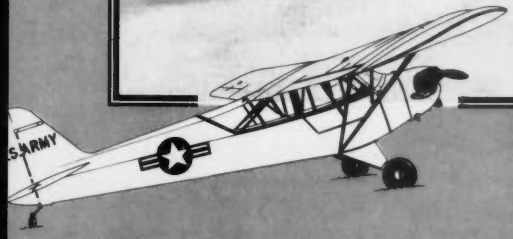
UNITED STATES ARMY
JUNE 1982

AVIATION DIGEST

GRASS-HOPPERS



U.S. Army Aviation's 40th Birthday

JUNE 1982 • VOLUME 28 • NUMBER 6

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page 11

page 14

page 24

2 **Forty Years Of Army Aviation, Part I: Grasshoppers,** BG William W. Ford, U.S. Army (Retired)
11 **Flight To Arizpe,** COL Richard E. Mackin
14 **A Detailed History Of The U-21,** LT James R. Dobson
20 **Reporting Final**
21 **Aviation Personnel Notes: Upcoming Board Dates; Maintaining Aviation Force Structure Documents**
23 **Army Aviation—Age Forty,** COL Emmett F. Knight
24 **Aviator Selection Research, Then And Now,** John A. Dohme, Ph.D.; William R. Brown, M.S.; Michael G. Sanders, Ph.D.
30 **DES Report To The Field: Employment Of Army Aviation: Filling The Void**
31 **ACTAAT: IMC For Cobra**
32 **Threat: Soviet Air Defenses Against Attack Helicopters, Part 2: Individual Weapons,** LTC Brian P. Mullady
36 **PEARL'S**
38 **Army Aviation Systems Program Review '82,** MG Carl H. McNair Jr. and CPT(P) Josef Reinsprecht

Back Cover: **ATC Action Line: The National Airspace System Plan (NASP),** Mr. John McKeeman

Cover: **The L-4 Grasshopper symbolizes the beginning of Forty Years of Army Aviation. "Part 1: Grasshoppers" written by BG William W. Ford begins on page 2. Illustration by Fredric M. Martin**

page 38

Honorable John O. Marsh Jr.
Secretary of the Army

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.

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THIS IS ARMY Aviation's 40th birthmonth. It began auspiciously and in great style with the celebration earlier this month at Ft. Rucker and now ends in the same fashion with this history oriented issue of the *Aviation Digest.*

Our anniversary festivities (4 to 6 June) were a tremendous success, thanks to all who attended and those who worked diligently to prepare a calendar of events that truly did offer something for everyone from yesteryear through today. One of the very key events was a formal dedication of the site for the new Army Aviation Museum. With the site now approved and the fund raising effort nearing the halfway mark, we are nearing the reality that it is going to be a home for Army Aviation history, memorabilia and vintage aircraft through the years.

Another most significant event was the memorialization of an academic building in the Warrant Officer Career College complex in honor of CWO Manford L. Kleiv who lost his life during an aerial mission in the Vietnam conflict. It is most fitting that we recognize Mr. Kleiv's contribution and sacrifice by such a structure, but the memorialization of the building is also representative of the great contribution to all of Army Aviation, both in peace and in war, by our aviation warrant officers.

One of the most distinguished guests who "came home" for the celebration was retired Brigadier General William W. Ford, the "Daddy Grasshopper" of Army aviators. General Ford and all "Grasshoppers" were reunited at Ft. Rucker during the birthday celebration and reviewed the troops during an impressive retreat ceremony conducted by the First Aviation Brigade. Thus, it is entirely fitting that this month's lead article should be entitled "Grasshoppers" and provide an account from General Ford's personal experiences as one who was so instrumental in the birth of Army Aviation.

Another viewpoint of our past and our present is presented by Colonel Emmett F. Knight, commander of the AVRADCOM Advanced Technology Laboratory at Ft. Eustis. He has written "Army Aviation—Age Forty," a pungent poetic description of the growth, snags and progress that have marked these four decades.

And even the history of how people have been chosen to be Army aviators, past and present, is included to add depth to your knowledge of our business. "Army Aviator Selection Research: Then and Now" by Dr. John A. Dohme, William R. Brown and Dr. Michael G. Sanders identifies testing procedures that have been and are being used and ones that are forecast for the future—all intended to reduce the attrition in the flight training program and enhance the quality of our product.

Much of the luster of Army Aviation's history has been derived from our people's willingness to be good neighbors to civilian communities, providing service and support where needed. Colonel Richard E. Mackin describes such an act in "Flight to Arizpe"—a mission of international neighborliness.

