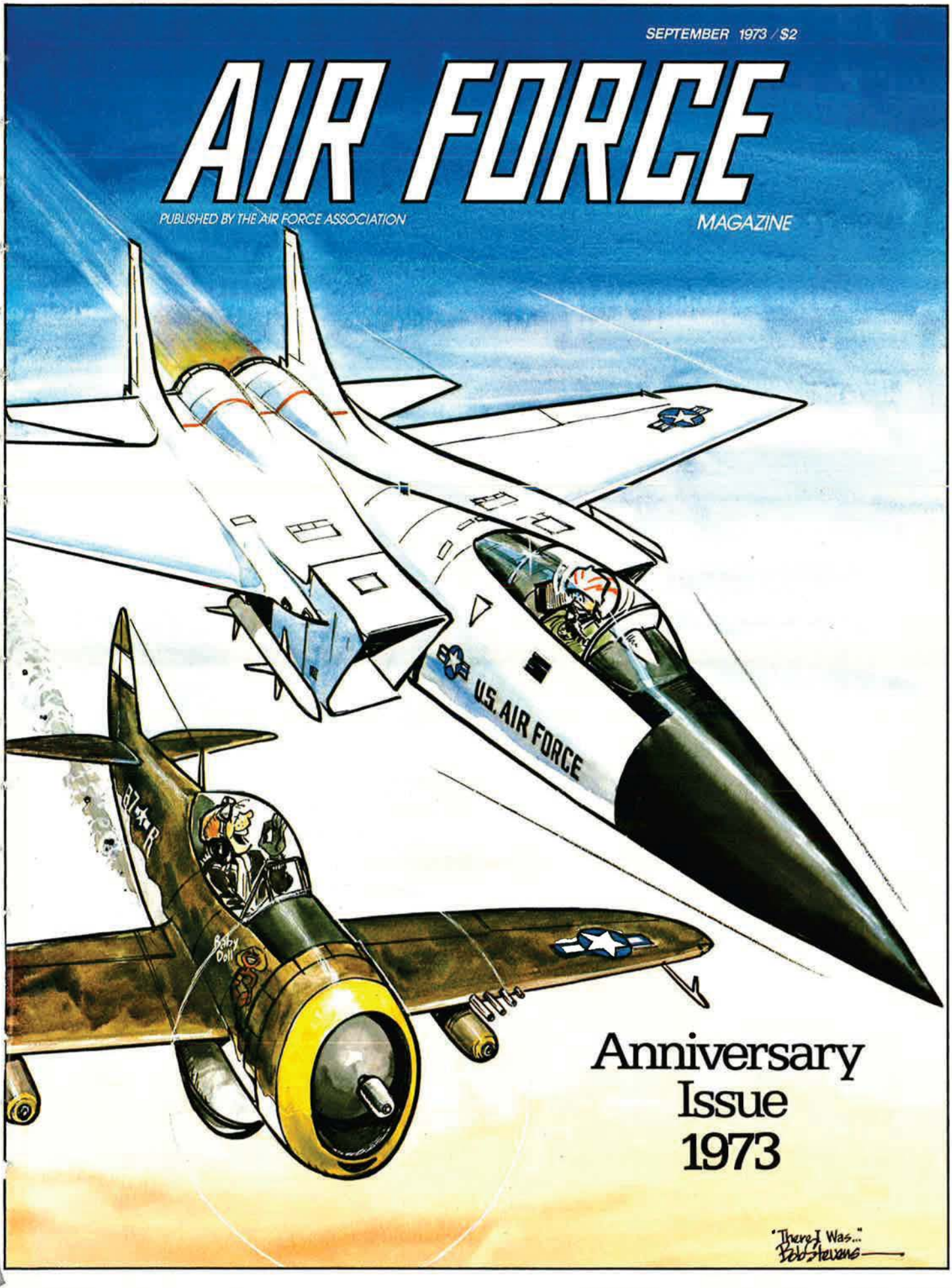
SEPTEMBER 1973 / $2

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



Anniversary Issue 1973

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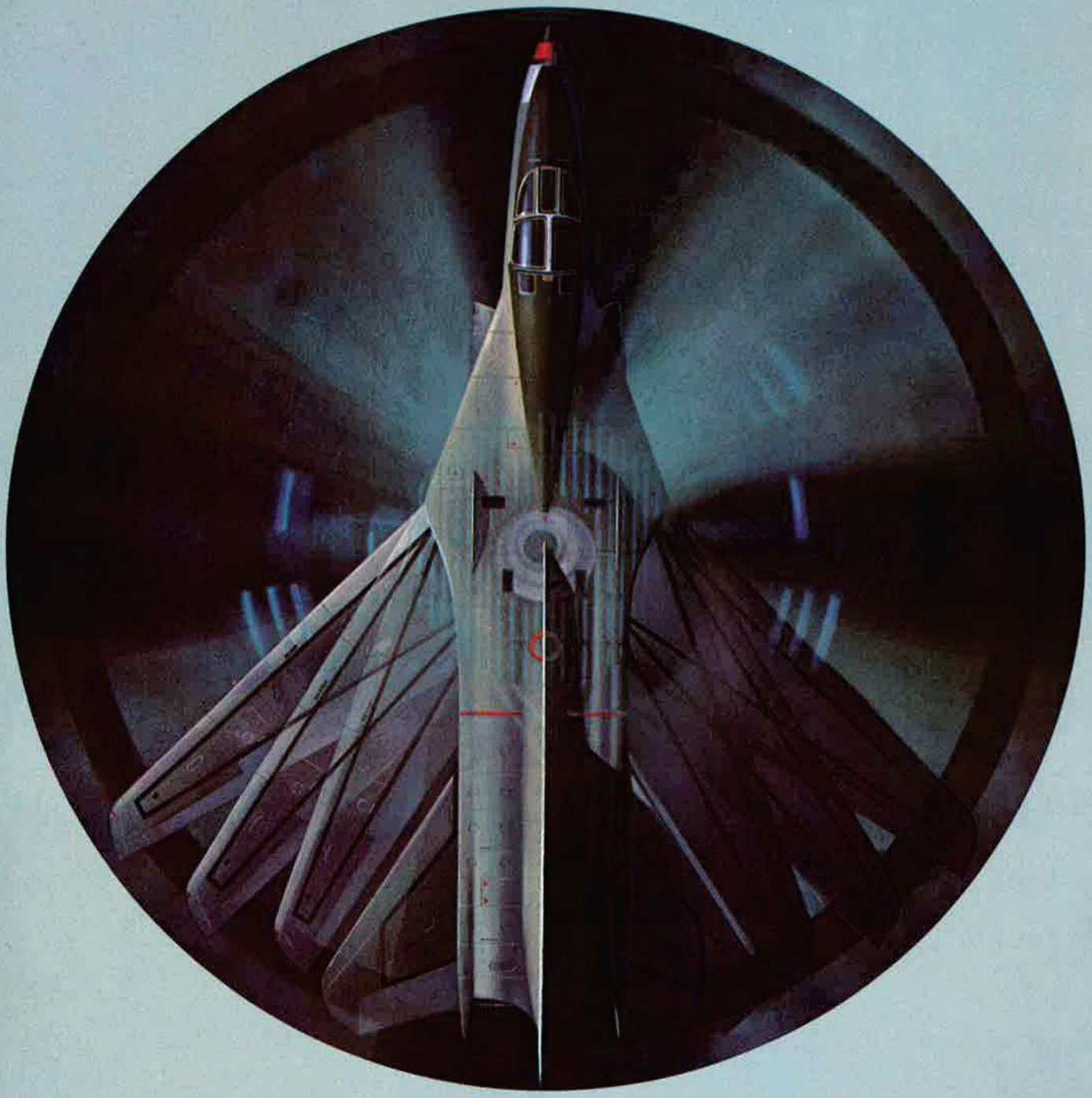

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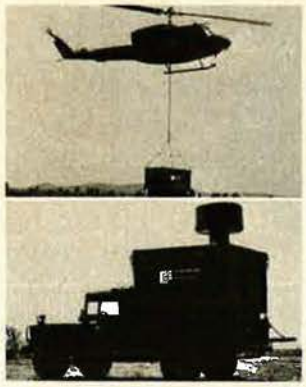

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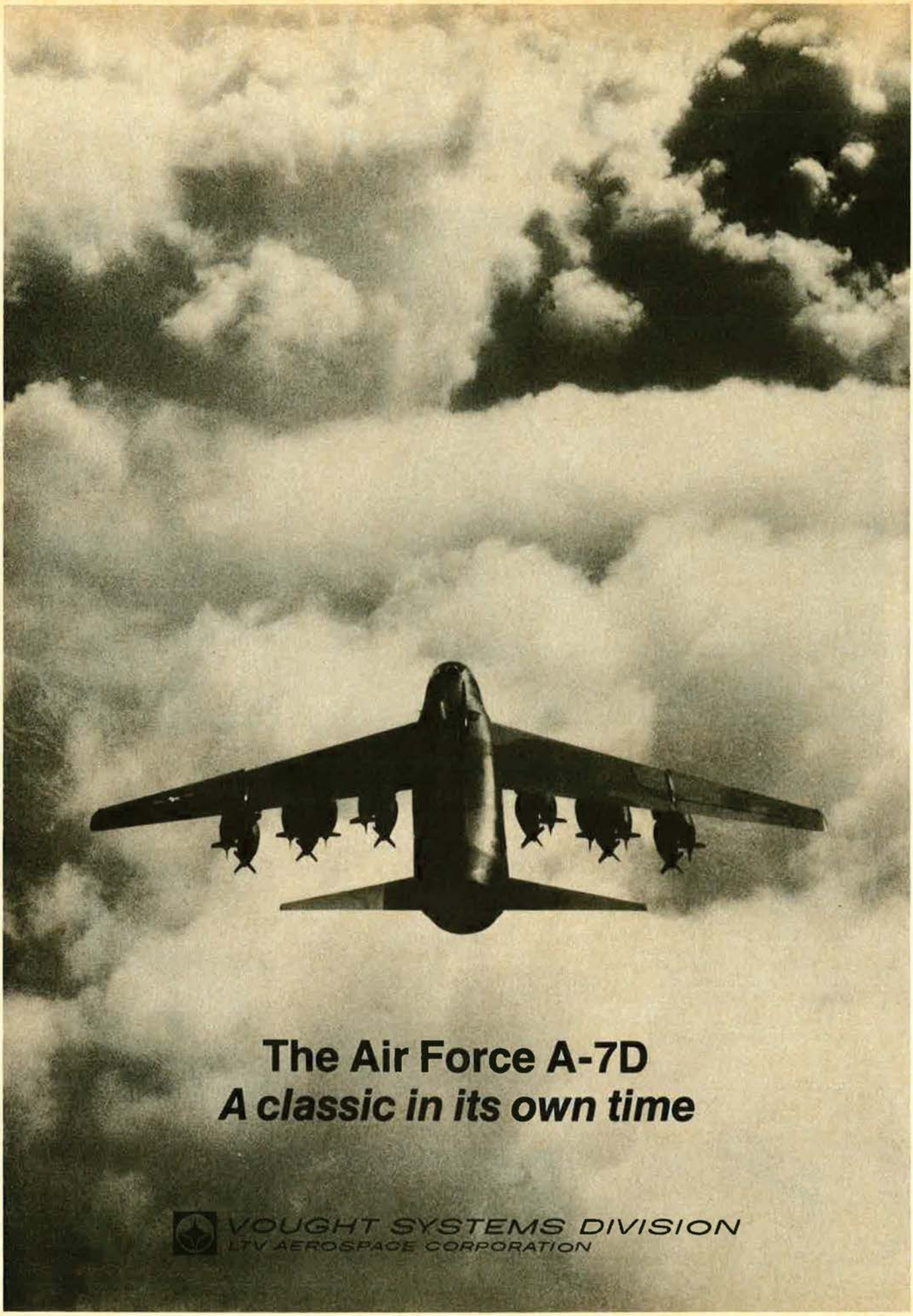

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AIR FORCE
PUBLISHED BY THE AIR FORCE ASSOCIATION MAGAZINE

VOLUME 56, NUMBER 9

SEPTEMBER 1973

Air Force Twenty-sixth Anniversary Issue

THIS MONTH

THIS MONTH'S COVER . . .

As the United States Air Force marks another anniversary—its twenty-sixth—Bob Stevens symbolizes, in his own inimitable "There I Was" style, USAF's experience and technical progress through the years.

THE DEPARTMENTS

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An Editorial

THE FLIGHT PAY FIASCO

By John F. Loosbrock
EDITOR, AIR FORCE MAGAZINE

THERE is a bitter irony in the fact that, while this nation is attempting to fill its military manpower needs on a fully volunteer basis for the first time since 1940, a trend is developing which would whittle away at basic financial incentives—incentives without which the dream of an all-volunteer force could turn into a chimera. Now that personnel costs are making up more than half of the defense budget—a percentage destined to increase—unfriendly eyes on Capitol Hill are looking hungrily at career-motivating benefits as a likely place for the next series of chops. The military man himself, not his equipment, is becoming the new target.

Current and immediate is the issue of flight pay, already severely mauled in the congressional action that, through failure to amend Section 715 of the 1973 Defense Appropriations Act, cut off flight pay for all colonels, Navy captains, general officers, and admirals except for those who have to fly as part of their duty assignments.

If you're going after military incomes, flight pay is a clever place to start. It is hard to generate sympathy for the "chairborne general" and easy to ridicule the idea of paying for flying that is not being performed. The congressional critics, notably Representatives Otis Pike (D-N. Y.) and Les Aspin (D-Wisc.), seized the opportunity with glee and relish. The fact that the Department of Defense's new flight pay proposal, the result of six months of study, was not placed before Congress until a week before the previous authority was due to expire didn't help matters. The amendment, which provided a six-month extension of the old plan to give Congress a chance to examine the new, fell easy prey to Mr. Pike and his cohorts.

As matters now stand, all flight pay for all ranks in all duty assignments could go by the boards unless the DoD proposal, or an amended version of it, is enacted. Such an outcome is unlikely, of course. But if the basic rationale for flight pay gets lost in the emotional shuffle of debate, permanent damage can be done to this country's fitness to fight.

The basic underlying factors, as we view them, are these:

- Military flying, in peace as well as war, is hazardous. The Congress has thought so ever since it first authorized flight pay back in March of 1913.
- Air forces are effective only when led and managed by experienced airmen. Officially, this was not recognized in the US forces until early in World War II, and the Luftwaffe, to our great good fortune, never learned this particular lesson until it was too late.
- It is cheaper to retain an experienced pilot than it is to train a green replacement for him.

These considerations go to the heart of the matter, and a flight-pay system that fails to recognize their significance will not do the job.

Already the effect of the flight-pay cutoff (estimated to save about $14 million a year, or less than the cost of one advanced tactical fighter) has been devastating. A young, combat-experienced colonel, who may be in a nonflying job at the moment because he was promoted faster than his peers, is taking a pay cut of $2,940 annually. A worst case, perhaps, but not untypical. Less senior, but just as bright, officers can see a similar fate in their tea leaves. Almost forty percent of rated officers with nearly twenty years' service have indicated they plan to retire as soon as they can. Worse, there is bound to be a mad scramble among rated people to avoid nonflying assignments so that more of the planning and managing will be done by those who have only vicarious knowledge as to what modern aircraft can, and cannot, do.

In dollars and cents, the flight-pay cutoff has equally disastrous potential. New pilots will have to be trained to replace those who retire early or just plain resign in disgust or despair. And the cost per new pilot will run six or more times the amount of flight pay a man could draw in a thirty-year career. If that's economy, we'll eat our bankbook.

Meanwhile, hearings on the new DoD proposal began in late July but were not completed when Congress recessed last month. The plan is incentive-oriented, providing flight pay over a twenty-five-year career. The monthly maximum of $245 would begin with the seventh year of flying service (instead of the eighteenth as matters now stand), and continue at that rate through the eighteenth year. It then would drop incrementally through the twenty-fifth year, when it ceases regardless of rank or duty assignment.

The new plan is acceptable to the services, but it can also be improved, and the best way to do that is for the Congress to get some firsthand reactions from the pilots themselves. The last thing needed is another formal study. Too much damage has already been wrought by the current cutoff.

Meanwhile, a lot of people are being hurt. And, whatever may transpire for the future, there is no excuse for that. ■

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The word Omega means the end. But the way people keep finding new uses for it, we think it's just the beginning.

NORTHROP

Airmail

The New SecDef

Gentlemen: Thank you for the excellent introductory insight into the personality and credentials of our new SecDef, Dr. Schlesinger (by Claude Witze, July issue). So often biographical sketches of this kind are dry at best. Not so in this case, as Mr. Witze has managed to present the new "boss" in an interesting and meaningful light.

The first eight months of 1973 have had a kind of "revolving-door" effect, trying to keep track of who's on first in the Pentagon. The timeliness and usefulness of the article on Dr. Schlesinger are appreciated.

Capt. Theodore R. Heil
Scott AFB, Ill.

WWMCCS Contractor

Gentlemen: Your coverage on the Electronic Air Force was interesting reading and an excellent source of information (July '73 issue).

I don't want to nitpick your otherwise first-rate job of reporting, and we do appreciate recognition of our services to the 436M program (p. 56). But we would have been happier if you had credited Computer *Sciences* Corporation as the integration contractor for WWMCCS and the SAC Automated Command and Control System.

Morton K. Bernheim, Manager
Corporate Publications Center
Computer Sciences Corporation
Los Angeles, Calif.

• *This is no nitpick—and thanks for setting us straight.*

—THE EDITORS

Scientists in Blue Suits

Gentlemen: Regarding Forrest M. Mims's article on the Air Force Weapons Laboratory, "Toward New Horizons in USAF Weapons," in your July issue: Yes, the blue-suit concept is indeed a valid one. In fact, there are those of us Junior Officers with scientific and engineering backgrounds who are eager to make contributions to Air Force R&D efforts, but are unable to.

When I graduated from CalTech, I had hoped to be assigned to the Weapons Lab to use my degree as an EE. My orders were changed, however, so I am presently serving in another career field. Having visited the Lab, though, I can vouch for Mr. Mims's statements: They do good work.

Your magazine represents good work, too. I found the rest of the issue equally well written and informative.

1st Lt. Craig W. McCluskey
Tyndall AFB, Fla.

After Many Years

Gentlemen: The unforgettable story, "Strange Harvest from the Zuider Zee," by Lt. Col. A. P. de Jong, RNAF, in the July issue was without a doubt one of the finest articles you've ever printed in your great publication.

I wasn't even embarrassed at the tears I shed as I read the article. It brought back to life again the things we saw and did in World War II, and it proved that we "old combat veterans" still have a soft spot in our tough old hides.

David E. Thorpe
Miami, Fla.

Postscript on POWs

Gentlemen: Thank you for publishing my letter in your "Airmail" section of the July issue. And also for refraining from excessive subediting. I have noted the editorial remarks appended to my letter and believe that I ought to respond to them. Whether you choose to publish these amplifications I will leave to your discretion.

