Barracks, PA, in 1936 to field test an improved autogiro as a forward evacuation vehicle. This and subsequent testing demonstrated that though the concept was sound, more development of the machine was necessary. The autogiro was difficult to build, expensive and could not carry an adequate payload. Thus, the concept was dropped, more for engineering and budgetary considerations than for any basic defect in the concept of forward evacuation.

During the late 1930s, this lack of emphasis on forward air evacuation was myopia not simply on the part of the American military, but on the part of most major military forces of the world. At the 1st International Technical Conference on Aerial Relief, held in Budapest in 1937, only the French and Italian armies demonstrated aircraft suitable for forward evacuation. The Americans and the British were sorely lacking light ambulance aircraft, and although the Japanese had produced one model in 1933, there is no indication that it was used in the forward air evacuation role during the Japanese 1939 invasion of China.

Both the Japanese and Germans, however, made extensive use of theatre air evacuation, the Japanese in China and the Germans in Europe, commencing as early as the Spanish Civil War.

Forward air evacuation, however, was not used to any great extent by the Germans, and several German flight surgeons commented on this lack in their otherwise laudatory articles on air evacuation. Perhaps the only major power to make use of forward air evacuation in the early days of the war was the Soviet Union, which first developed its air evacuation procedures during the campaign in Finland in 1939 and 1940. Faced with the constant necessity to support partisan units behind enemy lines, the Soviets early developed (and continued throughout the war) routine air evacuation flights using U-2 and R-5 aircraft. These planes were able to land on unprepared fields, load and take off again from small areas; they were the first example of massive and continuing forward evacuation techniques.

Many U.S. military authorities still believed, however, that air evacuation was not only dangerous but also medically unsound and militarily impossible. The position of the medical officers assigned to the Army Air Corps was a difficult one. Although, due to their assignments with the Air Corps, they had experience with, and understood the potential of air evacuation, they had no power to do anything but make recommendations. Air evacuation (as ground evacuation) was the responsibility of the Surgeon General of the Army, and he was unable to see the potential. In October 1941, Lieutenant Colonel Malcolm Grow, the surgeon of the 3d Air Force, wrote, "I believe our chief stumbling block in the way of ambulances has been the lack of interest on the part of the Surgeon General . . . until he accepts the airplane as a vehicle, I doubt if very much can be done about it." But the U.S. entry into World War II was looming, and so was the development of forward air evacuation techniques and aircraft.

Next month: Part II; World War II.

U.S. Army Communications Command

ATC ACTION LINE

TODAY'S AIR TRAFFIC controllers and aviators are fully aware of the life and death importance of their tasks. Their fine record of expeditious movement of aircraft with maximum safety speaks for itself. It is because proper phraseology has played such an important part in building this safety record that we wish to reemphasize its importance to the aviation community.

Radio communication discipline between aircraft and between aircraft and the ground relaxed considerably during the Vietnam conflict. "Eenie, meenie, minie, mo, how do you hear this radio" is not quite regulation phraseology but many such local idioms crept into the system. Poor phraseology is still with us occasionally and it can make a great deal of difference.

The following article is a good example of the serious consequences lurking only a bad sentence away. The article appeared in the March issue of the ***AOPA Pilot*** magazine and is reprinted here by permission of the Aircraft Owners and Pilots Association. Copyright 1981.

JIVE TALK By Joel Hamm

At the FAA Academy, we were taught to do everything by the book. Our Federal Aviation Administration instructors were particularly picky about radio technique. The business of separating airplanes leaves no time to wonder if the other guy really meant what you think he said. Controllers, they preached, must be brief, be precise and, above all, speak only the language prescribed in "The Good Book."

No classroom exercise, however, could have impressed on me the importance of proper communications the way I was impressed, nearly compressed, on a FAM (familiarization) flight to L.A. Some airlines invite (or permit) controllers to fly as cockpit observers in order to learn such lessons.

I was riding the jumpseat on a United DC-10, enjoying the view and doing some public relations work for the agency. My hosts had recounted some horror stories of ATC "system errors," and I had been obliged to counter with a protracted tribute to the devotion and sterling performance of the FAA's ground troops.

I was just running out of wind, when Center handed us off to Approach, who lined us up and turned us over to Tower while we still were up high and a long way out. The guy who answered our callup was one of those super 'trollers I had been bragging about. The Los Angeles skies were dark with exhaust trails, the radio jammed with calls; but the man in the cab had the big picture. My unease at being mixed up in the rush-hour melee calmed under his nonstop monologue of combined ATC, CB-ese and Buck Rogers jargon—not exactly standard phraseology, but it kept everyone moving.

We touched down on Runway 25L and made a fast right turn for the terminal on the other side of the parallel runway. Local control held on to us. "Keep 'em spooled up, United. You'll be across in a minute."

What did that mean? Were we cleared to cross? The captain shrugged and pushed the throttles. As we nosed onto the runway, the first officer swung around for a look.

"STOP."

Someone stood on the brakes, throwing me against the harness, as a blue and white blur filled the windshield. A wingtip slashed by, scarcely out of reach of our nose, as the departing jet rotated and disappeared.

We had come within yards of hitting a 727 on takeoff roll. Joe Cool and his snappy lingo nearly got us creamed.