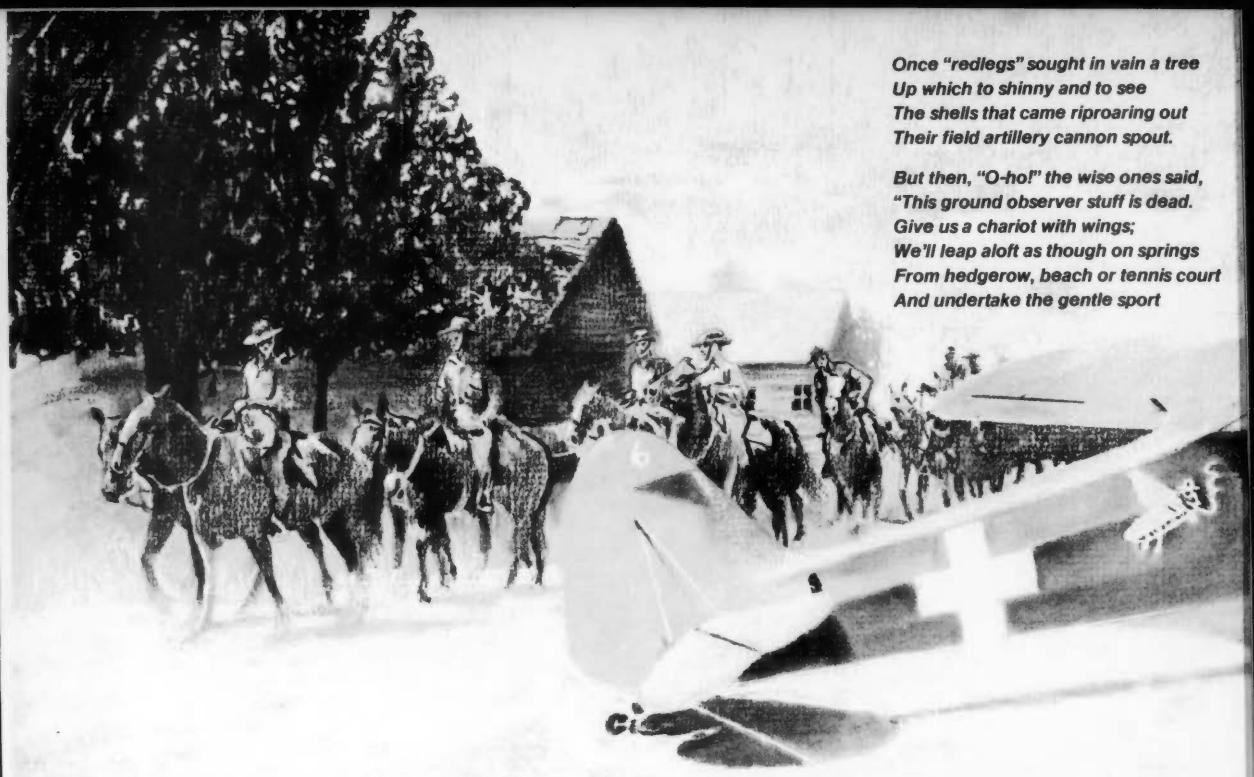
Such good relationships also exist with members of other services; witness the article from Navy Lieutenant James R. Dobson entitled "A Detailed History of the U-21." It is a very revealing bit of nostalgia for our fixed wing fanciers.

As we concluded the 40th Birthday celebration, not only had hundreds of oldtimers visited their "Center of Training Excellence" to share a tale or two, but also letters of congratulation and recognition poured in from around the world. Space simply does not permit us to print them all, but I would like to at least share a few excerpts with you. From these you will gain a further appreciation not only of esteem in which Army Aviation is now held but more importantly the measure of performance expected of aviators today to meet our Army commitments worldwide.

- The achievements and contributions Army Aviation and Fort Rucker have made to the United States Army are recognized throughout the world . . . You can be proud of the exemplary manner in which you have continuously accomplished your mission "Above the Best."—John O. Marsh Jr., Secretary of the Army
- Army Aviation has won its spurs many times over, on many battlefields, since its birth, and

Continued on Inside Back Cover

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



Once "redlegs" sought in vain a tree
Up which to shinny and to see
The shells that came riproaring out
Their field artillery cannon spout.