To begin with, I have no objection to your general disagreement with my thesis; in any discussion there is usually room for more than one opinion. But I was rather intrigued by your first contention that "Louis Stockstill's article did not change Administration policy." Administration policy, gentlemen? Or DoD policy? Scarcely, one would think, that of the State Department.

Next you aver that Mr. Stockstill's purpose was not "to get our prisoners back . . . at all costs." This seems a curious juxtaposition of phrases in that what I really said was, ". . . end the war, at all costs." The return of the prisoners would certainly have been among the welcome consequences of such ending. Still, whatever Mr. Stockstill's initial purpose may have been—and I will accept that it was to gain improved treatment of POWs—such purpose quickly transformed itself in the minds of the public into demanding not only better conditions for the prisoners but also their return.

As we all now know, Hanoi did provide the POWs with improved conditions. Furthermore, they did become amenable to returning the prisoners they held. However, as they then proceeded to make abundantly clear, this could only be accomplished at a certain cost to the United States. Serious haggling over this price could be said to have begun at approximately the same time as the lot of the prisoners improved. We need not pick the bones of the subsequent negotiations; suffice to say that we eventually paid the asking price.

Perhaps the real tragedy is that the price we eventually came to pay in 1973, though cruel, did not differ too markedly from that we had been offered some three years earlier, the major consideration of both being that the United States undertake to remove completely its military presence from South Vietnam while the North Vietnamese were to be permitted to remain "in place" throughout the country.

Thus, while Mr. Stockstill and AIR FORCE Magazine were, self-admittedly, the prime motivators in effecting certain improvements in the conditions under which POWs were being held, it is also possible to argue that from the manner in which they ignited public opinion they could well have extended the period of captivity of all prisoners captured prior to 1970 by some three years. As well as introducing into captivity many who would never otherwise have become prisoners of war.

A harsh judgment? Perhaps. But consider, gentlemen, how gleeful and optimistic General Giap and his cohorts must have felt each time they read or heard of mounting demands in the US for not only

Airmail

better treatment for the POWs but also for their release.

Since Hanoi well understood that release as a consequence of a US victory was not among our intentions, release could, therefore, only transpire from a North Vietnamese victory. Furthermore, the victory Hanoi envisaged would not occur on the battlefield, but would emerge from the ultimate in peace talks which the United States would eventually be compelled to attend —though in a neutral area: Paris— when domestic pressures to end the war and bring the POWs home reached sufficient intensity. It would not, perhaps, be altogether unfair to remind the editors of AIR FORCE Magazine of the role, the well-meaning and, let me say it, the utterly sincere role, they indubitably played in bringing about that requisite degree of intensity.

Finally, gentlemen, though you agree with me that the war in Vietnam did not constitute a threat to US security—could either of us have absolutely guaranteed that, by the way?—you indicate in somewhat elliptical language that were the security and vital interests of the United States directly threatened then American prisoners of war might have to be considered expendable. Indeed they would. All of us who have worn the uniform in combat were well aware that we were expendable, should the national interest so demand. The knowledge that sustained us, however, was that, if need be, we would be grudgingly, sparingly, and purposefully expended, and to a worthy end.

I trust these amplifying comments will be received in the spirit in which they are intended, and that sensitivities will not be unduly abraded. I am not simply foaming at the typewriter, nor am I writing with any sense of malice whatever. It is, rather, that while I am an admirer for the most part of the pragmatism and professionalism of the publishers and editors of AIR FORCE Magazine, and have highest praise for the general quality of the major articles in each issue, there are occasions, happily rare, when the magazine does seem to me to reach beyond its demonstrated area of competence. Facts are what I look for and appreciate in technical and military journals, sentimentality and emotionalism in lesser publications.

Maj. Keith D. Young, USAF (Ret.)
Coronado, Calif.

From One Who's Been There

Gentlemen: It has repeatedly come to my attention since my return from North Vietnam that the Air Force Association has consistently been in the front rank of those who militated for humane POW treatment. Since this had an unmistakable beneficial consequence on my life, I am quite anxious to express to those concerned at local, state, and national levels my extreme thanks.

A member both before and after my capture, I view with great pride the leading journalistic role played by our magazine. I recognize exemplary leadership in the letter-writing campaign also. My wife Lynda, a hard worker herself, has told me of the marvelous cooperation of Mr. Arch Deal, local TV newscaster and Chapter head.

Capt. David F. Gray, Jr.
Treasure Island, Fla.

And a POW's Sister

Gentlemen: . . . Things were said (in "Surviving in Hanoi's Prisons," by John L. Frisbee, June issue) that had not reached the papers. I've only seen my brother (Col. Laird Guttersen) for three short visits since his return, and he is reticent about his stay in Hanoi, always speaking of the humorous episodes.

He was the official guest of honor at the Region II Toastmasters' Convention on the Queen Mary in Long Beach last June. Of course, he spoke on "Teaching Toastmastering to a Captive Audience"! Colonel Guttersen has a well-developed sense of humor. But it helps to know and understand him better to hear of some of the other side of his experiences, and I reckon he speaks of it only to military men.

I read the Code and had to read it twice to spot the "fine-print" words saying torture was illegal so if used they should make an effort to remain silent. Surely not all military men would have spotted that and interpreted it to read that no more than an "effort" was expected in such cases.

It makes it easier to understand why men who didn't appear to make any effort to withstand it were condemned by fellow prisoners. Yet, who is to say—perhaps for some even the thought of it was too much.

Mrs. M. Gates
Hawthorne, Calif.

Av Cadet Chevrons

Gentlemen: I am trying to complete a research project on the history of US Army chevrons. In conjunction with this work, I am seeking some information on the chevrons worn in the 1930s and 1940s by the Aviation Cadets and hope that readers might be of assistance. Specifically, I am trying to find out when these special chevrons were discontinued. Also, would like to borrow photographs showing some of these chevrons in use.

Any assistance would be greatly appreciated since various government historical offices have not been able to help on these two points.

Capt. William K. Emerson, USA
701 N. Grandview St.
Stillwater, Okla. 74074

The Search Goes On

Gentlemen: I refer to a letter from Maj. Joseph P. Nichols published in your May edition (p. 11) on my behalf. We received correspondence from many ex-USAAF personnel who each had something to offer but, collectively, no concrete evidence as to the identity of the pilot flying the P-40, tail number 4125181, shot down on the first raid against Darwin, Australia, on February 19, 1942.

I thought your readers may be interested in a summary of facts received, showing the fate of those ten gallant pilots of the 33d Pursuit Squadron who participated in this engagement:

Maj. Floyd J. "Slugger" Pell,

F-111 Photographer

The June 1973 cover photograph of an F-111 in flight, and the photographs on pages 26 and 27 of that issue, illustrating the article, "Whispering Death: The F-111 in SEA," were taken by Capt. Paul D. Sperry, a member of the 474th TFW who was with the F-111s at Takhli RTAFB. We regret that this information was not available to us when the June issue went to press.—THE EDITORS

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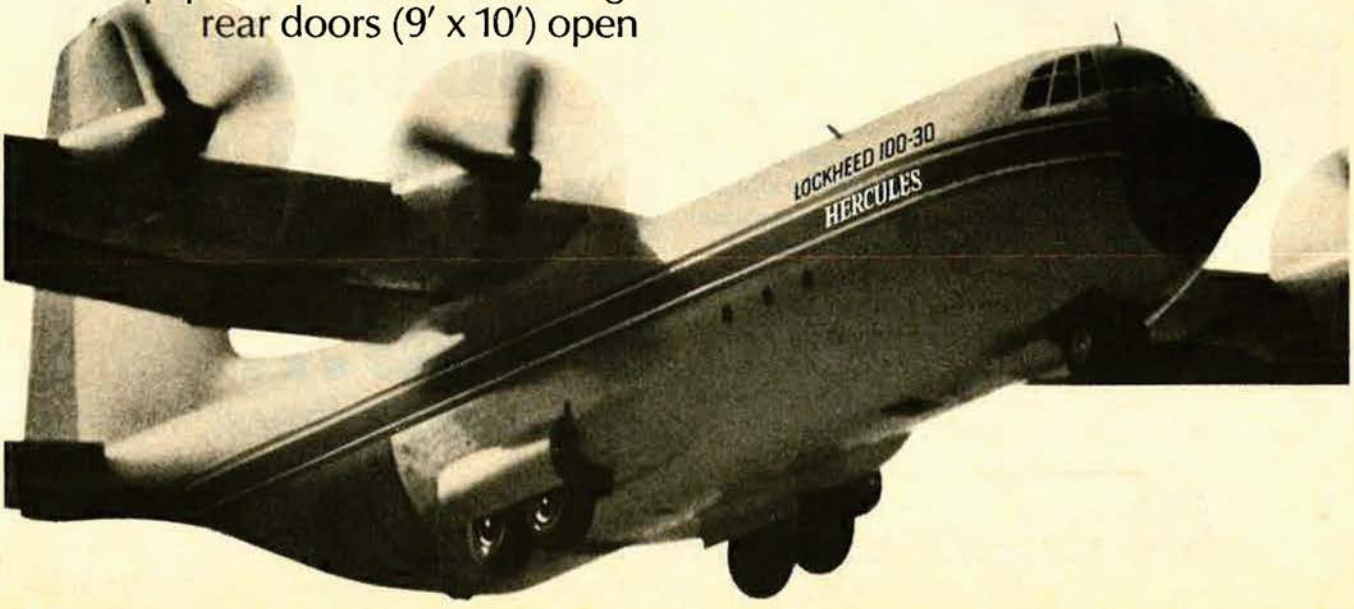

Airmail

Commanding Officer, 33d—shot down on takeoff. Killed.

Lt. Jack R. Peres—killed in action. Wreckage found, but not aircraft in question.

Lt. Elton S. Perry—killed in action. Crashed in sea.

Lt. Charles W. Hughes—shot down on takeoff. Killed.

Lt. Robert F. McMahon—injured whilst parachuting.

Lt. John C. Glover—crashed on field after engagement.

Lt. Robert G. Oestreicher—returned to field. Claimed first "kill" over Australia.

Lt. William R. Wiecks—bailed out over water. Rescued.

Lt. William R. Walker—returned after engagement. Aircraft strafed on ground and destroyed.

Lt. Burt H. Rice—bailed out. Injured.

From the above, we could surmise that 4125181 was flown by either Lieutenants Rice or McMahon. Incidentally, two wartime airfields were named after Pell and Hughes in the Darwin area.

My investigations are continuing with the Albert F. Simpson Historical Research Centre, and it is hoped, ultimately, to pin this aircraft to a particular pilot.

As a P-40 pilot who also flew in Milne Bay and Darwin in 1942, may I take this opportunity of thanking you, and through you, the many correspondents who responded to my request.

Gp. Capt. Ross H. Glassop, DFC
RAAF
Penrith NSW 2750
Australia

Calais Area

Gentlemen: I am working on a history of WW II in the Calais area.

I would be very grateful if I could get some information from American airmen who took part in the air raids over this area—about their missions over the port of Calais, the heavy-artillery gun emplacements along the Channel coasts, the radars, and the launching ramps of the V-1s and V-2s.

Would also like to hear from American airmen who were shot down near Calais and were POWs.

Robert Chaussois
La Voix du Nord
8, Place General de Gaulle
59023 Lille, France

Black Widow Buff

Gentlemen: I have been collecting photos and material on the Northrop P-61 Black Widow for many years. Also for years I've been trying to locate a Pilot's Handbook and an Erection and Maintenance Manual without any success. Attempts to locate these through the manufacturer, air museums and historical organizations all proved unsuccessfull.

Any help or suggestions that former pilots or crewmen could offer would be greatly appreciated.

I would also like to beg, buy, or trade for any photos, manuals, or mementos on the P-61.

Warren Thompson
7201 Stamford Cove
Germantown, Tenn. 38138

SCIENCE/SCOPE

A new technological approach to the display of airborne sensor information has been developed by Hughes human engineering specialists, working closely with the U.S. Air Force Aerospace Medical Research Laboratories. Called Helmet-Mounted Display (HMD), it uses a miniature cathode-ray tube and optical components inside the flight helmet to present a large, highly visible display to the pilot's forward field of vision when he glances downward. The image is generated by the electro-optical weapons and sensors aboard the aircraft. The HMD requires no cockpit instrument panel space.

An exciting longer term development of HMD technology is in progress at Hughes Research Laboratories, where scientists are employing the relatively new science of holography, a laser technology, to construct lightweight thin-film lenses which, although seemingly transparent, present a vivid TV image on the visor of the pilot's helmet.

A "man-in-the-loop" RPV strike mission simulator has been built by Hughes in a company-funded research project to evaluate the problems of remotely-piloted vehicles. These include video bandwidth, jamming, and vehicle steering. The man-in-the-loop provides critical target recognition and sensor pointing for weapon delivery and also enables a narrower bandwidth to be used, thus minimizing jamming. The complete system makes use of a TV chain, flying-spot image scanner, digital scan conversion, digital computer, analog converters, hybrid interface equipment, and operator and experimenter control station consoles. It can simulate the critical portion of the RPV strike mission, from the time the vehicle, cruising at low altitude, "pops up" to high altitude to acquire the target, until it delivers the weapon.

The FLIR (Forward Looking Infrared) subsystem for the U.S. Air Force B-52, built by Hughes for the Boeing Company's EVS (Electro-Optical Viewing System) night vision optics to upgrade the strategic bomber, recently completed its product reliability demonstration tests, exceeding the design goal of 140 hours mean time between failures by almost 68 percent. Hughes also makes the AGE (Aerospace Ground Equipment) sets which are stationed at SAC bases to assure the FLIR's combat readiness.

An imaging infrared guidance system for air-to-surface missiles like the highly successful Maverick is being developed by Hughes for the U.S. Air Force Avionics Laboratory. The new system will enable daytime missiles to operate at night by replacing their television guidance systems with imaging infrared guidance. First flight test unit, recently delivered to the Air Force for evaluation, met or exceeded acceptance specifications. The Air Force has also awarded Hughes an advanced study contract to increase the Maverick's target acquisition and launch range capabilities.

MARTIN MARIETTA AEROSPACE

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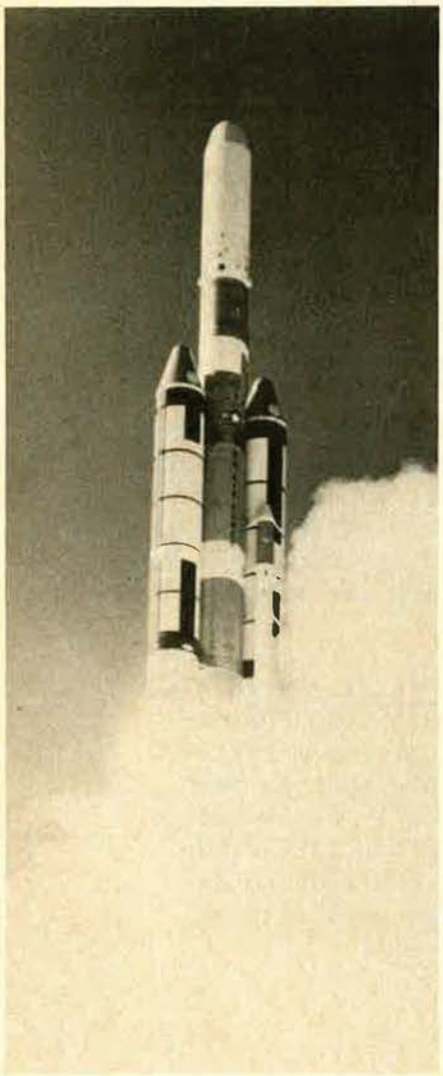

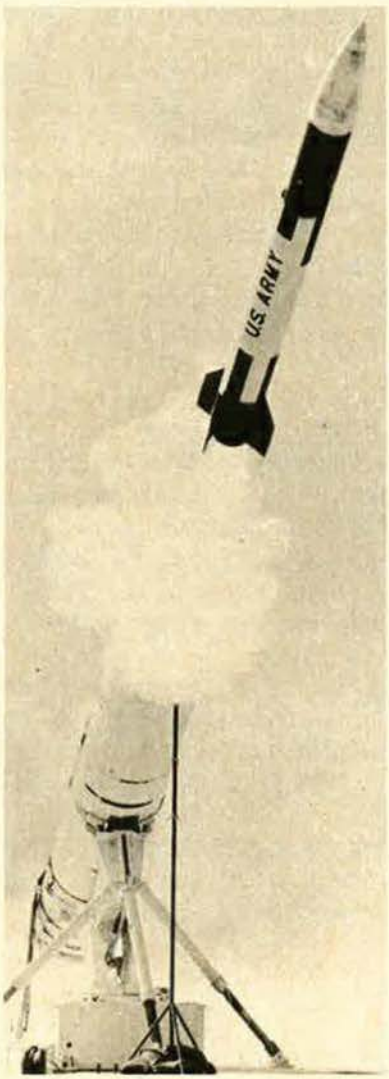

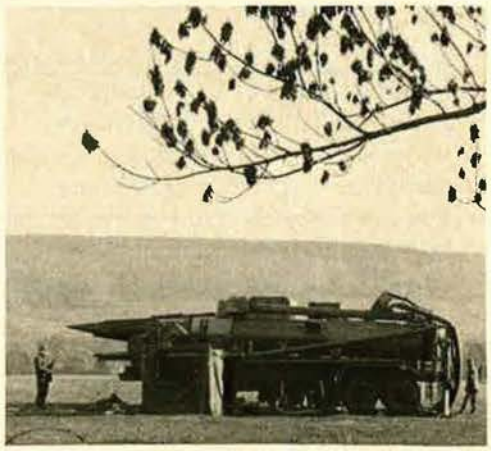

MARTIN MARIETTA

1800 K ST., N.W. WASHINGTON, D.C. 20006

Airmail

Battle of El Alamein

Gentlemen: A permanent memorial is being established in Enham Alamein, a small village in Hampshire, to set on record details of all units which took part in the great battle of El Alamein in 1942.

The church is to be extended, and it is the intention of the Appeals Committee to invite units to contribute to the cost of the extension, the Memorial Chapel, and internal furnishings on which their crest will be depicted.

The purpose of this letter is to ask help in tracing members of USAF squadrons that fought in the battle. It is appreciated that many have been disbanded during the last thirty years, but there may still be old comrades associations in being. We also need details of the squadron badges so that they can be incorporated in the Memorial Chapel.

It may be of interest that this village was renamed after World War II to commemorate the battle of Alamein, and the rehabilitation center for war wounded, started during World War I, has since expanded to become a thriving village community in which people with serious disabilities are able to work and live in comfortable and happy conditions.

We will be very grateful for any help.

Rev. L. S. Pettifer
The Rectory
Enham Alamein
Andover, Hants, England

401st History

Gentlemen: This is for World War II members of the 401st Bomb Group (H). The famous old outfit still lives! It's now the 401st Fighter Bomber Wing, flying Phantom jets for NATO.

They recently had their thirtieth birthday party. A group of our old friends around Deenethorpe, England, have organized to research and record for posterity the history of the 401st. They have already accumulated a great deal of data but have one major need: A copy of the 401st history book, long out of print.