"Hold short of Twenty-five Right." That is what he should have said. Only the crew's vigilance and reflexes saved us from a replay of Tenerife.

We sat there for a moment, tight lipped, staring out the windows. I knew what they were thinking: Good ol' FAA does it again. As a representative of the agency charged with promoting air safety, I prayed to the god of bureaucrats that I might die there unnoticed.

Tower's clearance to the gate broke the silence. Joe must have gotten the message: There was no more jive talk, just a straight, "Cross Twenty-five Right. Contact Ground, one-two-one-point-niner."

We docked, shut down and deplaned. Still, no one mentioned the near miss or said a word to me. I had to say something before leaving.

"Are you going to write up that incident?" I asked.

"Why bother?" the captain grumbled, adding, "It won't help. Happens all the time."

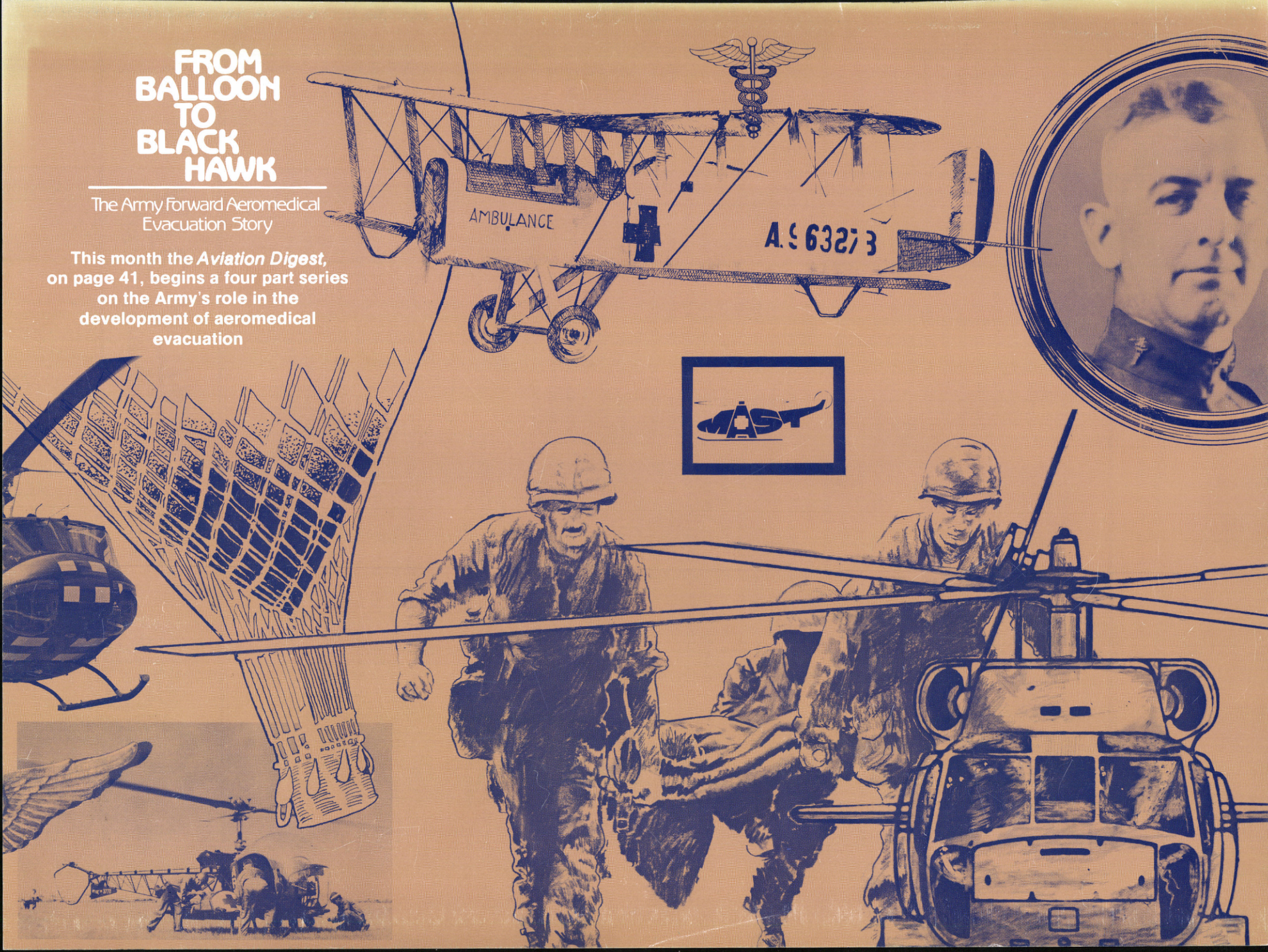
Well, not to me it won't. I stepped out into the sweltering smog, determined to learn from that experience. When I am in the air, I am going to keep my eyes open.

And on the ground, speak only by The Book.

Joel Hamm is at the Washington Air Traffic Control Center and is working on his commercial and instrument ratings.

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

FROM BALLOON TO BLACK HAWK

The Army Forward Aeromedical Evacuation Story

This month the *Aviation Digest*, on page 41, begins a four part series on the Army's role in the development of aeromedical evacuation