But then, "O-ho!" the wise ones said,
"This ground observer stuff is dead.
Give us a chariot with wings;
We'll leap aloft as though on springs
From hedgerow, beach or tennis court
And undertake the gentle sport

FORTY YEARS OF ARMY AVIATION

This is the first of a five-part series that will tell Army Aviation's story from its beginning to the present. It is authored by Brigadier General William W. Ford (U.S. Army, Retired), and he gives an account of the actions that led to the birth of Army Aviation. The succeeding four sections will be by Richard K. Tierney and will be titled "Building a Training Program," "Combat," "Armed Helicopters" and "Policies and Organizations." This history of Army Aviation will be a valuable addition to the library of every interested member of the Army Aviation community

MONTHLY WRITING AWARD

PART I:

GRASS-HOPPERS

Of heaping quantities of lead
Upon the Kraut's defenseless head."

'Twas done! A million so-called pilots
(Never considered shrinking violets)
Forthwith began to strut their stuff.
Believe me, boy, it was enough!
They filled the air with Cubs, and though
They flew the damned things low and slow
They (ponder this with greatest awe:)
With some assistance won the war.

By Brigadier General William W. Ford, U.S. Army (Retired)

This article is adapted from ***Wagon Soldier,*** a private publication, 1980 by William Wallace Ford.

The poem or whatever-it-is at left above (spoken with a Deep South accent), written for a celebration dinner at the end of World War II, concisely states the Field Artilleryman's (Redleg's) need for air observation, the solution devised, and—perhaps with some exaggeration—the results achieved.

People who visited Ft. Rucker, AL, on 6 June 1982 to celebrate Army Aviation's 40th birthday anniversary were apt to notice a score or more middle-aged characters wandering about the place, gawking at the newfangled machines and poking into things. On their coats, especially their blazers, some wore a large, gaudy emblem which looked like a grasshopper. Well, by gosh, it *was* a grasshopper! The wearers *called* themselves Grasshoppers. They belong to the first generation of Army aviators. This is the story of how they came to be.

The end of World War I found military air observation at a crossroads. The device upon which the U.S. Army had depended since Civil War days, the hydrogen-filled, captive balloon, was due to be phased out. Its vulnerability to attack by hostile fighters and to the growing range and accuracy of antiaircraft fire rendered it completely obsolete. Some 265 balloons had been sent to France; of these, 77 had participated in action and 48 had been lost.[1] It was too fragile a device for frontline observation purposes.

Fortunately, the same instrument that had brought about the demise of the balloon now provided a replacement: the fixed wing aircraft. Although the Wright brothers had first flown in 1903 and the U.S. Army had bought its first airplane as recently as 1909, by the end of World War I it had had 39 aerosquadrons in action against the enemy.[2] These had performed "pursuit" (fighter), bombardment and observation missions, all of primitive type, using mostly open cockpit biplanes.

GRASSHOPPERS

But enough had been learned to make it clear that the fixed wing aircraft (helicopters were way in the future) was the device to develop, for observation as well as other missions. When the Army Air Corps was created by Act of Congress in 1926 it began to develop specialized types of aircraft to perform its several functions; for observation a tandem two-seater, open cockpit biplane was generally used. Rather heavy, it required a hard surface runway or its near equivalent. The Air Corps furnished the plane and pilot for observation of artillery fire while the field artillery furnished the observer. Doctrine specified that such observation planes should be attached to corps and from there allotted to subordinate units on a mission-by-mission basis as the situation indicated.

The two branches quickly worked out a suitable technique. During 1930 to 1932, at Ft. Bliss, TX, I was reconnaissance officer of the 82d Field Artillery Battalion (Horse) of the 1st Cavalry Division. My duties included those of battalion air observer. On numerous occasions I went aloft as observer in an Air Corps plane and adjusted artillery fire during target practice at the Dona Ana Firing Range in New Mexico. Adjustments were routinely rapid and accurate, though slowed somewhat by the use of Morse code instead of radio telephone; a suitable set was not then available. (During this experience I became interested in flying and learned to fly at a nearby civilian school. Over the next few years I advanced through several pilot ratings—solo, amateur, private, limited commercial with instrument rating—and I owned two airplanes. I flew often from small fields and strips, gaining experience which was to bear fruit later.)

But, however adequate the technique, there were serious and I think fatal flaws in the arrangement just described:

- The plane furnished was always a fairly heavy type requiring a hard surface runway or near equivalent; it therefore had to be based at an airport or temporary field some distance to the rear, "on call."
- When the call was made (if indeed it was heard) the pilot had first to *find* the guns he was to serve, since the artillery often had moved since the last mission.
- The observer, whether Field Artilleryman or Air Corps observer, was likewise in the dark as to gun position and target location; this had to be worked out by radio after the plane was airborne. It wasn't easy. Of course the observer could be stationed between missions at the guns, and thus have all the information he needed, but the delay due to his travel overland from guns to airfield to begin the mission was unacceptable.
- The overriding deficiency in this system was the limited amount of observation *time* available. There was need for air observation, not merely to fire on some target previously located (located *how*, please?) but to sit up there and *find* targets. Time spent by the airplanes on the ground or flying back and forth between landing area and gun position was a complete loss.