If anybody has a copy he would like to contribute, please let me know. If you can't spare it now, how about putting it in your will? You're not getting younger, you know, and your grandchildren won't appreciate it as much as that loyal crew in England.

Brig. Gen. Harold W. Bowman, USAF (Ret.)
100 River Dr.
Tequesta, Fla. 33458

RPV Historical Record

Gentlemen: The recently organized National Association of Remotely Piloted Vehicles (RPVs) is compiling a historical document and picture file on airborne targets, drones, and RPVs.

Anyone having data, information, and/or pictures relating to this field is requested to send copies to the writer. Stories and anecdotes that can be used in our forthcoming

Airmail

News Letter would be welcome. A documentary or monographs on targets, drones, and RPVs is now being planned.

The data supplied will be made available to scholars, researchers, and persons interested in the field.

N. C. "Dutch" Heilman
Chief Historian
National Association RPVs
Mid-City Post Office Box 964
Dayton, Ohio 45402

Price Correction

Gentlemen: We appreciate your review of the latest edition of our *Observer's Book of Aircraft,* which appeared in your July issue. We must point out, however, that the correct retail price of this book is $2.50, NOT $1.50 as mentioned in your review. This $2.50 price has been in effect for more than a year.

Richard Billington

Frederick Warne & Co., Inc.
101 Fifth Ave.
New York, N. Y. 10003

UNIT REUNIONS

A-1E/H

The fifth annual A-1E/H reunion will be held November 2–4, 1973, at the Menger Hotel in San Antonio, Tex. Spads, Sandys, Hobos, Fireflys, Zorros, Downed or Rescued Crewmembers, and any other interested parties are encouraged to attend. Expect a flyer containing exact details later on. Send inquiries to

Capt. Jim Seith
103 Oak Circle
Universal City, Tex. 78148

Class 54-K

Any member of Pilot Training Class 54-K who is interested in a 20-year reunion, in June 1974, please contact

John S. McIver
Hughes Aircraft Company
Corporate Flight Operations
Centinela & Teale Sts.
Bldg. 25 M 127
Culver City, Calif. 90230

366th Tac Fighter Wing

The 366th TFW "Gunfighters" will hold their first annual reunion in Las Vegas, Nev., Nov. 2–3, 1973. All eligible officers should write for applications and reservation forms.

Gunfighters
P. O. Box 9783
Nellis AFB, Nev. 89110

Class 42-B

The 32d annual reunion of Aviation Cadet Class 42-B of Mather and Luke graduates is scheduled for the San Francisco area in February 1974. If we do not have your current address, send it, along with any other known "survivors," to

R. E. Monroe
24221 Elrond Lane
El Toro, Calif. 92630
Phone: (714) 640-1516
or
W. E. Radtke
Marsh & McLennan, Inc.
One Bush St.
San Francisco, Calif. 94104
Phone: (415) 981-1900

McGlinn & Robson

Please notify this magazine if you know the present address of former Maj. Richard M. McGlinn or former TSgt. Charles H. Robson. McGlinn was a B-29 pilot of the 395th Bomb Sqdn., 20th Air Force. Robson was his tail gunner. Both were based in Chakulia, India, and parachuted into Siberia after a raid on Japan August 19, 1944. Their Russian rescuer now wants to contact them.

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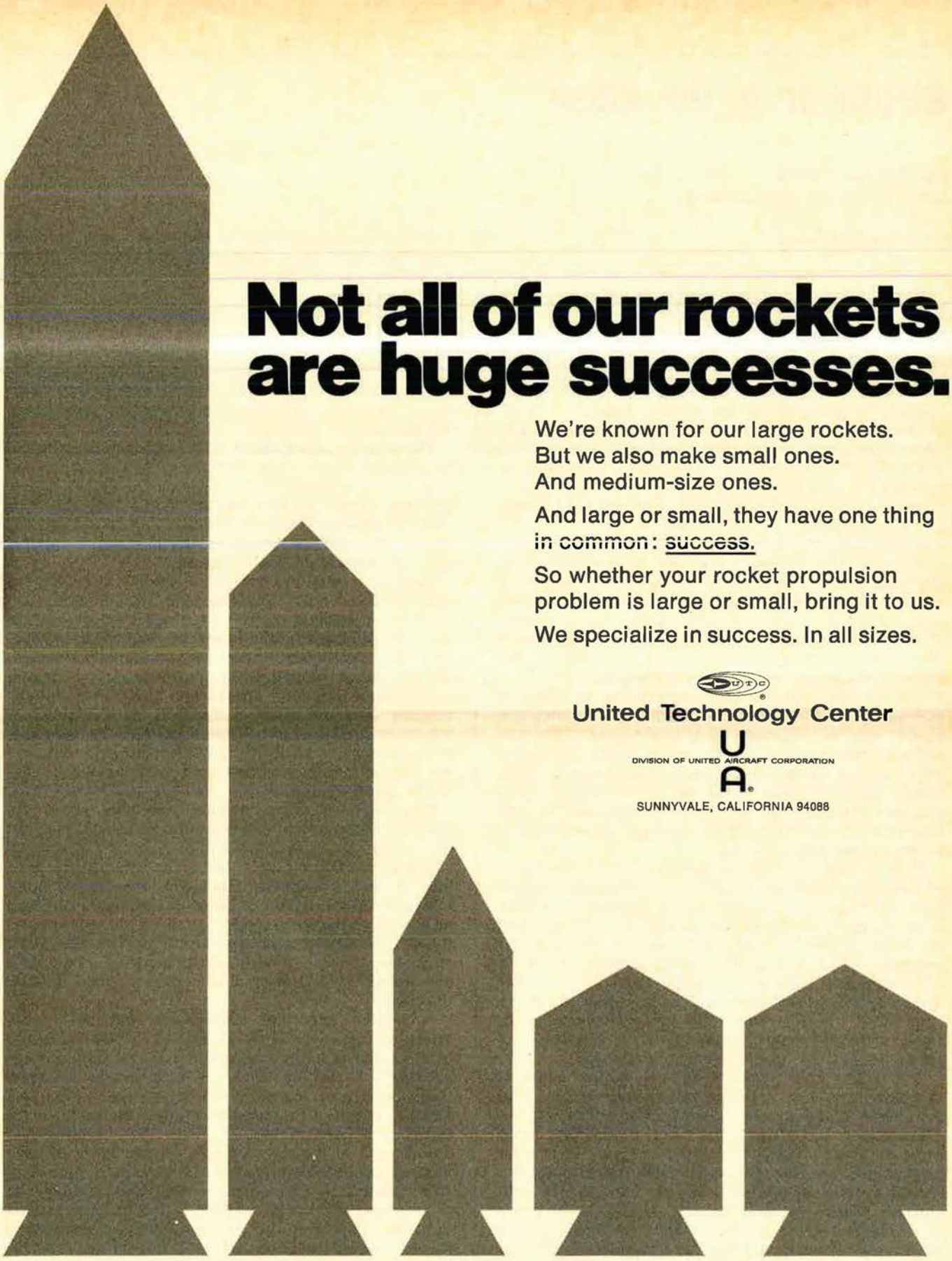

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UTC's variable thrust hybrid. Powered a high altitude supersonic target vehicle perfectly on its maiden flight.

UTC's FW-5, a 6,000 pound thrust apogee/upper stage motor. Successfully placed TELESAT Canada's Anik I satellite into orbit.

UTC's veteran FW-4, a 6,000 pound thrust apogee/upper stage motor. Has put 62 payloads on station in space.

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SUNNYVALE, CALIFORNIA 94088

Airpower in the News

By Claude Witze
SENIOR EDITOR, AIR FORCE MAGAZINE

It's a New Ball Game

Washington, D. C., August 9

It was only a few months ago, in this space, that we discounted the suggestion there would be a confrontation between the Congress and President Nixon this year over the issue of impounded funds. We were wrong. The Watergate scandal has overturned the prediction, just as it has made so many other assumed realities "inoperative" in the nation's capital.

As you know from reading the papers, there are still other showdowns in this new Washington atmosphere. There are White House tape recordings, the President's war powers, and the conduct of the war in Indochina—to name three of the most prominent—as the centers for confrontations.

At this writing, the bombing in Cambodia must end in a week. The Senate, by a vote of seventy-two to eighteen, and the House, 244 to 170, have approved a strict curb on the President's right to commit troops. Both have acted to restrict presidential impoundments of appropriated funds. In the House, there was a two-day debate on the subject, virtually ignored by the press in its entrancement with Watergate.

One of the real dangers looming as a result is that genuine reform of the way Congress handles the budget may be imperiled. Early in the year, there was optimism that the House and Senate would streamline their processing of the annual budget request. Now, some members sense a waning enthusiasm for this and fear the anti-impoundment bill may doom it. The optimists are confident a budget-reform bill will appear on the House floor this year.

More critical than any of these, from the viewpoint of persons concerned about national security, is the fate of the defense budget. At the moment, Congress is in recess. The House has spoken on authorization for procurement in Fiscal 1974, voting 367 to thirty-seven for a bill setting the ceiling at $20.5 billion. It will be autumn before the Senate takes action. After that, indications are there will be a wrangle of more than usual intensity when the two chambers try to settle their differences, particularly on the issue of efforts to cut our troop strength in Europe.

The quality of this year's defense budget problem is drawn clearly in both the House floor debate and the report of its Armed Services Committee on the authorization bill. During the floor discussion, there were at least a half-dozen efforts to cut or delete funding for specific projects. They were defeated. Amendments were offered to cut spending for the anti-ballistic missile by $125 million, to delete all funds for a fourth nuclear aircraft carrier, to delete $169.2 million from the authorization for the Navy's helicopter assault ship, to eliminate all funds for USAF's B-1 bomber, to cut the Trident submarine by $885 million, and for a limit on the number of military officers. The sponsors had no success, but a couple of important amendments did make it.

One of these, proposed by Rep. Les Aspin, a freshman Democrat from Wisconsin and member of the Armed Services Committee, is what fixed the ceiling at $20.5 billion.

Representative Aspin's reasoning is that what is bought for research and procurement in Fiscal 1974 should not be more than was purchased in Fiscal 1973. He reached his figure by adding 4.5 percent for inflation to last year's total. Requirements had nothing to do with it. The House accepted his suggestion, 242 to 163.

There is no doubt about it, the action was a defeat for the Armed Services Committee and its chairman, Rep. F. Edward Hébert of Louisiana. He was incensed, and the reason is obvious. Mr. Aspin was the lone member of Mr. Hébert's committee to vote against the bill as reported to the floor. And the House agreed with Mr. Aspin, not the committee.

Further, it was the first time since the procedure was set up in 1961 that the procurement authorizations recommended by the committee were cut on the floor. Cuts normally are made by the House Appropriations Committee and in conference with the Senate. Mr. Aspin capitalized on that situation by arguing that, if appropriations always are lower than authorizations, why not slash in the first stage instead of the second? The answer should be that the first committee is concerned with the military requirement, and the second has jurisdiction over total outlays for the entire federal budget.

The Aspin amendment thus illustrates again the need for Congress to improve its own budget machinery. Under the amendment, the Defense Department would administer the cuts, or decide where it wants to let the blood, in consultation with the Hébert committee. With the defeat of other amendments directed at specific weapon projects—such as the carrier and the B-1—it would seem the Pentagon has few veins it can tap, unless it wants to demonstrate how little the House of Representatives knows about military priorities.

A second important amendment that the House accepted appeared to be a decision to buy the lesser of a number of evils. In effect, the House turned down all efforts to cut by edict US troop levels overseas. It did accept an amendment directing the Armed Services Committee to prepare a report on troop levels before next year's debate on Fiscal 1975 procurement. This is one of the key subjects on which we already know there will be disagreement with the Senate. The Armed Services Committee on that side already has recommended a cut of 150,000 in the number of men stationed abroad. It also has recommended reductions in the Trident program and a $100 million slash in funds requested by USAF for the B-1 bomber. Both of these were left intact by the House.

One of the rejected amendments, offered by Rep. Otis Pike of New York, would have required foreign nations to pay proportionately as much as the United

Airpower in the News

States for national defense, in return for continuation of our policy of stationing troops abroad. The yardstick would be the percentage of Gross National Product spent on defense budgets.

A few days ago, a somewhat similar idea emerged in the Senate. Sen. Henry M. Jackson and Sen. Sam Nunn, fellow members of both the Armed Services and Government Operations Committees, said they intend to propose an amendment to the defense procurement bill when it comes up. Under their proposal, Congress will urge the President to seek agreements, bilateral or multilateral, to offset completely any balance-of-payments deficit incurred as a result of the deployment of US troops in Europe. If such agreements have not been concluded by the end of this fiscal year, then our troop strength will be reduced by a percentage figure equal to the balance-of-payments shortfall. If, for example, only seventy-five percent of the deficit is offset, our forces will be reduced by twenty-five percent; if the deficit is offset by ninety percent, our forces will be reduced by ten percent.

The Jackson-Nunn amendment also will identify areas in which our allies should increase their contributions. They will include facilities, installations, and recurring expenses now assumed by the US in Europe. Further, it will call on the President to make periodic reports on the effort, which will be monitored by the Armed Services Committee.

Turning back now to the authorization bill as recommended by the House Armed Services Committee and sent to the floor on July 18, there are signs of a disagreement on the key issue of our contributions to NATO.

"Some claim that the United States provides more than its equal share to NATO," the report says, "but it must be recognized that our NATO allies provide ninety percent of the total manpower, eighty percent of the ships, and seventy-five percent of the airpower of the alliance. In terms of men and equipment, the committee believes the US contribution is not excessive."

However, it is money that butters the parsnips, a fact that has resulted in dismal reports on the US trade deficit and the value of the dollar. Mr. Hébert's committee recognizes this and a year ago recommended the establishment of a NATO common fund to absorb or balance out any deficit due to military deployments. Contributions would come from the nations enjoying that butter on the parsnips—a balance-of-payments windfall because US troops are in their country. Nothing has happened about it, and the committee again is urging the program be adopted.

This year's authorization report runs 150 pages, the longest in House memory. Contributing to this is an unusual section on cost escalation. It includes summaries of two studies on the subject, by the General Accounting Office and the Department of Defense.

GAO centers on two principle causes of cost growth. One of them is that improved performance is expensive. The money that bought 100,000 fighter aircraft in World War II, when adjusted for inflation, would buy fewer than 1,000 F-14 fighters today. The money that bought 57,000 tanks would buy fewer than 2,000 of today's design and capability. What GAO calls "acquisition management" is the other cost-growth

The Wayward Press

On July 30, the Department of Defense made a statement about its counterespionage programs in West Germany. The same information was given to all interested newspaper and wire services.

The next morning, July 31, this headline appeared in the Washington *Post:*

Army Admits
West German
Spy Activity

On the same morning, this headline was in the New York *Times:*

U. S. Denies Spying
In West Germany

Which newspaper dyaread?

* * *

Of all the almost unbelievable things coming out of our war effort in Cambodia, one of the most amazing was the press reaction when Air Force Secretary Robert C. Seamans, Jr., told a Senate committee he did not know about some 3,630 raids secretly carried out by his Air Force. The newspapers were aghast. Their editorials spoke of this "sordid history" and called the action "immoral, unconstitutional, and deceitful." The ranting went on for a couple of weeks.

Well, the Department of Defense has a fact sheet, distributed to Pentagon press correspondents, including those who were not there in 1958. The fact sheet discusses, freely, the terms of the Defense Reorganization Act of 1958. It says, loud and clear:

"The new legislation increased still further the responsibilities of the Secretary of Defense, particularly in the operational direction of the Armed Forces and in the research and development field.

"A new chain of command was established running directly from the President and the Secretary of Defense to the unified and specified commanders who were given full operational command over the forces assigned to them."

A television correspondent assigned to the Pentagon complained that, although this was the law and recognized as such, the public, he declared, "does not know it." He was indignant when it was suggested that this fact, possibly, was the fault of the media, not of the Department of Defense. The key question may be: Does the press read the fact sheets?

villain. Competition is a factor here. Both contractors and the services are motivated to accept low cost estimates. Requirements are unrealistic. There are the "unk-unks," or unknown-unknowns, and the evil of "buying in." Inflation accounts for a thirty percent growth.

The Defense Department, in its analysis, argues that the cost of weapons has not been a major contributor to growth in the budget. It is true the Pentagon outlay has gone up $28.2 billion in the past ten years. But $27.2 billion of that goes into pay and operating costs, only $1 billion into real investment—procurement, RDT&E, and construction.

DoD also says cost overrun charges are distorted and misleading. The recent allegation that they amount to $35 billion, should be $16 billion, the Pentagon says. It contends that current all-time cost estimates are up seventeen percent above the development estimates, made since the early 1960s for programs extending into the 1980s. About half of these involve amounts never requested of Congress, and some never will be incurred. Inflation is lowest where Defense does its shopping; it is highest in wages and operating costs.

The Hébert committee's key reactions to the cost situation are that Congress should have more data on the escalation factors and that it should get involved at an earlier point in the decision-making process. There is a plea for more candor.

The normal format of the report is followed for discussions of specific weapon systems and other expenditure areas. The $20.5 billion ceiling chosen by Mr. Aspin and approved by the House is $950 million less than recommended by the Armed Services Committee and $1.5 billion less than requested by the Administration. For comparison, the request for Fiscal 1973 was $23.3 billion, and Congress authorized $20.9 billion, a cut of $2.4 billion. The amount finally appropriated was $19.6 billion, $3.7 billion less than the Pentagon wanted. Thus, the pattern set indicates there will be further, possibly more drastic, slashes.

Of key interest to the Air Force among changes made by the Armed Services Committee are these:

• Funding for the McDonnell Douglas F-15 fighter was reduced from $918.5 million to $587.6 million. The authorized buy is cut from seventy-seven to thirty-nine. The committee ordered the slowdown because of difficulties with the Pratt & Whitney F-100 engine, and indicated it will reconsider when test results are known. *(For another view of the F-100, see p. 54.)*

• The committee denied a USAF request for $9.6 million to buy sixteen attaché aircraft. This is the CX-X, approved last year with the recommendation that USAF and the Army make a common buy to effect savings. There has been no agreement between the services on which off-the-shelf airplane will be selected, with USAF seeking a higher performance level than the Army. The Army was given a green light for procurement of twenty turboprops. USAF got no authorization.

• An authorization request for $43.1 million to complete funding of the Lockheed C-5A program was cut $5.9 million to $37.2 million. The committee says that is enough for the year's requirements. The report acknowledges that the C-5A, in operation with the Military Airlift Command, "continues to assure the balanced and effective deployment for manpower and materiel."

• The report reduces the Air Force's proposed Lightweight Fighter prototype program by $6.5 million, from the $46.5 million requested, to $40 million. This is an R&D project. One of the engines involved again is the Pratt & Whitney F-100. The committee recommended a slowdown, as with the F-15, but said it would consider reprograming if the engine problem is resolved.