All this was well-known to every artilleryman, and much complaining was done, but little else. The stringencies of peacetime funding plus the natural preoccupation of the Air Corps with what it considered its more pressing responsibilities, strategic bombing and tactical air support, left scant opportunity for improvement in air observation for Field Artillery.

In 1939 war broke out in Europe, and by 1940 military activity in the United States was increasing by leaps and bounds, for it seemed likely that we would eventually be drawn in. (My class at Leavenworth was turned out in January 1940, ahead of the scheduled June, to go to units in field training.) Agitation for better air observation grew in intensity, led by the chief of Field Artillery, Major General Robert M. Danford. This attracted the attention of the three leading light aircraft manufacturers: Aeronca, Piper and Taylorcraft. Aggressive businessmen, they got into the act and placed one or more civilian aircraft with company pilots, at the disposal of every senior commander in every large scale Army maneuver conducted during 1940 to 1941 in Louisiana, Tennessee and elsewhere. Toward the end a veritable squadron of planes was in action during the Desert Maneuvers at Ft. Bliss: eight from Piper and two each from Aeronca and Taylorcraft. The missions performed were mostly courier and command reconnaissance, though there apparently was some adjustment (simulated) of artillery fire.

An amusing incident occurred in the course of the Desert Maneuvers. Henry Wann, one of the Piper pilots, was told to fly to the field headquarters of the First Cavalry Brigade and report to the commander, Major General Innis P. Swift. Wann located the headquarters, landed and reported. General Swift seemed quite impressed. He said, "You looked just like a damn grasshopper when you landed that thing out there in the boondocks and bounced around." Thus "Grasshopper" became the proud title of the early Army aviators.

At this point my 20 years' service as an artilleryman, my modest experience as an air observer, and my 7 years of private flying came into conjunctive focus: Why not make air observation organic to the artillery itself? Each battalion would have its own light plane operating from a nearby field or road, with its own artilleryman pilot and artillery observer, constantly in touch with the battalion fire direction center, constantly and instantly available to the battalion commander.

GRASSHOPPER SQUADRON

Piper Aircraft Corporation
W. T. Piper Sr.
T. I. Case
Thomas Piper
Howard Piper
T. H. Miller
Norman Hockenberry
Henry Kubick
W. D. Strohmeier
T. V. Weld
Forrest I. Nearing*
Robert Bowes
David Cogswell
Gordon Curtis
James Diegel
Robert Heath
J. M. Helbert
C. R. Holladay
J. W. Miller
Henry S. Wann
David Kress*
Jules Parmentier
H. Sheldon Chadwick

Aeronca Aircraft Corporation
Maurice C. Frye
James Rosing
James Kukla
John Gall*

Taylorcraft Aviation
James Ludwig
Paul Yates
Philip Gow*
Adair Miller
Ray Carlson*
Frank Parmelee*

Continental Engine Company
Percy Hubbel*
Chauncey Chantree*

Ground engineers, the others were flying salesmen. John E. P. Morgan was also a member of this group. From Washington, he acted in the capacity of a director or observer.

In the fall of 1940 I wrote an article along these lines, published in the *Field Artillery Journal* of April 1941, recommending organic air observation for Field Artillery. As to the need, I said, in part:

"During the Third Army maneuvers in the early part of 1940 this writer was a battery commander in the light artillery of a "streamlined" division. During successive division, corps and army exercises he participated in a number of field problems. *Not once*, during this period of 4 months, did he find a decent OP! *Not once* did he have a map or map substitute from which fire could have been computed! *Not once* was an actual air observer available to adjust the fire of his battalion!"

As to the feasibility and type of plane:

"The plane for our Field Artillery battalion should go with that battalion at all times. The 'flivver' plane, with its light wing loading and its 75 HP engine, cruises at about 80 mph and lands at about 45 mph. It does not require a prepared landing field, but can land in almost any cow pasture or similar place. Hundreds of landings and take-offs have been made on highways. Even plowed fields are practicable provided the furrows are not deep."

As to vulnerability:

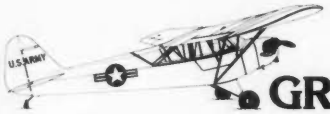
"Objection will be heard that such a craft will be quite vulnerable to hostile aviation. Well, what aircraft isn't? Only the best of the fighters themselves. Does anyone think, for example, that our present service type observation ship, the O-47, would bear a charmed life in an atmosphere infested with enemy pursuit? Of what use are one or two flexible machine guns, firing to the rear, against the eight fixed forward guns of the modern fighter?