• Authorization for the Airborne Warning and Control System (AWACS) is reduced by $42 million, leaving a net authorization of $155.8 million. USAF had requested $197.8 million, for continued development. It was made clear that the committee continues to support the concept, despite frequent attacks on the project. New, previously unscheduled tests and evaluations in the European theater made the reduction practical at this time, the report says. Boeing is prime contractor.

• The committee did add something to the authorization request. It is $172.2 million for the purchase of a dozen General Dynamics F-111 aircraft. The funds are available only for that project. Nobody has pointed it out in the daily press accounts, but the House authorization report almost ignores the Air Force's B-1 bomber program. There is a brief reference on page fifty-five of the report to its penetration capability and the fact that it is scheduled to fly in 1974. The funding, a request for $473.5 million, was approved without comment.

The subject is worth expansion.

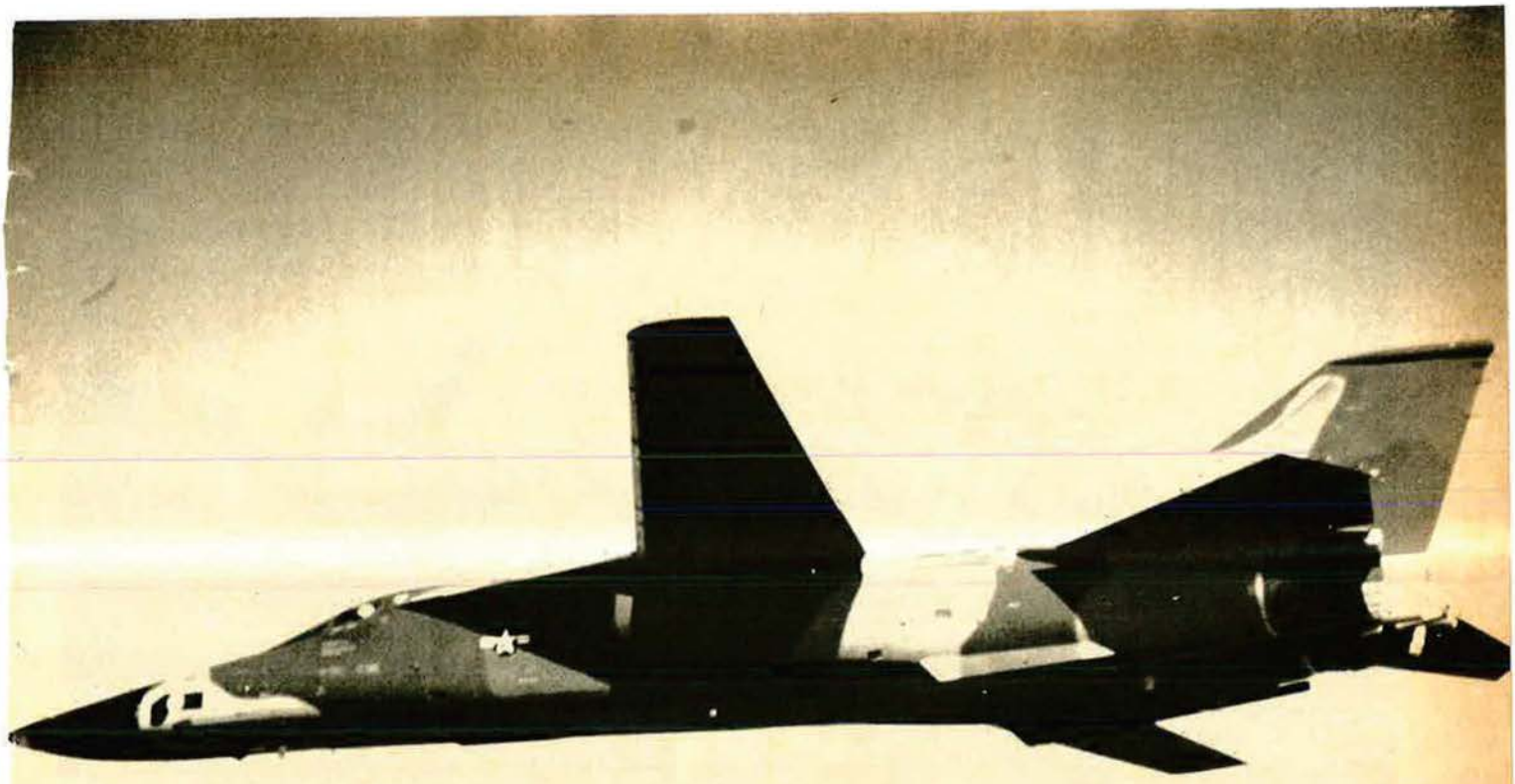
The House Armed Services Committee is amazed that the Administration proposes letting the F-111 production line pass out while continuing the A-4, A-6, A-7, and the F-4. All the technologies involved are older than those incorporated in the F-111. Said the committee:

"The majority of the committee arrived at the conclusion that we might be creating an unnecessary problem for ourselves by blindly accepting the strategic bomber schedule of the Department of Defense. It seemed that a simple solution to the whole problem would be to preserve the alternative that is found in the F-111. That production line is the only existing bomber source in the free world today. The F-111 is the only tactical aircraft we have that can be converted to a strategic aircraft, the FB-111, with minor modifications."

This decision, to keep the F-111 line open, was in contradiction to a Pentagon determination to close it out. The Defense Department lost on a second test. This was the rejection, by the committee, of a proposal to develop a cheaper jet fighter to replace both the Air Force F-15 and the Navy's F-14. The report says the committee received expert testimony indicating no money would be saved.

There were other committee decisions of major importance in view of the defense budget debate that will rage this fall:

• Funds for the Safeguard antiballistic missile were cut by $50.7 million, leaving a net authorization of



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$350.3 million. This should almost pay for completion of the Safeguard site at Grand Forks, N. D., which is scheduled to become operational in this fiscal year. It is the only ABM that the US will build.

• The committee recommended full authorization of the Navy's request for $783.2 million to complete five nuclear attack submarines. It gave warm endorsement to the new Trident submarine program and approved an authorization of $1,527.4 million. On the other hand, it favored a cut of $149.9 million in the Navy's authorization for conversion of five submarines from the Polaris to Poseidon missiles.

• The Navy was voted $79 million it did not ask for, to provide long lead-time procurement for two nuclear frigates. The committee wants this program speeded up.

• USAF's Subsonic Cruise Armed Decoy (SCAD) almost got deleted entirely. The request was slashed from $72.2 million to $22 million. The money is to pay for work on new technology that will result in a system to replace SCAD. The committee says it is not convinced the original SCAD concept ever would produce an effective decoy.

The subject of the Defense Department's manpower problem is discussed at length. The committee would authorize a year-end military strength of 13,037 fewer personnel than requested by the Pentagon. The new total would be 2,219,865. Of these, the Air Force would have 665,963, the Army 791,627, the Marines 196,363, and the Navy 565,912. This will be the smallest military establishment since the Korean War, and 1,325,000 fewer men in uniform than we had at the height of the war in Vietnam. Further reductions, the committee says, "can only be justified by reducing foreign policy commitments."

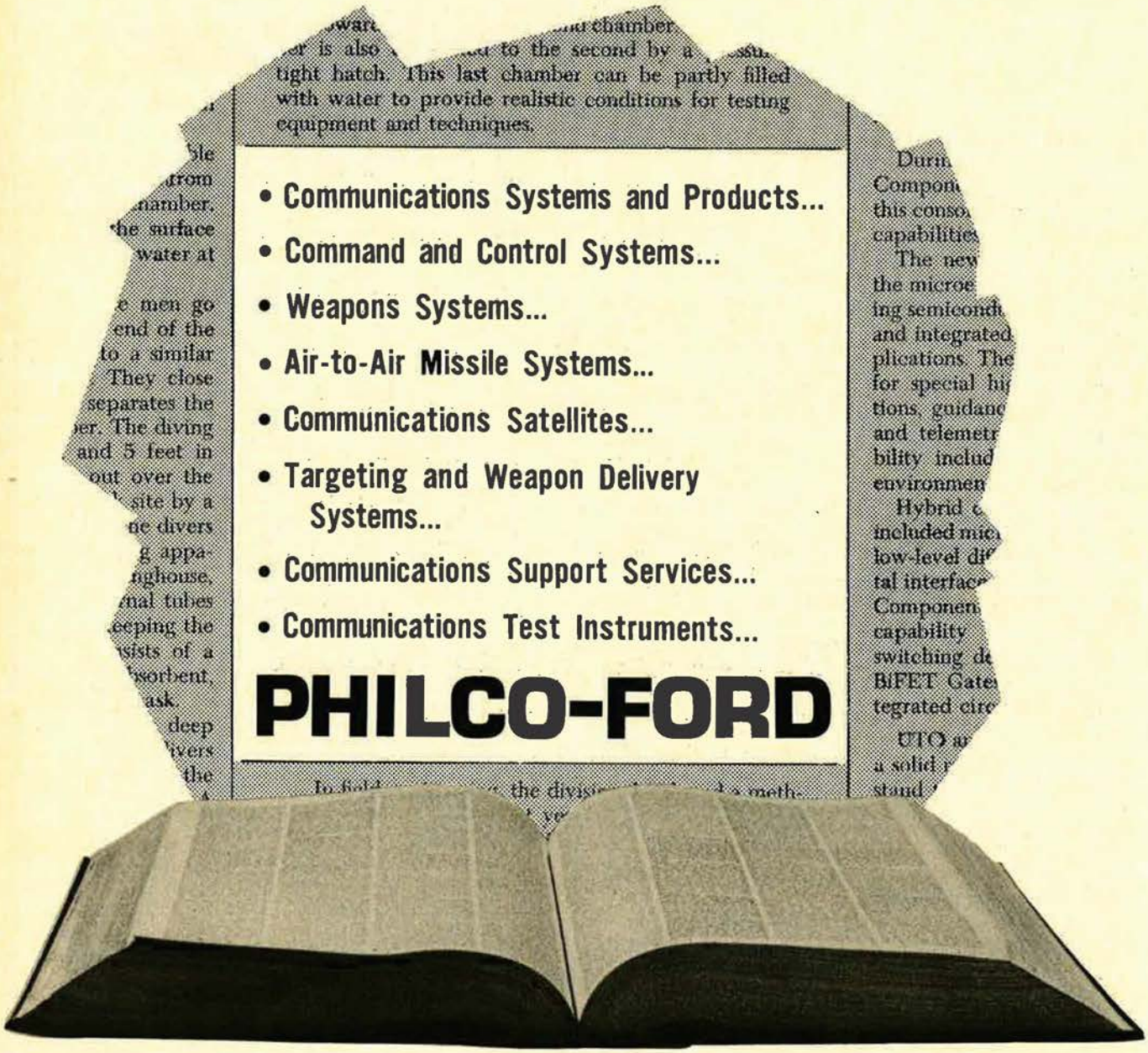
Contributing to the unusual length of this year's authorization report are the dissenting opinions filed by Congressmen Ronald V. Dellums, Robert L. Leggett, Les Aspin, and Congresswoman Patricia Schroeder. As pointed out, Mr. Aspin was the only one to vote against the bill in committee.

In general, the dissenters are opposed to the Trident submarine program, arguing that the Navy has plenty of underwater strength and is not in any urgent race with the Russians. They argue it is not plausible that Moscow can develop a preemptive strike capability. They would kill Safeguard because any expenditure in this area is "so much money down the drain."

A third innovation in this year's report is a section discussing the spin-off from defense research and development that benefits the civilian economy. Out of the almost endless list, the committee cites such things as the radio transistor, German measles vaccine, the jet engine, and improved materials. All came out of research efforts aimed at a military requirement.

The committee recommended authorization of $8.3 billion for RDT&E. A few cuts were made, but none that would hinder the effort to maintain "a technological base which is superior to that of potential adversaries." ■

"WHO'S WHO" in...



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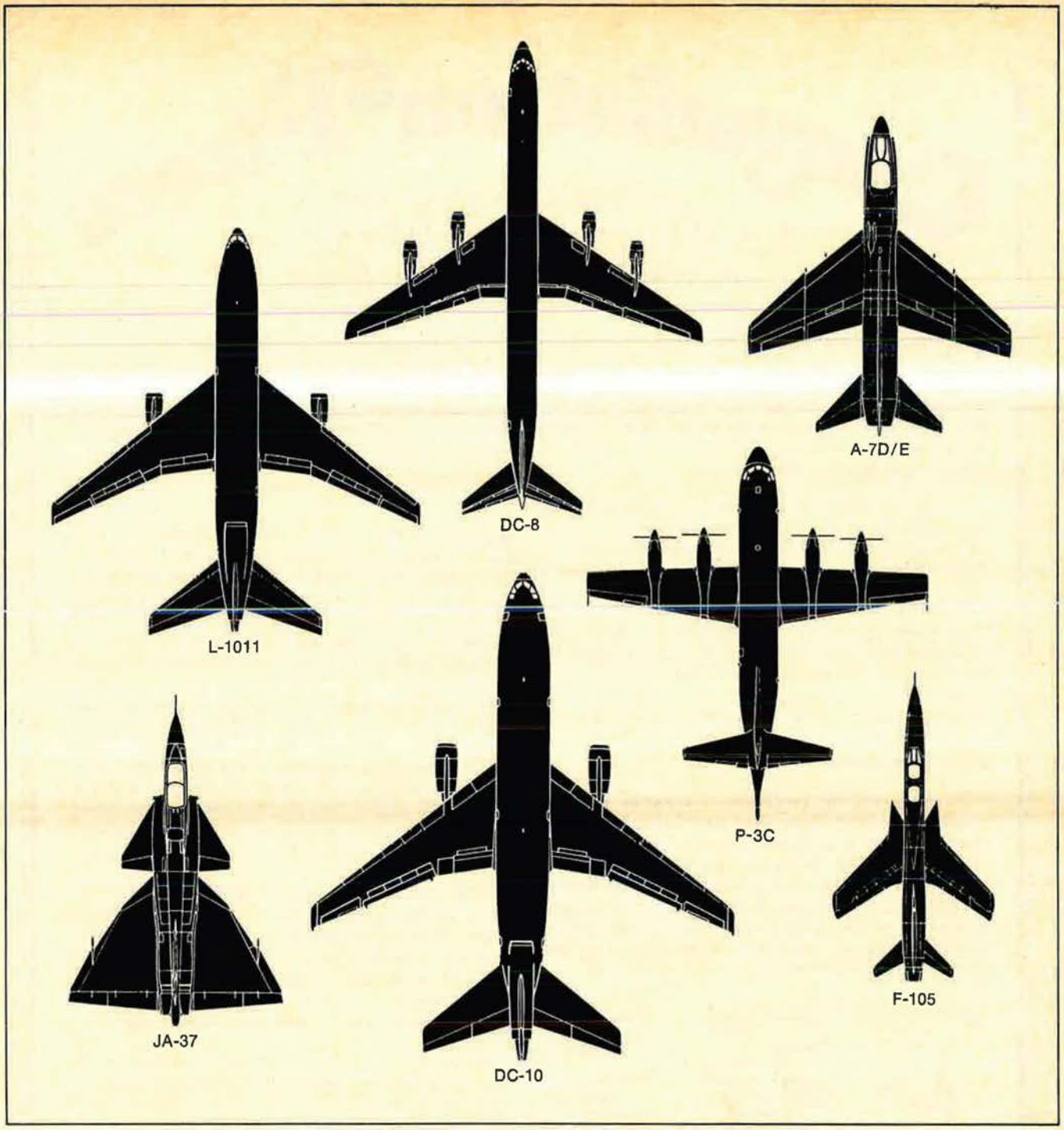

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Conversation Pieces

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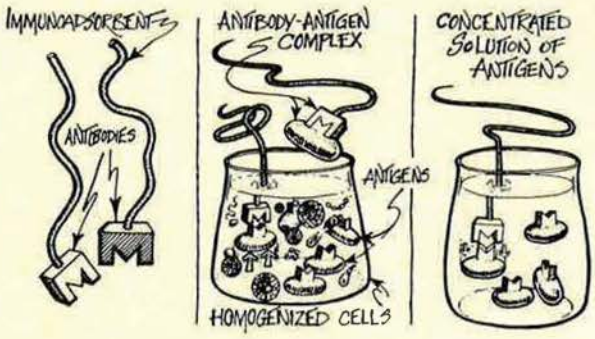
Disarming a Virus You, a teenager with mononucleosis, and an African girl with a cancer called Burkitt's lymphoma have one thing in common. Your cells very likely contain a "living molecule" called the Epstein-Barr virus (EBV). But you are in no danger, the teenager will recover from a long and exhausting illness, and the African child may die. Why?

Viruses and cancer are frequently associated, but we don't know much about their exact relationship. Is cancer caused by the virus or by a combination of factors? What makes people react differently to the same virus?

We know that when an organism fights disease it produces antibodies which travel through its bloodstream combining with and deactivating the foreign chemicals, called antigens. But antigens are not only viruses or virus products. The virus-transformed cells themselves make antigens which can cause or contribute to their destruction. When cells are invaded by EBV, five different antigens may be formed.

To best study the properties of antigens, we must separate them from all the other materials found in cells. One way is to use immunoadsorbents, long-chain molecules to which EBV antibodies have been chemically attached. EBV-infected cells are homogenized and the immunoadsorbent is immersed in the mixture. The antigens cling to the antibodies and when the immunoadsorbent is removed, the antigens come with it. The antigens are then freed from the immunoadsorbent and concentrated.



Scientists at the National Cancer Institute hope to isolate EBV antigens and those of other cancer-associated viruses. These antigens could be used to produce serums which would be catalogued and stored in a serum bank. Each serum would contain the antibody to one specific antigen.

TRW researcher Dr. Norman Weliky has been perfecting the immunoadsorbent technique for the National Cancer Institute. His group has prepared a highly purified serum against a mouse leukemia virus, and is now working on EBV-associated antigens. Their work is a small but important step toward the solution of the cancer-virus mystery.

Boomerang Have you ever considered how many hazardous chemicals get into our environment via their containers alone? Paint residues left in the cans and carted to your local dump add 32,700 pounds of mercury, 4.4 million pounds of lead, and 1 million pounds of chromium to the earth and water each year. And what about the packages that held pesticides like dieldrin and herbicides like 2,4-D? How do you clean the solvent that washed the can that contained the powder that killed the bugs that ate the wheat that farmer Jack grew?

The Environmental Protection Agency realized that we don't know enough about hazardous chemicals and their disposal. For instance, mankind has been using the oceans as an ultimate disposal site for centuries without knowing the effects of waste materials on the ocean environment.

TRW Systems was asked to help. In a year of investigation we have compiled and studied a rouges' gallery of over 500 chemicals which are highly toxic, persistent, extremely flammable or explosive, or radioactive. We have also recommended ways of dealing with these ecological menaces, usually by breaking them down completely or isolating them from the environment.

Waste can be like a boomerang; you think you've thrown it away, but it returns, sometimes with destructive force. TRW is working with the EPA to improve waste management techniques in the United States. You should go to the dump, but the dump shouldn't come back to you.

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Aerospace World

News, Views & Comments

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

Washington, D. C., August 14

For us here on earth, the impression of the second manned Skylab mission orbiting overhead is that of a combination three-ring circus and zoo.

Nothing derogatory meant, of course. "Circus" in the sense that something seems to be going on every minute, with the simplest tasks having acrobatic aspects, as Skylab's team of astronauts performs in the weightless environment.

As for the "zoo," a sizable menagerie is accompanying Marine Corps Maj. Jack Lousma, Dr. Owen Garriott, and Navy Capt. Alan Bean on their multimillion-mile journey: an aquarium of fish, a swarm of vinegar gnats, a half-dozen pocket mice, and an uncommon pair of household spiders.

The spider experiment—as with the other tiny creatures—observing how they handle weightlessness and other space phenomena, is one of twenty-five experiments selected for Skylab by NASA from more than 3,400 suggestions submitted by high school students throughout the nation. It came from seventeen-year-old Judith S. Miles of Lexington, Mass.

At one point, Garriott commented on the activities of "our friend Arabella," one of the spiders: "She's got a very unusual web spun around all four corners of the box, with some stringers even from corner to corner. She had to do a lot of improvising, but she got her net out anyway and she's currently standing by waiting for some prey to float by."

All this is not to suggest that these experiments, part of sixty scheduled for the mission, have any less scientific weight than others of a more technical nature. During the fifty-nine-day mission, the astronauts expect to garner a wealth of data, much of it heretofore unobtainable. In so doing, they'll also break a bunch of records—such as distance traveled and time spent in space, to name two.

At New York's Seventh Regiment Armory, Brig. Gen. Slade Nash, left, immediate past Deputy Director of AF Information, congratulates Col. Robert P. Keim, President of The Advertising Council, on his recent retirement from the Air Force Reserve.

☆

In the July issue, we carried an article by Royal Netherlands Air Force Col. Arie de Jong describing the recovery from the Zuider Zee of aircraft lost during World War II.

Now word has come that the only RAF Halifax bomber known to exist has been salvaged from a Norwegian lake.

The heavy bomber—a type built by Handley Page and a mainstay of RAF's Bomber Command during World War II—was shot down in April 1943 during an attack on the *Tirpitz,* a German battleship seeking sanctuary in a Norwegian fjord.

When the aircraft was forced to crash-land on Lake Hoklingen—still frozen at that time of year—the crew was assisted by the Norwegian resistance in escaping to Sweden. Next day, the aircraft's weight sent it through the ice to the lake bed some ninety feet below.

A Norwegian skin-diving club discovered the Halifax, said to be in extraordinary condition, and RAF divers helped retrieve it. The operation of bringing the aircraft to shore was accompanied by music volunteered by a local school band (the Norwegians have long memories where their World War II British allies are concerned).

With Norwegian government permission, the great bomber is to be ensconced in the air museum at Hendon in Britain. USAF Museum Curator Royal Frey please note *(see p. 134).*

☆

Eddie Rickenbacker

Racing driver, war hero, airline pioneer, business executive—all these careers and more were what Edward Vernon Rickenbacker crowded into his varied and extraordinary life.

Born Edward Reichenbacher in Columbus, Ohio, on October 8, 1890, Rickenbacker throughout his life seemed to typify the "can do" spirit of the America in which he thrived.

He had already made a name for himself as a racing driver when the US entered World War I. Eddie began the war as Gen. John J. Pershing's chauffeur—and ended it as America's legendary "Ace of Aces," a fighter pilot credited with destroying twenty-one German aircraft and five balloons.

Following the war, Rickenbacker helped produce an automobile that bore his name, but the company went bankrupt in 1927, leaving him a quarter of a million dollars in debt. Undaunted, Captain Eddie worked his way back into solvency and got into the racing business again with purchase of the Indianapolis Speedway, which he managed until 1945.

Asked by General Motors Corp. in 1934 to take charge of a red-ink subsidiary—Eastern Air Lines—Rickenbacker did just that, and soon had Eastern earning a profit. In the late 1930s, he raised $3.5 million and bought Eastern, which he was able to keep in the black until the '60s.

Critically injured in an Eastern

airliner crash in February 1941, Rickenbacker fought off death and was ready to serve his country the following December when World War II engulfed America.

Soon after, the B-17 carrying Eddie on an inspection tour of bases crash-landed in the Pacific, setting Rickenbacker and his party adrift in rafts with almost nothing to eat or drink. The ordeal lasted twenty-one days, and by shear guts he kept himself and six of the other seven men alive. One died of injuries.

In the years since, he remained active, controversial, and deeply patriotic.

Although Rickenbacker had escaped death many times, the end finally came for him on July 23, when he succumbed to a heart attack in a Swiss hospital. He was eighty-two.

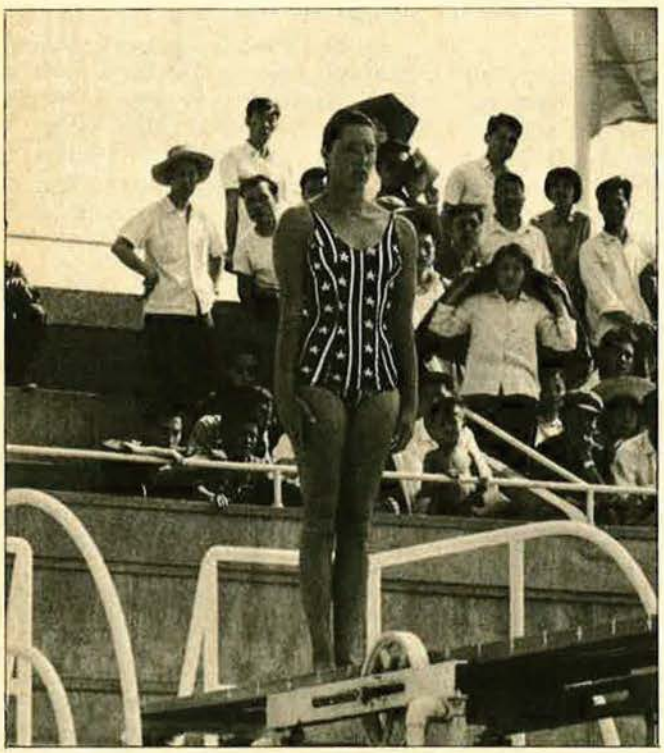
☆

Joe E. Brown

Another singular man, comedian Joe E. Brown, died on July 6 in California. He was eighty-one.

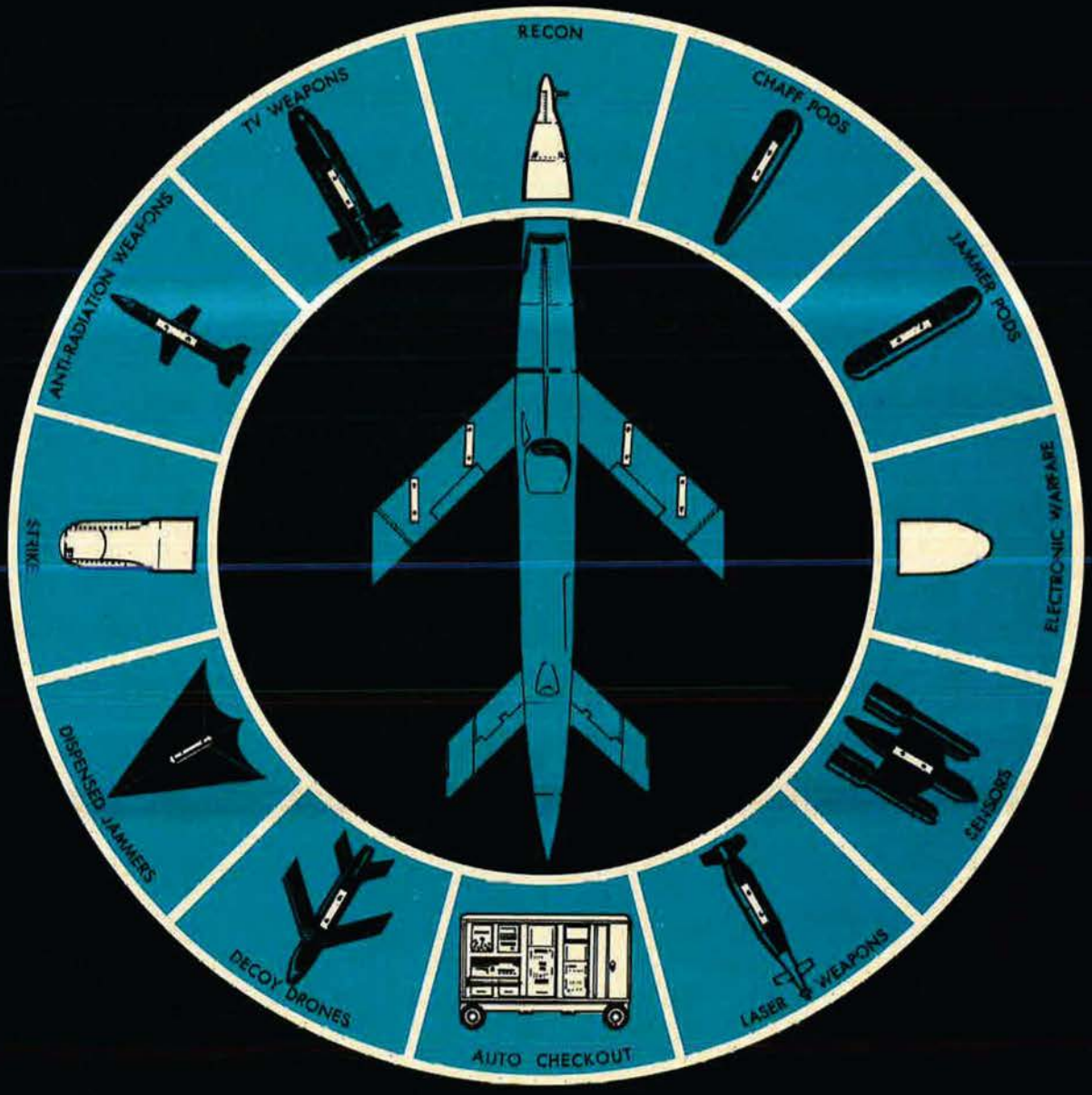
His career spanned the entire

Under test is the "Mini-Copter," being developed for the Naval Air Development Center by Aerospace General Co. One version folds into a bomb-shaped container for air-dropping to downed pilots. It can be assembled without tools. Other uses are foreseen.



USAF's 1972 Olympic diving gold medalist Capt. Micki King is poised to make a dive in Peking. She and eight other swimmers and divers recently toured the People's Republic of China.

A replacement for Det. 9, 39th Aerospace Rescue and Recovery Wing, Zaragoza AB, Spain, as a Bell HH-1H Huey hovers over an HH-43 Huskie, which is being phased out of the unit.



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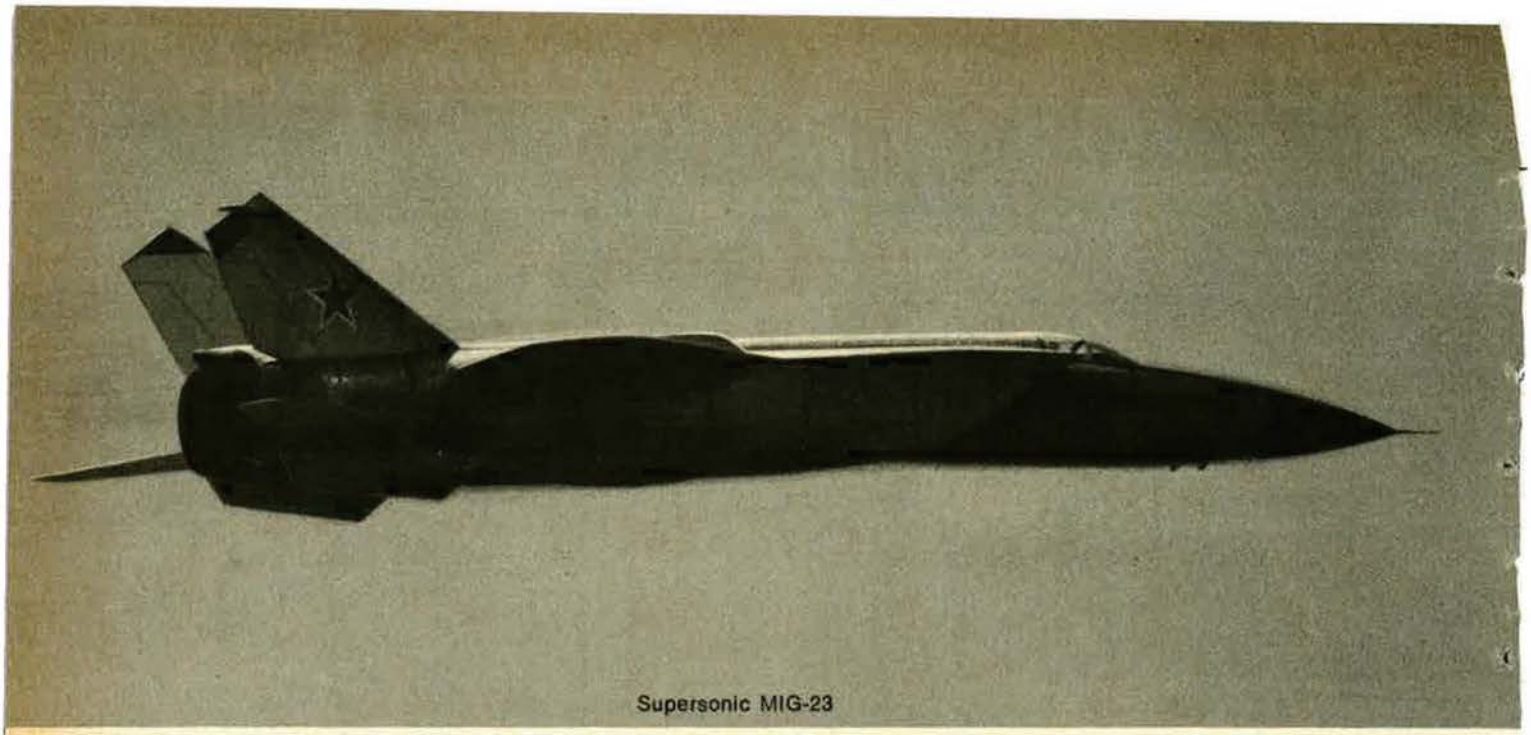

Supersonic MIG-23

Supersonic BQM-34E/F—Newest U.S. jet target

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modern history of entertainment in America, from appearances at carnivals, to burlesque, silent films and talkies, the stage, and television. Brown was even a big-league ballplayer in his youth. He last entertained at Las Vegas, mecca for today's big-name celebrities.

But behind his clown's mile-wide smile, Brown was a thoughtful and sensitive man—characteristics that were reflected in a lifetime of humanitarian acts.

Following the death of his son in a military plane crash in 1942, Joe devoted himself to entertaining US servicemen at home and abroad. "Whenever we got to some remote outpost," a fellow USO veteran recently related, "we were told that Joe had already been there—alone."

For deeds such as this, Joe E. Brown was the recipient of many honors, including the Bronze Star. He was an Honorary Life Member of AFA and the holder of an AFA Citation of Honor.

☆

The Navy's "Blue Angels" precision flying team has canceled its schedule for the remainder of 1973 following the midair collision on July 26 that killed three flyers. A fourth man was hospitalized. The tragedy is the latest in a string of mishaps that has proved costly to US military demonstration teams. *(See May 1973 issue, p. 27.)*

A Navy spokesman said that the accident occurred while four Blue Angel F-4 Phantoms were flying in formation near the Lakehurst Naval Air Station in New Jersey. The formation was engaged in a slow role—a routine but nevertheless delicate aerial demonstration team maneuver—when apparently two of the aircraft collided and exploded.

The Blue Angels have been hard hit this year, having lost four other aircraft—with, thankfully, no fatalities—in previous crashes.

☆

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MAXWELL A. KRIENDLER

The Air Force Association is young as organizations go, and time has thinned its ranks but little. Hence, when any stalwart falls he leaves a bigger than ordinary gap. The phenomenon is compounded when the man himself is extraordinary—when he is Mac Kriendler.

Maxwell Arnold Kriendler died in New York City's Mt. Sinai Hospital on August 7, 1973. He had been grievously ill with cancer for the past two years, although the proximate cause of death was pneumonia. He was sixty-five.

Those are the bare statistics. Behind them lie a complicated, warmhearted, generous person who gave more to each of the three enthusiasms in his lifetime than the average man is able to devote to one.

Enthusiasm number one—his business life, in which family, social, and personal relationships were inextricably entwined. It centered around the best-known restaurant in the country, the "21" Club, at 21 West 52d Street in New York—an internationally known watering place that began as a speakeasy, under the aegis of Mac's late brother, Jack Kriendler, and their cousin, Charlie Berns. Mac joined "21" in 1929, following graduation from St. John's Law School, and served as its president from 1947 to 1955. In that year, he moved next door as president and treasurer of 21 Brands, a liquor distributor and importer of, among other fine spirits, Ballantine's scotch and Hines cognac. He later served as chairman of its board.

Enthusiasm number two (only Mac could have said what should be the proper order)—the United States Air Force. The "21" Club is full of souvenirs of the Air Force, in which Mac rose to the rank of lieutenant colonel during World War II, being discharged in 1945 as chief of management control, Eastern District, Air Technical Service Command. He remained active in the Air Force Reserve and retired as a colonel in February 1968. Associated decorations include the Exceptional Service Award, highest civilian decoration of the Air Force, Legion of Merit, and Air Force Commendation Medal.

Enthusiasm number three—the Air Force Association, including AFA's Aerospace Education Foundation, the Iron Gate Chapter of New York, and the Annual Air Force Salute, sponsored by the Chapter. His service to AFA was endless and tireless. He was the first President of the Iron Gate Chapter when it was chartered on September 21, 1961. That same year he was elected to AFA's National Board of Directors, on which he served until his death, excepting only the years 1964–66. His tenth term in 1972 made him a permanent member of the Board. For nine years, beginning in 1965, he was a member of AFA's Finance Committee. He received AFA's Medal of Merit in 1961 and its Exceptional Service Plaque in 1962. In 1964, Mac was named AFA's "Man of the Year."

Also in 1964, he became a member of the Board of Trustees of the Aerospace Education Foundation, on which he served until his death. In 1966 and 1967, he was Treasurer of the Foundation.

Mac Kriendler—genial host, successful businessman, devoted Air Force officer, dedicated AFA leader—but most of all a generous and unselfish friend. His life was so full because he was so full of life. He will be missed but never replaced. —J.F.L.

Aerospace World

told of an application that extends life itself.

About the size of a cigarette lighter, a heart pacemaker powered by a space-satellite-style cadmium battery has been developed by Johns Hopkins Applied Physics Laboratory, Laurel, Md.

The chief problem with the more expensive nuclear-battery-operated regulators inserted in the chests of people with certain heart defects is that operations are necessary every several years to replace them.