"Our little flivver plane will have no armament at all; its protection will consist in:

• General superiority of the air secured by our pursuit aviation. Let no one say we may not have this. We *may* not win the war, but we should try. We should try, likewise, to gain air superiority. No modern war has been won without it. Of course not even a definite air superiority on our part will render us immune from enemy air attack. But such superiority, or merely an equality, should make it possible for us to employ observation aviation without

Some of the members of the test group (above) who helped bring about the birth of Army Aviation and the establishment of the Department of Air Training at Ft. Sill, OK:

Richard H. Alley
Frank C. Baumstark
Lloyd M. Bornstein
Delbert L. Bristol
Joseph R. Caldwell
Felix H. Coune
Roland J. Coutura



GRASSHOPPERS

prohibitive losses, especially if other protective measures are adopted.

- Observing from low-altitudes *over own territory.* Low-flying airplanes, particularly if painted camouflage, are hard to see from above. If enemy fighters *cruise* at low altitudes our ground weapons should be able to make it hot for them.
- Maneuverability. Upon the approach of hostile aircraft our pilot will put the little ship into a series of tight turns, barely off the ground; high-speed enemy fighters, much less maneuverable, will have difficulty in bringing their guns to bear."

Well, what happened? The article in the *Journal* excited much favorable comment; the light aircraft manufacturers placed a dozen or so planes and pilots at the disposal of the senior commanders in the maneuvers of 1941, but not much else took place.

Opponents of the idea claimed, first, that Field Artillerymen couldn't fly these little planes from roads and small fields, they'd break their necks; second, that if they did manage to fly them as proposed, the necessary maintenance could not be performed under primitive field conditions; third, that if it happened by some miracle that the planes could be so flown and maintained, they'd be shot down the first day in battle.

So the "experts" were opposed. The Air Corps was opposed for an additional reason. It had been too long under the tutelage of the Army not to know the uses of bureaucracy and it wasn't about to let air observation slip from *its* hands any more than the Army, some years earlier, in the days of Billy Mitchell, had been willing to let the Air Corps slip from *its* hands to become an independent arm.

Despite this strong opposition, the idea would not die. The commanders who in the 1940 and 1941 maneuvers had been served by the light planes lent by the aircraft manufacturers were enthusiastic in their support. General Danford visited the artillery school in England during the summer, and came away impressed by the efforts being made there to use light aircraft for artillery observation. I talked to him later that fall when he came to Ft. Sill, OK, and was delighted to realize his strong support of the proposal that a test of my theory be made. His staff was plugging for it with G-3 of the War Department, and finally, on 5 December 1941, a formal proposal to this effect was made to the Chief of Staff, General George C. Marshall.

It is doubtful whether the proposition would have gone any further in the absence of a strong push from a new direction. But 2 days later, on 7 December 1941, the Japanese attacked Pearl Harbor with devastating effect. The event caught some of the big brass, military and civilian, with their pants down, and scared the pants off nearly everyone else. People had nightmares of Japanese scaling the cliffs of California. On 10 December the Chief of Staff directed the chief of Field Artillery to proceed with the proposed tests.

I was called to Washington a few days later and worked with General Danford's staff on the details of a directive which he would issue to the commanding general, Ft. Sill, covering the training phase of the program. This directive was issued on 23 December 1941, and on 2 January 1942, I was appointed director of Air Training.

On my way to Washington I had been visited on the train during the brief stop in Cincinnati by Major Gordon J. Wolf, a Field Artillery Reservist, who had heard of the program and wanted to join. He was an enthusiastic private flyer with several years' experience, of great energy, intelligence and imagination. I gladly accepted his offer, and he became my second in command. He contributed outstandingly to the operation.

Lloyd M. Damron
Robert W. Donovan
Edward Drapela
Robert M. Ford
William W. Ford
Marion J. Fortner
Alwin R. Hackbarth
Ralph P. Hage
Chester Hammond
Steve E. Hatch
James W. Hill Jr.
Edwin F. Houser
James T. Kerr
Charles W. Lefever
Robert M. Leich
William R. Matthews
Joseph E. McDonald
Joe L. Messina
Forrest I. Nearing
Thomas F. Piper
Alanson Rawdon
Lawrence E. Rhodes
William T. Roulston Jr.
John S. Sarka
Theodore F. Shirmacher
Thomas M. Skelly
Stanford J. Stelle
David Sweetser
Paget W. Thornton
Henry S. Wann
Robert R. Williams
Bryce Wilson
Gordon J. Wolf
Walter J. Zimmerman

Incredibly, on 15 January 1942, actual training for the tests began. That so much had been accomplished in a scant month is explained only by the heroic efforts of all concerned under the impetus of war.