Not so with the Hopkins pace-

(Continued on page 36)

The new USAF Chief of Staff, Gen. George S. Brown, obviously enjoys promoting his successor as Commander of AFSC, Gen. Samuel C. Phillips, to four-star rank. General Phillips formerly commanded the National Security Agency at Ft. Meade, Md. Mrs. Phillips is helping out during the ceremony.

Ex-POW Air Force Capt. James Ray and his bride, AF Lt. Beck Laughter, walk beneath the traditional arch of swords held by former POWs. The ceremony took place at Randolph AFB, Tex.

Capt. Lee Gutheinz, center, and Maj. Roger Gallington, left, brief C1C Sam Shutt. Volunteer sailplane instructors at AF Academy, both officers hold FAA-issued pilots' licenses.

Ed Stearn, Chairman of the Fifth Annual AFA Charity Golf Tournament executive committee, presents SAMSO Commander Lt. Gen. Kenneth W. Schultz with his "Commission" as "General of the Air Corps" in the Remote Piloted Vehicle Wing (Prov.) of the California Inland Empire Corps. The tongue-in-cheek event took place following the recent tournament—at Norton and March AFBs, Calif.—which produced some $7,500 for Air Force charities. General Schultz helped plan the money raiser.

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WHAT THEY'RE SAYING...

The B-1's Schedule Change

Air Force Secretary John L. McLucas, reporting on the B-1 schedule slippage before the Senate Armed Services Committee on July 27, 1973:

The B-1 Development Program was approved in June 1970. Shortly thereafter we adopted some innovative management concepts and restructured the program so as to reduce our investment to a minimum prior to a production decision. Included in these measures was the decision to build three flight-test aircraft rather than five as originally planned. Since these early program adjustments, the B-1 development has been relatively stable, and continuous progress on the major milestones has been achieved, with only appropriate adjustments to adhere to the "fly-before-buy" development policy.

We are now over forty percent through the development program. We have accomplished 18,300 hours of wind-tunnel testing, and our structural tests are well under way with very satisfactory results. We have been very conservative in our structural design because of the lessons learned from other recent development programs. Although we have experienced a slight increase in weight and have a more complex structure to manufacture, we believe we have a structurally sound airframe. The engine development program is on schedule and running somewhat better cost-wise than we anticipated.

As you realize, during any development program, especially one of this magnitude, unexpected difficulties will be encountered, some of which may pose major challenges. We recognize and accept our responsibility to meet these challenges, and we have been successful in identifying major difficulties early in the development program. Corrective measures have been incorporated with the least possible increase in program costs. By taking early action where necessary, we have been able to hold the cost increase of the program to approximately four percent, in real terms.

. . . We have tried to keep the appropriate congressional committees informed on the B-1 development progress and the technical and cost status of the program. In August 1971, we reported to you our revised plans for avionics development designed to lower technical risks and costs; in October 1972, we advised you of the status on the wing-structure test program; in December 1972, we reported our decision to proceed with development of the crew escape module; in the spring of 1973, Secretary Seamans informed the congressional committees of the status on weight growth and its impact on production-cost estimates; in May 1973, we reported the change in our production-cost estimates due to new escalation factors; and, on July 12, we advised you of the decision to adjust the development program schedule and delay the production decision from July 1975 to May 1976.

Indications of a possible schedule problem first came to our attention last winter when we identified a slight behind-schedule position. At that time, a slip in the development schedule was considered as one alternative. However, the contractor developed plans that would allow us to recover the schedule by adopting work-around plans in the assembly process, with selected application of overtime. It seemed reasonable to us then that a behind-schedule position of small magnitude could be overcome through those measures recommended by the contractor.

Following this decision, Secretary Seamans asked for special reports on the schedule status, which we have continued to monitor closely. Until recently, it appeared as though we would regain our position without an excessive cost investment. However, over the last few weeks, evidence indicated that the recovery plan would not produce an airplane to meet the April 1974 flight date without additional FY '74 funds. We considered numerous alternatives; however, we became convinced that the most prudent course to take was to slow down the pace of development rather than pursue the original schedule with an attendant increase in technical risks and cost.

We have, therefore, decided to revise the development schedule by delaying first flight from April to mid-year 1974. In addition, we have delayed fabrication, assembly, and flight test for the second and third aircraft. Finally, to accommodate the later flight tests of the second and third aircraft, we have . . . delayed the planned production decision some ten months from July 1975 to May 1976. The effects of this schedule adjustment on development costs will amount to approximately $80 million. Our decision to delay the program avoids the necessity to seek additional funds for FY '74.

The problem we have identified here is associated with our ability to estimate the degree of difficulty and time required for the fabrication and assembly of the first aircraft. We now do not foresee any major difficulties in production. While we do not now expect a major increase in our production-cost estimates, other than the effects of inflation, we will have more confidence in our estimates by September 1973 when a production-cost analysis now under way is complete. This cost study was reported to Congress by Secretary Seamans last winter and spring and is based on actual B-1 program experience.

We firmly believe our decision to restructure the B-1 development program reflects a sensible approach and that the program as revised is both sound and practical. . . .

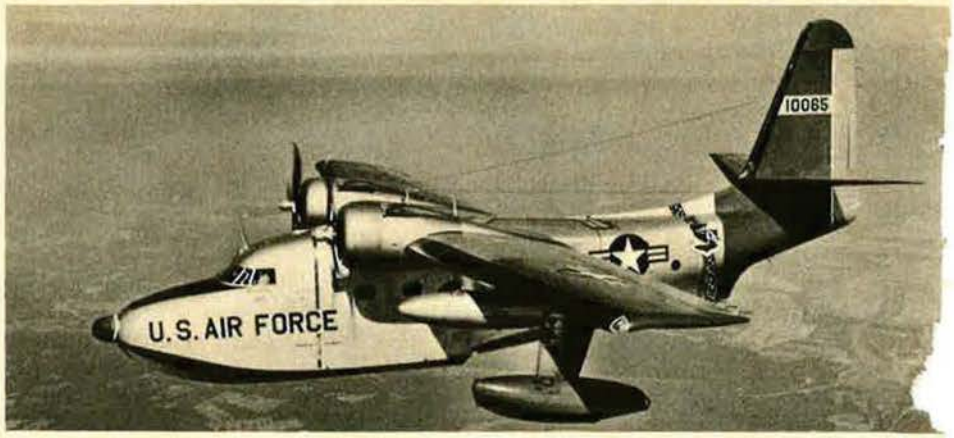
I would like to emphasize that I consider development of the B-1 bomber to be crucial to the overall national security interests of the United States. ■

Aerospace World

maker, which can be recharged with a portable apparatus from outside without any pain to the wearer. The process takes a few hours each week.

The Hopkins pacemaker costs about $1,800, including recharger, compared to perhaps $5,000 for the nuclear-battery version. Conventional pacemakers have a price tag of about $1,000, but require an operation every two or three years.

The Hopkins regulator, developed through the cooperative efforts of scientists and engineers over the past five years, should last twenty years or more. The devices are being made by Pacesetter Systems, Inc., Sylmar, Calif.



An HU-16 Albatross like this Grumman-built twin-engine amphibian recently broke an altitude record—before retiring to the Air Force Museum. See item below.

☆

An HU-16 Albatross flown by a three-man Air Force Reserve crew set a new world altitude record for a twin-engine amphibian in mid-July.

The aircraft, flown from Homestead AFB, Fla., hit 30,700 feet, some 2,000 feet above the previous mark.

The crew—all of the 301st Aerospace Rescue and Recovery Squadron—consisted of Lt. Col. Charles Manning, pilot; Maj. Paul Schaefer, copilot; and TSgt. Ed Schindler, flight mechanic.

The Albatross is the last in the Air Reserve inventory and is scheduled to be retired to the Air Force Museum *(see p. 134)* where it will go on display.

The Albatross, built by Grumman, was first flown in 1947 and entered military service in 1949. Nearly 500 have served with the US Air Force, Navy, and Coast Guard, as well as the services of fifteen other countries.

☆

A combined USAF and Navy guest team scored highest in the

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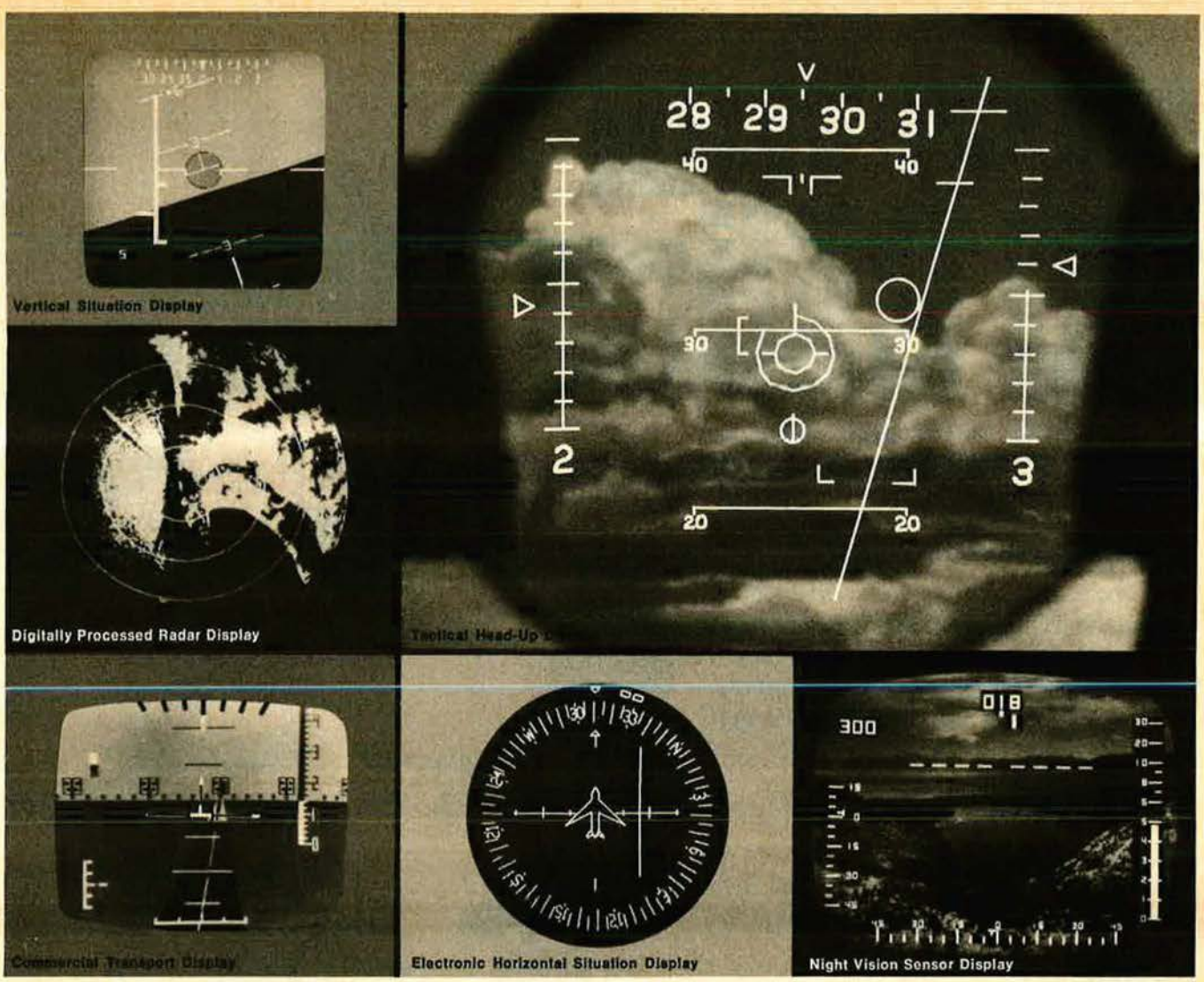

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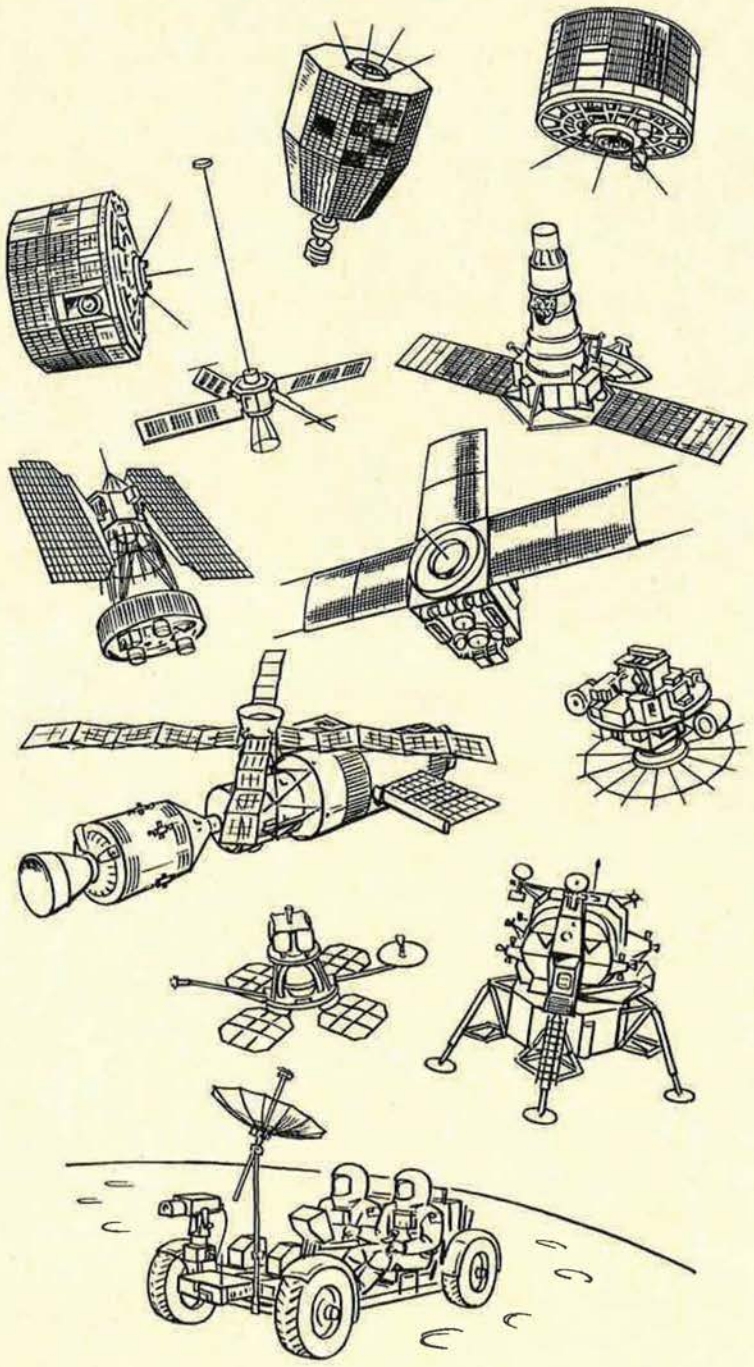

RCA Government and Commercial Systems

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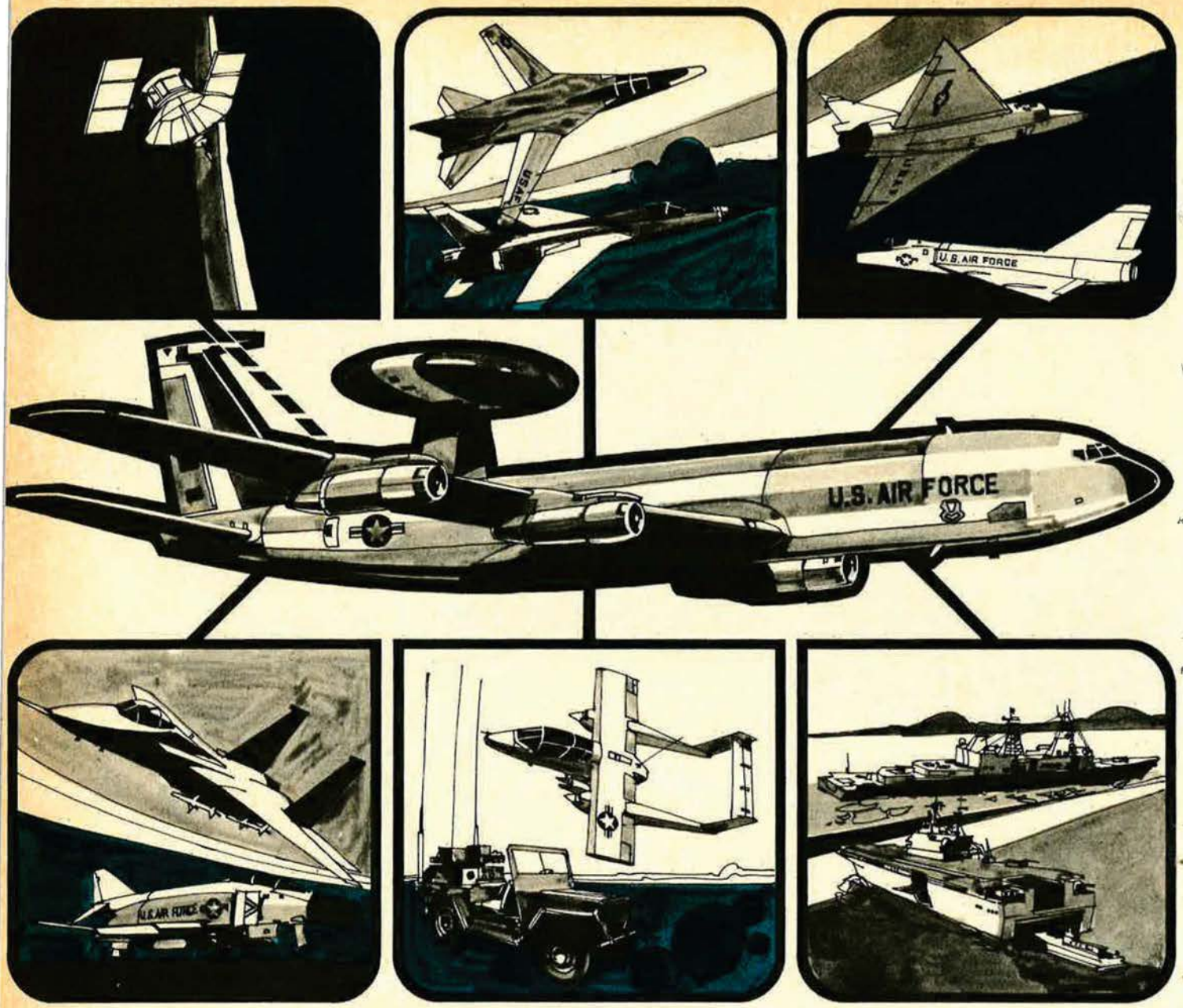
Brig. Gen. Guy E. Hairston, Jr., has been named to succeed Brig. Gen. (Maj. Gen. selectee) Slade Nash as Deputy Director of the Air Force's Office of Information. He formerly commanded the School of Military Sciences, Officer, ATC, Lackland AFB, Tex.