Arrangements had been made as follows:

- The chief of Army Air Corps had turned over Post Field, Ft. Sill, for use in the project; had furnished 24 Piper Cub airplanes (commercial J-3s painted olive drab) and associated equipment; and would supply 80-octane aviation fuel.
- The chief of Field Artillery had sent circulars to all field artillery units in the United States, inviting applications for participation in the test from officers and enlisted men having civilian pilot licenses with private pilot or higher grade. Fourteen officers and 19 enlisted men were thus selected and they reported to Ft. Sill for training.[3]
- The Civilian Aeronautics Administration (CAA) lent Mr. Richard Alley to serve as chief flight instructor, and Mr. Stanford J. Stelle to serve as maintenance supervisor. It also recommended seven flight instructors of extensive experience in the type of flying contemplated. These instructors were hired by the Field Artillery School and served throughout the training period prior to the field tests. Included in their number were two, Tony Piper and Henry Wann, who had been active as pilots for the light aircraft manufacturers in the maneuvers of 1940 and 1941. Both of them, and Ted Shirmacher, another of the civilian flight instructors, obtained commissions and continued as military pilots throughout the war.
- The aircraft and engine manufacturers sent experienced people to assist: Mr. Forrest I. Nearing from Piper, and Mr. Chester Hammond from Continental.

It was a piece of cake. Probably no military group ever began a war mission with greater joy and enthusiasm. For here was an opportunity not only to serve their country in a highly promising war effort, but to do so while getting their fill of what they liked best to do—flying. Whereas flying hours had previously been limited due to their costliness, they were not bountiful and free.

The course laid out by Mr. Alley and Mr. Stelle under my direction was to last from January 15 to February 28. After that would come the field tests. One-half of each day would be spent in flying; the other half in maintenance, for we were training pilot-*mechanics*. The pilot had to be prepared to do all the usual day-to-day maintenance in the field. As far as practicable each pilot was assigned a specific airplane, which was exclusively his to fly and maintain. The CAA skilled flight and maintenance instructors were all over the operation, giving dual instruction, check rides and examinations in both subjects.

It was the flying, of course, which was the most unorthodox. In their previous civilian training these pilots had been taught to fly only from fields large enough to provide a generous margin of safety against misjudgment in landing and takeoff. They had been taught to maintain, except at the final moment of landing, a speed well above stalling. And they had been required to fly at an altitude high enough to provide reasonable safety in case of engine failure.

Now all this was changed. They were to fly "low and slow," formerly a prescription for trouble. Flying low was to provide some protection against hostile aircraft. Flying slow, during the approach for landing, was to permit them to get into the smallest possible field or strip, since any excess speed would risk overshooting and cracking up. The fields to be used were to include, ultimately, those of smallest negotiable size and barest acceptability as to surface; the roads with smallest tolerable clearance as to wires, trees, telephone poles, fences and similar obstructions.

What fun it was! Like defying the law of gravity. Daring to do what you had been told, up to now, never, never to do.

But this was no foolhardy enterprise, no exercise in recklessness. We began by practicing this new style of flying under conditions where the dangers were only simulated. We began on practice fields and strips as large and as smooth as many small airports. We put up, at the approach end of the landing strip, two bamboo poles about 20 feet high, with a string bearing short streamers stretched between their tips. The pilot's job was to come in over this simulated obstruction in a delicately controlled power-stall approach and land as short as possible, braking hard if necessary. If he overshot, being too high or too fast, there was still plenty of field left on which to make a landing. If he came in too low the only damage was to the string and streamers; if too slow, he might "stall out" and have a hard landing, possibly washing out the landing gear but nothing more. Actually, not a landing gear was lost.

After several hours of this, when the pilots had acquired a feeling of confidence in the power-stall approach and a fairly good feeling for what size field was acceptable, the scene shifted to smaller fields and roads. Nothing was simulated here; the obstructions were real. Landings on roads presented no problem except in crosswinds or where obstructions such as trees or telephone poles were too close to the road. In that case a less hazardous stretch of road was sought. After more experience a pilot skilled in this technique could even land on a curving road with confidence. The trick was simply to fly around the curve, banking just enough under part throttle to stay over the center line of the road, then settling gently to a one-wheel, tail-high landing. As soon as the landing roll was stabilized on one wheel, following the curve, the outside wing was lowered until the outside wheel touched the ground. Rudder control was then sufficient to keep the desired direction until, with throttle closed, the tail dropped gently, the steerable tail wheel touched, and the aircraft was braked to a stop.