Mather AFB, Calif., civil engineers work with the Forestry Service to repair facilities at Crystal Basin camp site in the Sierras. Part of the Eldorado National Forest, the camp was damaged by fire that ravaged the area fourteen years ago.

recently concluded tactical weapons meet, "Best Hit '73," sponsored by Allied Air Forces Southern Europe (AIRSOUTH), but the win didn't count officially.

Held this year at Istrana Air Base in northern Italy, the two-week

A Greek pilot checks his aircraft's maintenance log during NATO's recent Southern Region tactical air competition. Held at Istrana AB in northern Italy, the meet featured aircraft of the Hellenic, Turkish, and Italian Air Forces, as well as "guest teams" from the US Air Force and Navy.



Vital Link for AWACS: Collins Communications

The new Boeing Airborne Warning and Control System (AWACS) will give the Air Force longer detection ranges, "look down" capability and unprecedented airborne command and control capabilities.

To share data and issue directions within the TAC or ADC systems, AWACS needs flexible and reliable communications.

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NATO gunnery competition is an annual event serving as an incentive to improved weapons delivery capability.

Under AIRSOUTH rules, members of guest teams are not eligible to receive trophies awarded high scorers, so Turkish Air Force pilots, flying Northrop F-5A tactical fighters, swept team honors in the meet. They racked up 632 points of a possible total of 1,200. The US guests scored 671, while the Italian and Greek teams totaled 617 and 519, respectively.

Aircraft engaged in the meet included USAF McDonnell Douglas F-4 Phantoms and Navy LTV A-7E Corsairs flown by the US team, Aeratalia G-91Ys flown by Italian pilots, and the F-5s piloted by both the Turkish and Hellenic teams.

Each team consisted of six aircraft and pilots, and one backup pilot and plane. The teams flew thirty-six missions apiece, comprised of events in navigation, dive bombing, strafing, skip bombing, and high-angle rocket attacks.

☆

A group sure to garner deafening applause is now on the road to bring entertainment to some eighty Air Force facilities in the US, Alaska, and the PACAF area.

Called "Tops in Blue '73," the ensemble is composed of talented Air Force people offering everything from comedy impersonations to country-and-western music.

The troupe, billed as the most versatile ever, is sponsored by USAF's Military Personnel Center. In the best show-biz tradition, its grueling series of one-night stands will take it on a circuit from Randolph AFB, Tex., to Yokota AB, Japan, and is to be concluded in mid-October. The road show is free to all USAF personnel and their families.

☆

The possible forerunner of future aircraft capable of flying in near space made its maiden flight August 1. With John A. Manke, project pilot for NASA's Flight Research Center in California, at the controls, the X-24B was air-launched from a B-52 flying at 40,000 feet, and glided to a landing on a dry lake bed four minutes later. The X-24B is a joint NASA/USAF project.

The X-24B is successor to the wingless lifting bodies flown by USAF and NASA research pilots to demonstrate man's ability to maneuver and safely land vehicles with a shape primarily designed for space flight.

The X-24B configuration is also representative of advanced aircraft capable of sustained cruise flight at hypersonic speeds.

Following launch, veteran NASA research pilot Manke guided the delta-shaped vehicle through a series of maneuvers to evaluate the experimental craft's flight characteristics. He also made a practice landing approach at high altitude, then made a 180-degree landing approach that ended in a 200-mph landing on the dry lake bed.

NASA officials termed the first flight very successful.

☆

NEWS NOTES—USAF is investigating the crash on landing during

Aerospace World

its second flight of the **Boeing YQM-94A Compass Cope** remotely piloted vehicle. The only one of its kind, the RPV was to compete with the **Teledyne Ryan YQM-98A RPV,** set for first flight later this year. A second YQM-94A may be built.

Honeywell's Aerospace Division, St. Petersburg, Fla., is accepting job applications related to the firm's work on the **Space Shuttle** flight-control system.

Col. (Brig. Gen. selectee) L. A. Skantze is the new Deputy and Program Director for **AWACS** at AF Systems Command's Electronic Systems Division, L. G. Hanscom Field, Mass.

Florence D. Pohlman was recently sworn in by the Navy to serve as **the first female military chaplain** in US history. ■

Senior Staff Changes

M/G James M. Breedlove, from DCS/Ops, Hq. ATC, Randolph AFB, Tex., to Dep. Dir., Defense Mapping Agency, Washington, D. C., replacing retiring M/G James H. Watkins . . . **M/G Devol Brett,** from Dir., Near East-South Asia Region, OASD (ISA), Washington, D. C., to Chief, MAAG, Teheran, Iran . . . **Gen. George S. Brown,** from Cmdr., Hq. AFSC, Andrews AFB, Md., to C/S, Hq. USAF, replacing retiring Gen. John D. Ryan . . . **Col. (B/G selectee) Thomas E. Clifford,** from Cmdr., 52d TFW, USAFE, Spangdahlem AB, Germany, to V/C, 17th AF, USAFE, Sembach AB, Germany.

M/G Jimmy J. Jumper, from Sp. Asst. to Cmdr., 13th AF, PACAF, Clark AB, Philippines, to Sr. AF Member, Weapons Systems Evaluation Group, ODDR&E, 400 Army-Navy Dr., Arlington, Va., replacing retiring M/G Fred J. Ascani . . . **B/G Clyde F. McClain,** from Chief, Pacific Div., J-3, Jt. Staff, OJCS, to Cmdr., 313th Air Div., PACAF, Kadena AB, Okinawa, replacing B/G Robert F. Titus . . . **M/G Kendall Russell,** from V/C, ESD, AFSC, L. G. Hanscom Fld., Mass., to Dir. of Development & Acquisition, DCS/R&D, Hq. USAF . . . **B/G Robert F. Titus,** from Cmdr., 313th Air Div., PACAF, Kadena AB, Okinawa, to Asst. DCS/Ops, AFSC, Andrews AFB, Md.

RETIREMENTS: M/G Fred J. **Ascani;** B/G Stanley H. **Bear;** M/G Jones E. **Bolt;** B/G Alfred L. **Esposito;** M/G Andrew J. **Evans,** Jr.; B/G Richard J. **Hartman;** L/G Earl C. **Hedlund;** Gen. John D. **Ryan;** M/G James H. **Watkins.**

—Compiled by Catherine Bratz

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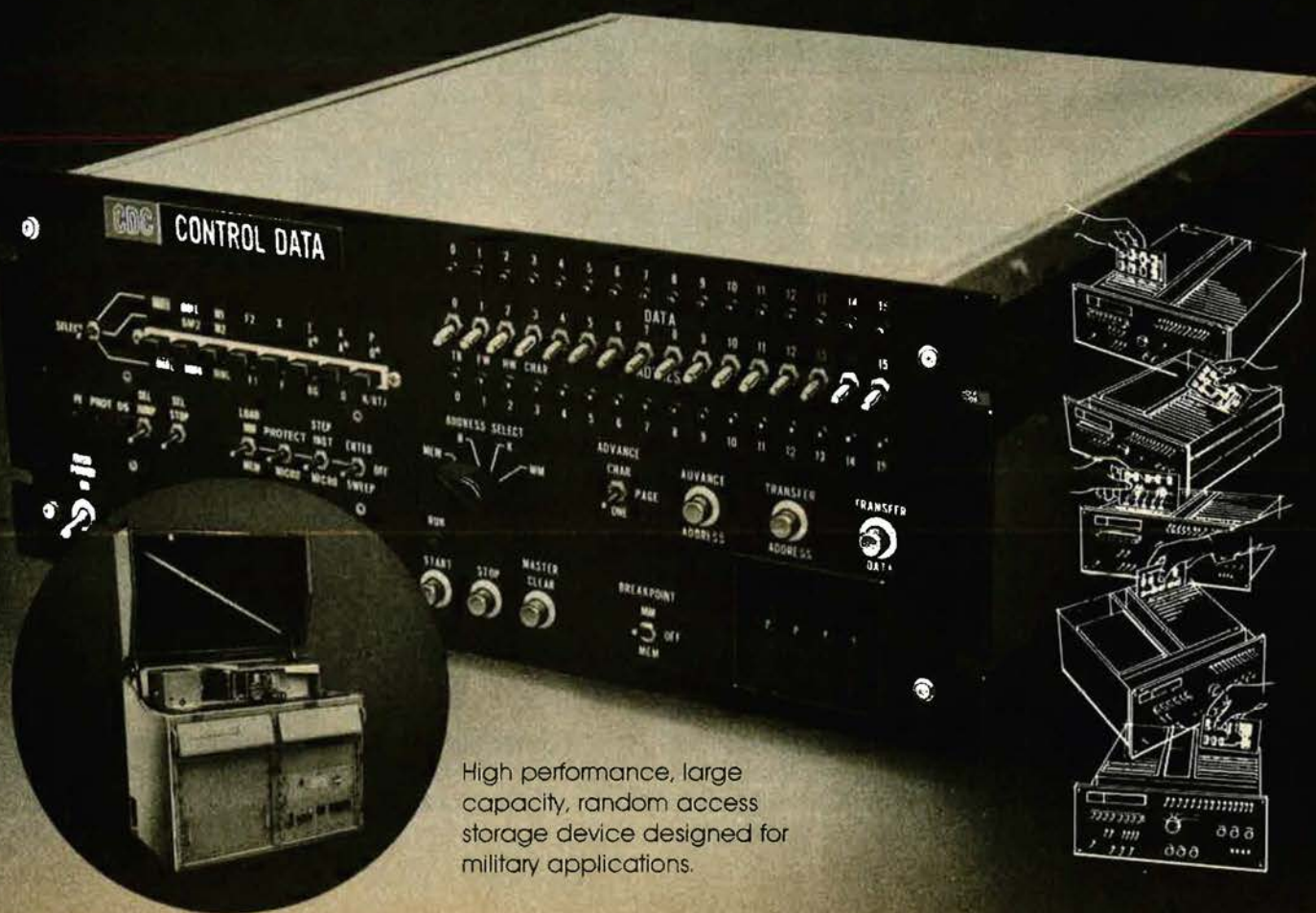

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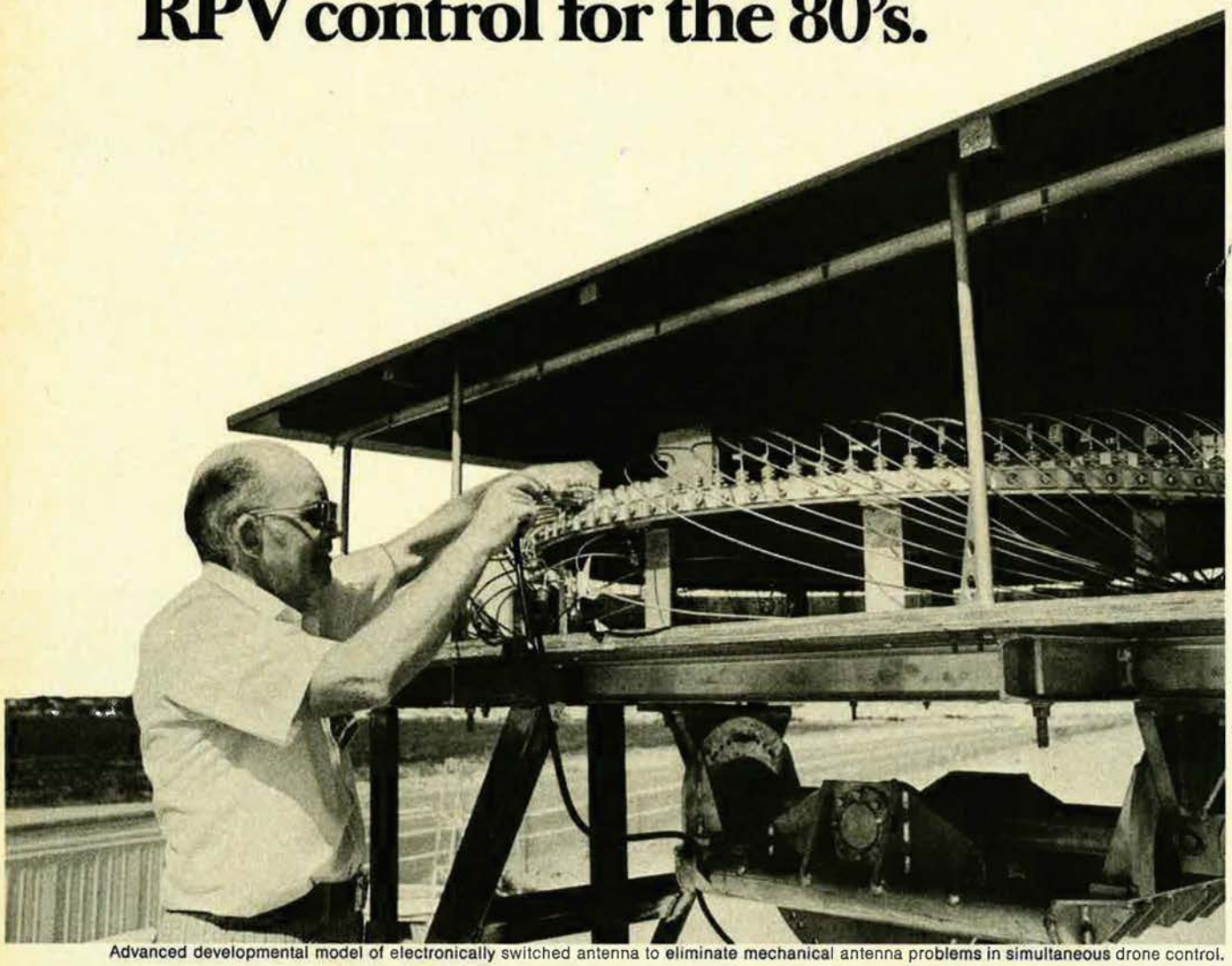

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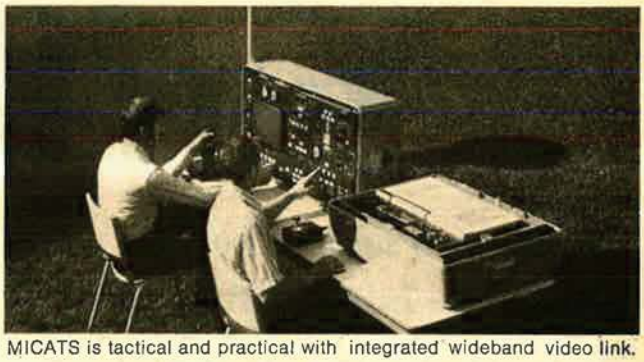

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You can save money on your out-of-state Long Distance calls if you keep this rate chart in mind.

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Examples of Long Distance rates for coast to coast calls

		Station-to-Station		Person-to-Person
		Dial-it-Yourself	Operator-Assisted	
Weekends	8 a.m. to 11 p.m. Sat. and 8 a.m. to 5 p.m. Sun.	**70¢ first 3 minutes**	$1.40 first 3 minutes	$3.55 first 3 minutes
Evenings	5 p.m. to 11 p.m. Sun. through Fri.	**85¢ first 3 minutes**	$1.40 first 3 minutes	$3.55 first 3 minutes
Nights	11 p.m. to 8 a.m. daily	**35¢* first minute (minimum call)**	$1.40 minimum call (3 minutes)	$3.55 minimum call (3 minutes)
Weekdays	8 a.m. to 5 p.m. Mon. through Fri.	**$1.45 first 3 minutes**	$1.85 first 3 minutes	$3.55 first 3 minutes

Rates shown (tax is not included) are for the days, hours and durations indicated, and for the types of calls specified at the head of the columns. Rates may be even less, of course, on out-of-state calls for shorter distances.
Dial-it-yourself rates apply on all interstate calls within the continental U.S. (excluding Alaska) completed from a residence or business phone without operator assistance. They also apply on calls placed with an operator from a residence or business phone where direct dialing facilities are not available. For dial-it-yourself rates to Hawaii, check your operator. Dial-direct rates do not apply to person-to-person, coin, hotel-guest, credit-card, or collect calls, or to calls charged to another number, because an operator must assist on such calls.
*One minute minimum calls available only at the times shown, and additional minutes are 20¢ each, coast to coast.

The reason rates are so much less on interstate dial-direct calls is that they cost so much less to handle. Often a person-to-person call ties up our circuits and an operator for long periods.

Know when you can save on Long Distance calls and how much. Examine the rate chart above. Cut it out and keep it near your phone. Knowing is worth the effort.

MIA/POW Action Report

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

League Family Convention

In late July, the fourth annual convention of the National League of Families of American Prisoners and Missing in Southeast Asia took place in Washington, D. C.

If possible, the atmosphere was even more emotionally charged than at conventions in years past. This most recent convention was attended by more than 600 MIA/POW wives, parents, and other kinfolk—individuals and families who, while remote from one another in many ways, had forged a common unity based on mutual need.

The stated theme of the convention—"The Need to Know"—centered on the effort to ascertain the fate of more than 1,200 men still missing in Southeast Asia. (Thus far, the search teams have been hamstrung by the unstable military and political situations prevailing throughout SEA, and the failure of the North Vietnamese to live up to the Paris accords.) The identification issue had naturally become the League's principal objective upon the realization of its previous major goal—the release of the POWs—last spring.

Yet, another issue surfaced during this year's convention that could overshadow this aim, seriously undermine the League's tenuous unity, and perhaps even threaten the very life of the loose-knit League federation.

The controversy stems from the prospect of Defense Department "status changes"—that is, a change in category on the casualty lists of a large number of men now carried as "missing" to "killed in action" or "presumed killed in action."

If any such change is undertaken by the Department of Defense in the immediate future, the ramifications would be considerable, in the view of many League members. (AIR FORCE Magazine intends to explore this issue and related subjects in a major report on the MIA/POW situation in a future issue.)

Sensing, perhaps, that unusually turbulent times might be in store for the League, participants at the convention moved to shore up the organization's top leadership. Acting on the recommendation of both the outgoing and newly elected League boards of governors, the conventioneers named Col. Scott Albright, who retired from the Air Force on July 31, to a newly created League post—that of Executive Director. Colonel Albright's son, Air Force Capt. John S. Albright II, has been missing since December 1968. Colonel Albright had been serving as Chairman of the League's Identification and Discrepancy Committee, and his experience in this area should serve the League well. It is the first time in its history that the League has had a salaried—rather than volunteer—official at its helm. Serving as League Board Chairman is newly elected Iris Powers, who has been a mainstay of the League of Families since its creation. Mrs. Powers' son, Army Chief Warrant Officer Lowell S. Powers, has been missing since April 1969.

The participants at the League convention approved twelve strongly worded resolutions in line with its policy stand on the MIA situation. Several of these have also created controversy within League ranks (the circumstances of this area of MIA and League affairs will also be examined in our upcoming article).

The resolutions dealing with status changes and the procedures for accounting for the missing follow:

1. The League shall pursue a vigorous policy of opposing any US aid for reconstruction of NVN [North Vietnam] until the North Vietnamese have assisted the US government in obtaining the return of all living POWs and the fullest possible accounting of all Americans who are missing in action in Southeast Asia.