During the latter part of this short-field work our "evasive maneuver" was introduced. Upon observing the approach of hostile aircraft the pilot was to roll into a dive, aiming for the ground. The hostile pilot could not follow this maneuver because of his much greater speed, and would thus be thwarted. Our pilot, having rolled into the dive, would immediately begin a gentle pullout, lest a dangerously high airspeed be built up, which might take him into the ground or cause him to lose a wing in pullout. Little training was required for this maneuver. In the production aircraft for field use the observer would be seated facing to the rear, with large plexiglass window areas giving him a good field of view for detecting the approach of hostile aircraft.

In the beginning the pilots had been given a review of basic flying maneuvers, lasting about 10 hours. Several were dropped from training during this period, due to lack of aptitude or unsatisfactory rate of progress. Then, after some 20 hours or so of practice on small fields and roads, came the third and final phase: the actual conduct of fire. The splendid Ft. Sill firing ranges were made available, along with well-trained firing batteries and skilled fire direction centers (FDCs). The observer, having conferred with the FDC as to the mission to be flown, would go to his plane nearby, the plane would take off at once, and as soon as the target area was in sight the command to fire was given. Adjustment would be rapidly concluded and the plane would land. The average time achieved, from takeoff to landing, was about 9 minutes. This was for personnel in training; skilled pilot-observer teams sometimes did it in as little as 6 minutes. During this part of the training the observer was usually a second pilot in the

Flight A at Camp Blanding, Florida, April 1942

Flight B at Pershing Field, Ft. Sam Houston, TX, April 1942

aircraft; but in the field the observer would be a junior officer in the Field Artillery unit served, he having been already well-trained, at Ft. Sill, in the conduct of fire.

The War Department had directed that the training phase at Ft. Sill be completed by 28 February 1942, after which the real tests, in the field, would be conducted. So it was. In less than 3 months since Pearl Harbor there had been assembled, trained and made ready a unit prepared to demonstrate the capability of an entirely new kind of military aviation.

Of the 14 officers and 19 enlisted men who reported for this training, 3 officers and 10 enlisted men failed to complete the course. Probably there would have been fewer failures had the course been not so condensed. The average flying time at the beginning of the course was, for officers, 187 hours; for enlisted men, 70. This explains the disparity of results between the two groups. The average number of hours flown during the course by students completing same was 39. Enlisted pilots completing the course were immediately promoted to staff sergeant.

There were no accidents! Well, no *serious* accidents.

On 28 February 1942, the training detachment, later to become known as the Class Before One, was divided into two groups: Flight "A," consisting of 11 airplanes and 14 officers and men, to go to Ft. Bragg, NC, for service test with the 13th Field Artillery Brigade; Flight "B," consisting of 10 airplanes and 14 officers and men, to go to the 2d Infantry Division, Ft. Sam Houston, TX, for the same purpose.[4] I was not a member of either group, although I led Flight A on the flight to Ft. Bragg and remained there as observer and consultant for most of the test period, then moving to Ft. Sam Houston for the same purpose.

The field tests were to be made with troops actually on maneuvers, where the utility and practicability of organic air observation for field artillery could be assessed. A new element was now introduced for evaluation: the vulnerability of these small planes to hostile aircraft. Actually this was the only element in doubt. If the little planes could live in battle, there was no doubt that they could operate from landing areas or roads *somewhere* near the guns they served; there was no doubt that they could maintain the planes in operational condition; there was no doubt that they could bring fire, unerringly, upon any target within range of the guns, and this by staying over our own lines, out of reach of enemy ground fire. But what about hostile aircraft? We hoped that the evasive maneuver previously described would neutralize this danger.

Shortly after Flight A arrived at Ft. Bragg, the 13th Field Artillery Brigade moved to Camp Blanding, FL, where the actual tests were to be run. Flight A went along, finding an acceptable landing strip on a sandy lane in the pines near brigade headquarters. An Air Corps fighter squadron, based nearby, was designated to furnish the air opposition. Flying P-39s equipped with gun cameras, they were to take pictures of our Cubs in the air, thus proving the Cubs would be shot down while flying their observation missions, and on the ground, proving that our attempts to hide planes under trees while not on missions were ineffective.

We were worried about this. Not only at the prospect of having some high-speed fighter whiz by you a few feet away (suppose he miscalculated?), but more so at the thought that he had just taken a picture of you as he shot you down. These pictures might convince higher authority that our whole scheme was impractical.

A bright idea occurred to us. If he wanted to play at shooting us down, why shouldn't we play at shooting him down? Not from our plane, of course, which had no guns, but from the ground? All the artillery units underneath us were generously equipped with machine-guns for defense against low-flying aircraft as well as against ground attack. Why not equip each machine gunner with a camera to "shoot down" (that is, take the picture of) any hostile plane that pursued a Cub so low as to present a good target? This would render the picture war a stalemate. This was done, and the game was entered into with enthusiasm by all concerned: the fighters, the Cubs, the men on the ground. The ultimate in evasive maneuver by a Cub pilot was reached one day when Lieutenant Couné came in from a mission with a section of pine tree about 3 inches in diameter and 3 feet long stuck in the leading edge of his right wing. Attacked by a fighter, he had barely pulled out of his evasive dive when he flew through the top of a pine tree, clipping off a piece. The plane was repaired in the field and remained in service.

Brigadier General Mark Clark came by to have a look at all this, and I took him for a ride from a secondary road with pine trees close to our wing tips on both sides. We landed on the same strip. He seemed favorably impressed.[5]

After a few weeks at Camp Blanding I went to Ft. Sam Houston, where Gordon Wolf was leading Flight B through a highly successful test with the 2d Division. The field tests at both places were soon over, and enthusiastic reports from both generals concerned went on their way upward through channels to Headquarters, Army Ground Forces. A curious thing happened here. Lieutenant General Lesley J. McNair, who commanded the Ground Forces all over the United States and did a magnificent job of training them, was away on an inspection trip at the time and his Chief of Staff, General Clark, who had flown with

me, was in charge. Ever willing to take responsibility, General Clark promptly approved the reports and sent them up to the War Department Chief of Staff, General Marshall, recommending that organic air observation for Field Artillery be adopted as standard. The War Department approved. It was rumored that General McNair, upon his return, was somewhat displeased at this precipitate action. I asked him later about this, believing that having served under him at Purdue ROTC I had his confidence. I asked him didn't he believe we could do what we claimed we could do. He said oh, yes, he believed the concept was sound but that the Air Corps, being the traditional operator in the flying domain, should have been allowed to handle it if it wished. However, he made no effort to undo what had been done. He and General (Hap) Arnold, chief of Army Air Forces, were very respectful of one another's prerogatives.

So it came about that on 6 June 1942, a War Department directive established "Organic Air Observation for Field Artillery," allotting two planes, two pilots and one mechanic to each field artillery battalion, and the same to each group, division artillery and corps artillery headquarters. It was wealth beyond our wildest hopes.

A Department of Air Training was instituted at the Field Artillery School. I was appointed director, and most of the personnel who had been in the test group remained as members of the initial staff. The course of pilot training was refined and somewhat extended, and training of mechanics was begun on a corresponding scale. When the supply of persons already holding civilian pilot licenses gave out, the Air Corps contracted with civilian flying schools to fill this need. Volunteers from all over the Army were first given primary training at the civilian schools, coming later to Ft. Sill for advanced and special training. It was a great satisfaction to those of us who had been the pioneers in this activity that, although starting from scratch after the war began, it developed fast enough to supply each Field Artillery headquarters entering combat in any theater of operations its organic air section.

That, then, is how Army Aviation got its start, though under another name. How it went on in World War II to fulfill richly the predictions which had been made for it; how it came to serve many needs beyond those of the Field Artillery; how it came to employ a new type of aircraft, the helicopter; how it proved itself over and over in two more wars; how it stands today in robust maturity and is still developing—these are chapters in a remarkable story for which there isn't the beginning of enough space here. Some other time; some other reporter.

Anyone who makes bold to write for the information or entertainment of other people ought to be able to scrape up as a parting shot some bright thought, some gem of wisdom. I give you the words of Tom Jenkins, who was wrestling coach at West Point a long time ago. His maxim was: "There ain't no holt what can't be broke." It is as true in military science as in wrestling, whether you are making the holt, or breaking it.

References

[1]*The Army Aviation Story*, by Richard Tierney, Colonial Press, 1963, p. 24.
[2]*ibid.*, p. 38.
[3]*ibid.*, pp. 54-56.
[4]*ibid.*, pp. 57-58.
[5]*ibid.*, Introduction, General Mark Clark's postwar comments on the little planes.

Pilots of the Grasshopper Squadron at a reunion in October 1978 at Ft. Sill are left to right: John Sarko, Robert Williams, Gordon Wolf, Randy Matthews, James Kerr, Charles Lefever, Tony Piper, Robert Cassidy, William Ford, Bryce Wilson, Padget Thornton, Henry Wann, Delbert Bristol and James Hill