2. The League is opposed to any and all presumptive findings of death in Southeast Asia until after our search teams have been permitted to enter all areas of South Vietnam, North Vietnam, Laos, and Cambodia, complete their searches in all said areas, and make their reports.

3. The League shall use every means at its disposal to prevent the changing of status on any missing-in-action personnel until Article 8 (B) of the Paris agreement is fully implemented. The League endorses,

Alaskan Mayor George M. Sullivan presents a City of Anchorage plaque to USAF Capt. John H. Nasmyth, an ex-POW. Nasmyth addressed a joint meeting of AFA and other groups.

MIA/POW Action Report

as an acceptable procedure for changing status, the following:

At the request of a family member (wife, parent, child) a review will be held before any status is changed.

The appropriate service Secretary shall not change status to MIA of those presently carried as POW, and

When US inspection teams have received all required assistance from the DRV [Democratic Republic of Vietnam—North Vietnam], PRG [Provisional Revolutionary Government—Viet Cong], Pathet Lao, etc., for the purpose of discharging their responsibilities and thus enabling them to make recommendations to the appropriate service Secretary concerning status changes, the following procedures shall prevail:

(a) change to POW if MIA is found to be alive.

(b) change to KIA if remains are found that can be positively identified.

(c) change to PFOD [presumptive finding of death] if remains are not recoverable but new information warrants a change.

4. The League urges the President to press for additional information from the Democratic Republic of Vietnam (North Vietnam), the Pathet Lao, the Khymer Rouge, and the Viet Cong concerning all Americans who are still missing: that the case of each man carried in missing status be judged on an individual basis, and that where discrepancies exist, the government of the United States will pursue every feasible avenue of investigation; and that where the information is conclusive as to the circumstances surrounding the incident, statuses be reviewed and changed in accordance with the preponderance of information.

5. The League requests that President Nixon appoint an individual at the White House executive staff level whose primary responsibility will be to carry out the President's pledge for the complete accounting of our missing men.

6. The League is dissatisfied with the inactivity of the United States government and North Vietnam in providing the JCRC [Joint Casualty Resolution Center] the rights of overflight and entry into all of Southeast Asia. The League demands that all efforts be exhausted to make all parties (the governments of US, DRV, PRG, Pathet Lao, and Khymer Rouge) aware of the fact that American POWs must be released or satisfactorily accounted for and the missing accounted for within six months.

7. The League respectfully requests the governments of China and USSR to exhaust all reports available through their good relations with North Vietnam, PRG, Khymer Rouge, and Pathet Lao to seek the release and accounting of all missing in action and prisoners of war. . . .

8. The League strongly opposes the granting of "most favored nation" status for trade with the United States to either Russia or China until these two countries have assisted in bringing the war in Southeast Asia to an end, and until they have demonstrated their insistence that North Vietnam must vigorously assist the United States in obtaining the fullest possible accounting. . . .

9. Resolved that the League require that DoD provide the information to the primary next-of-kin and secondary next-of-kin which is contained in the field records of the JCRC pertaining to the missing servicemen, thus allowing the families the opportunity to evaluate the record and assure that all known data is contained therein.

10. The League shall establish a liaison office in Southeast Asia to be manned by our own concerned members in order to achieve on-the-spot results. . . .

11. The League's Board of Directors is hereby directed to respectfully request that all Representatives and Senators take a public position on the MIA issue. We suggest that the Congress use their mailing, local newspaper column, and all other means at every opportunity to speak out positively on the MIA subject. . . .

12. The League believes that the present US role in the United Nations is actually encouraging the United Nations' attitude of indifference toward the plight of missing Americans and their families. The League believes that unless the United Nations is able to secure an acceptable accounting of MIAs in ninety days, our government should immediately reduce its share of the UN budget to seven percent, which is our percentage of the population of all UN member states. The League further believes that such action is not merely an option, but a legal obligation of our government under Article I of the Geneva convention.

While the practicality of this last resolution, and perhaps several of the others, has been questioned by some, the list leaves no doubt of the seriousness with which the League is pursuing its self-assigned mission—that of prodding the powers that be into seeking a full accounting of our missing men in Southeast Asia. ■

At the Langley, Va., AFA Chapter's recent banquet for returned area POWs are, from left, USAF Col. Richard Vogel, Brig. Gen. Robin Olds, USAF Maj. Ronald Webb, and Army Capt. Robert White. General Olds, a Hampton, Va., native and guest speaker, had commanded several of the POWs in SEA before they were shot down.

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AIR FORCE
SEPTEMBER 1973 MAGAZINE

INTERVIEW WITH GEN. GEORGE S. BROWN

The rapidly rising costs of "ownership"—that is, the price the Air Force pays for developing, buying, maintaining, repairing, modifying, and manning aircraft, missiles, and other weapon systems—is on a dead-center collision course with escalating manpower costs and the declining purchasing power of the Air Force dollar. The new Chief of Staff recently talked with AIR FORCE *Magazine about some novel and unorthodox approaches that can help USAF meet the challenge . . .*

AT STAKE: USAF'S ECONOMIC SURVIVAL

By Edgar Ulsamer
SENIOR EDITOR,
AIR FORCE MAGAZINE

"WE ARE going to be out of business if we don't find ways to cut costs. We simply can't go on spending the kind of money we are spending now. The rising costs of weapon systems—some 300 percent over the past decade—coupled with a marked loss in buying power, leaves us only three alternatives:

- "We acquire fewer weapon systems.
- "We cut the size of the force.
- "We find ways to drastically reduce the cost of acquiring and operating weapon systems."

Saying this, during an interview with AIR FORCE Magazine on the eve of his nomination as the Air Force's new Chief of Staff, Gen. George S. Brown left no doubt that cost reduction has become USAF's top priority.

The Air Force, especially the Air Force Systems Command, headed at this writing by General Brown, has launched a major effort to cope with the problem of shrinking purchasing power and climbing manpower costs. The effort is known as Project ACE, for Acquisition Cost Evaluation. Behind the acronym looms an effort that "could rival, potentially, Project Forecast in importance to the Air Force and national defense," according to General Brown. (Project Forecast, undertaken by the Air Force early in the 1960s, became a blueprint for subsequent weapons and general technological developments, not only by the military, but also by commercial aviation and the US space program.)

Project ACE was chartered and chaired by General Brown. Its first phase was completed in May of this year and involved thirteen general officers and about 120 experts in such diverse fields as management, logistics, procurement, and production. Organized into eight panels, the group probed the causes and remedies for rising costs in workshops and specialized sessions held over an eight-week period between March and May of this year.

The objective in the first go-around, General Brown said, "was to have these eight panels, each representing a key area of the development and acquisition process, analyze and identify the problems, not so much with the idea of coming up with cure-alls, but to provide a realistic basis for finding workable solutions."

The second, *crucial* phase of the project was scheduled to get under way by August. The aim of the second round is to translate the earlier findings into specific policies and guidelines on how to cut the cost of weapon systems ownership. These guidelines are to span the full spectrum of "ownership," all the way from how requirements are formulated to total life-cycle operating and maintenance costs.

(One of the first-phase findings is the glaring

"We are going to be out of business if we don't find ways to cut costs. We simply can't go on spending the kind of money we are spending now."

—Gen. George S. Brown
Chief of Staff, USAF

need for reliable mechanisms for keeping track of the costs associated with operating, maintaining, modifying, and manning weapon systems. Such costs were found to be many times higher than combined development and acquisition costs.)

While the first phase of the project was an in-house effort, involving, in the main, AFSC and AFLC, the next round probably will have broader participation, according to General Brown. Key DoD experts as well as the other services, NASA, and defense contractors may be involved. The latter approach, General Brown told AIR FORCE Magazine, is favored at this time, but "is likely to be handled on a selective basis."

Requirement Trade-Offs

A major deficiency in the present R&D cycle, according to Project ACE, is that "we get into trade-offs too late, after the basic concept has been set," General Brown said. "Of course, there have been exceptions, the most noteworthy being the F-15 program, which was premised on systematic trade-offs from the outset," he added. "If there is a single area where we found a broad potential for trade-offs, it is in requirements. We tend to consider operational requirements [as stated by the ROC, or Required Operational Capability, which is the chronological starting point of a weapon system] as inviolate. Also, there are not enough high-level reviews during the early phases of system development, nor are there sufficient provisions for looking at alternative solutions before we freeze a new program into the budget. We must place more emphasis on joint operational/technical reviews, where the operator and the developer can hammer out an optimum compromise between mission requirements and technological options, and make possible trade-offs that meet the cost objectives. The cost of that last ten percent of performance the user would like to have must be looked at with the greatest care, because it often exerts a disproportionately high influence on costs," according to General Brown.

Unrealistic requirements tempt the developer to use "immature," unproved technologies and thereby create conditions of double jeopardy, according to Project ACE case studies. In some instances, the requested capabilities were simply beyond the state of the art. In others, developers had treated unproved, high-risk technologies as if they were in hand.

An associated problem, the experts found, is "oversophistication," the tendency to design subsystems for exclusive, one-time use, ignoring off-the-shelf components. The habit of "going back to the eve of creation, to develop

GENERAL BROWN'S VIEWS ON USAF WEAPONS NEEDS

In discussing current Air Force requirements, General Brown told AIR FORCE Magazine that the nation's air defense capabilities require comprehensive improvement. The first step, he suggested, should be intensified development of the air defensive capabilities inherent in the tactical force. But because the F-106 "isn't going to last forever, we must consider developing a new interceptor." This role could be filled by the F-15, operating in concert with AWACS. This combination, he said, would provide "good" intercept capability despite the "F-15's relatively short legs."

Another aircraft to be considered for adaptation to the interceptor role, according to General Brown, is the Navy's F-14. "Of course we are talking here about an aircraft that costs a lot of money. On the other hand, the F-14 has tremendous range, good speed, an excellent radar, and an outstanding long-range missile capability. Finally, the F-111 could also be made an excellent interceptor because it, too, has great range, good speed, a good radar, and a high payload capability," General Brown said.

None of these aircraft, he explained, is ideal as an interceptor, and it would be a "great challenge to build a completely new interceptor within acceptable cost limits. The Lightweight Fighter [prototype development program involving General Dynamics' YF-16 and Northrop's YF-17, scheduled for first flight early next year] is of interest in this connection." Because of pressures on costs, the Air Force is more likely, however, to settle for an F-14/F-15 type interceptor, rather than the development of an entirely new weapon system, according to General Brown.

Another high-priority issue, in General Brown's view, is the development of a new large tanker to augment and replace the KC-135 fleet. "We must move on this program just as soon as we can fit it into the budget," he said. (The Air Force, for some time now, has explored the potential of such commercial aircraft as Boeing's 747 and McDonnell Douglas' DC-10 as air-refueling tankers as well as bulk-fuel carriers.)

General Brown also dealt with the question of a mixed fighter force, consisting of high-performance, relatively expensive F-15s and austere aircraft derived from the Lightweight Fighter program, which would provide air superiority in a friendly GCI environment and under conditions that require no sophisticated avionics capability. He acknowledged that this is being favored by some defense planners. The General pointed out that such a mix becomes attractive "only if the numbers involved are very large. As long as this is not the case, it makes no economic sense to pay for the development of a second aircraft and to create yet another logistics and training structure. The R&D costs of the F-15 and its support facility are, in effect, already paid for."

If there is a requirement for "upward of 800 or 1,000 fighter aircraft," in addition to the currently planned number of some 700 F-15s, then it might be "sensible to develop a second aircraft and its support facilities." General Brown added with emphasis, however, that the questions involved go well beyond the purchase of aircraft and affect the all-important manpower problem.

"The real question is how many active units can we maintain and support, particularly in an all-volunteer force," he said, adding by way of an explanation, "It is all well and good to say, 'When we bring the A-10 into the inventory, then we will

every subsystem and component, instead of using items common to several systems," General Brown said, "is costing us dearly." He pointed out that each new equipment entering the inventory requires full complements of AGE (aerospace ground equipment), spares, tech data, and trained maintenance people for its support.

Corrective action has already been taken in this area, he pointed out, such as "on the B-1 program, where we rely on off-the-shelf offensive avionics. It is essential that we avoid a repeat of the situation where we have at least ten different airborne UHF transceivers, all performing the same function."

The tendency to view schedules, mainly IOC (Initial Operating Capability), as sacrosanct was found to be another stimulant to cost increases. General Brown made it clear that henceforth the Air Force will take a dim view of a program manager who lets schedules drive up costs. "The only condition under which paying for an IOC makes sense is when we thereby protect the least-expensive option. Conversely, it would be equally unwise to let the schedule slip to a point where the delay costs us extra money," General Brown pointed out.

Prospect of Solutions

While the eight panels and the high-powered steering committee (comprised of Aeronautical Systems Division Commander Lt. Gen. James T. Stewart; SAMSO Commander Lt. Gen. Kenneth W. Schultz; Electronics Systems Division Commander Maj. Gen. Albert R. Shiely, Jr.; and Dr. Alan M. Lovelace, AFSC's Director of Science and Technology) did not look for specific solutions, and while in General Brown's view even the next phase of the project is not likely to come up with any miraculous cure, some of the early findings

AND THE CURRENT LEVEL OF THE US R&D EFFORT

put the A-7 in the Guard.' But how are we going to support the Guard and the Reserve? It will probably be possible, through normal recruiting techniques, to keep up the required aircrew strength of the Reserve force. But this may not be true for ground crews needed to support that force. It is not inconceivable, down the road, that we will have a volunteer regular force but will conscript people for the Reserves. Of course, I am still convinced that if anybody can make the all-volunteer force concept work, it is the Air Force."

General Brown foresaw an era of active Air Force support of naval requirements through tracking, surveillance at sea, land-based air, and in the area of ASW (antisubmarine warfare). "The forces that we maintain in order to carry out our primary mission provide us with a tremendous capability to support naval requirements in line with the corollary missions we have had for years. What is required beyond this—and perhaps we have not done as much here as we should have—is to train our forces and provide them with specialized equipment to carry out these corollary missions," he said.

General Brown saw no significant merit in the proposal by former Department of Defense officials that the Air Force operate some of its tactical air units from carriers. "Operating off carriers is one of the most demanding and specialized forms of aviation there is. I take my hat off to the crews who do. By the same token, our people on exchange duty with the Navy have had no major problems in learning these techniques, and it could be argued, therefore, that it is possible to put Air Force people and their F-4s aboard carriers after some training—except that our aircraft are neither designed nor equipped for carrier operation," General Brown said.

Asked about the proposal that the Air Force take over some Navy equipment, or even Navy units, General Brown said: "This makes no sense to me. What does make sense, in my opinion, is to develop techniques and train our crews to perform the current corollary missions of the Air Force and to fully exploit the tremendous potential of such aircraft as the FB-111 and the B-52 for support of war at sea."

Commenting on the far higher level of effort the Soviet Union expends on military R&D than does the US, General Brown said that the current problem is not so much one of falling behind the Soviets in basic R&D. The basic difficulty, he said, stems from the fact that US training of scientists and engineers is falling off, while the Soviet Union continues to exert broad national efforts to build up a vast technology base. He did express impatience about long lead times in US R&D programs, saying, "I continue to be amazed at how long it takes to bring innovative things into the inventory. Typical cases are the digital avionics and digital communications technologies, along with advanced composite materials. It seems that it takes a tremendous effort and too long to get general acceptance and usage, even after we have proved them out."

There are no new major technological breakthroughs now in sight except for the laser program, "which is moving forward at a good pace," General Brown said. "Funding for this program is adequate, we are using the lasers already in some operations, and we believe that there are many more applications of this technology covering almost all phases of our business."

embody at least the nucleus of potential solutions.

In the area of basic policy, Project ACE found a pronounced need for more guidance on long-range concepts. The study singled out the need for more top-level attention to long-range airpower concepts (beyond five to eight years ahead) and to budget priorities. The only existing document that currently considers these long-term factors is the USAF Planning Concepts Document, published by the Air Staff. It does not, however, provide budgetary information nor does it set relative priorities, especially in implementation. This absence of precise, long-term planning guidance takes on special importance now that both the Congress and the Department of Defense, in three separate studies, have underscored the need to view service requirements, goals, and priorities in the long range (seven to fifteen years) and in a triservice context.

Project ACE recommended that the Air Force develop long-range airpower concepts and long-range funding priorities. (This lack of long-term guidance has broad adverse effect on the Air Force's laboratories, whose own long-term research is less precisely focused as a result.)

Project ACE also found a questionable state of affairs in the welter of ROCs that inundate AFSC and its agencies. Approximately 400 active ROCs are currently competing for resources, about a third dating back more than three and a half years. There is overlap, as well as user needs that are neither fully validated nor clearly defined.

One suggested remedy is that the Air Force streamline its review of open ROCs to establish priorities, set up categories by mission area, and consolidate those that are duplicative. AFSC did not get off unscarred either, as Project ACE pointed out that corporate management visibility, except for RPVs (Remotely Piloted Vehicles) and electromagnetic warfare, is not arranged along functional lines; hence, management has a limited view of priorities within mission categories.

Project ACE also found that both user and developer tend to react one-sidedly to changes in the threat. There is willingness to add to a system or a ROC whenever the threat is increasing, but considerable hesitation to pare down requirements and weapon-system sophistication in the face of evidence that the threat has diminished.

No Major Change in Industry Relationship

The Air Force/industry relationship came in for close scrutiny. Several basic conclusions were reached. A key question, according to General Brown, was whether the current mix of in-house and contractor research and development should be changed. Project ACE also looked at the advisability of shifting toward associate contract structures—a management technique favored by NASA and used occasionally by the Air Force and the other services—in which the government acts as prime contractor.

POWERPLANT FOR THE F-15—"NOT IN TROUBLE"

"The F100 engine is not in trouble. We have had more than 1,000 engine hours in flight involving seven aircraft without a hitch. We have a total of more than 13,000 hours of engine-running time, also without trouble. In our test procedures, of course, we demand more and push a lot harder than in the actual flight envelope. It is perfectly normal to have some problems during the development cycle of a new engine."

This is how General Brown assessed the status of the advanced-technology engine powering the F-15 air-superiority fighter. This program has attracted considerable negative publicity because of difficulties during the current test phase.

The only real problem associated with the F100 engine program at this time, General Brown told AIR FORCE Magazine, is "to get on with our work. We have had, of course, some development problems, and that is normal at this point in the program cycle. As a matter of fact, there hasn't been an engine program, be that the TF41 of the A-7, the J85-21 of the F-5, or the F101 of the B-1, that didn't have difficulties along the way.

"But on the F100, we have a situation where often the Air Force is expected to explain real and alleged development difficulties before the pertinent reports have gone through the normal communications channels," General Brown said. Some of the early problems associated with the F-15's engine, he said, were "not design problems at all. Through human error, blades were used that were not up to the specifications."

General Brown pointed out that "the achievements of US aviation propulsion technology are something the whole country can be proud of. Our engines are the finest in the world, and they are being used all over the world. The F100 is in the same league."

In both instances, General Brown told AIR FORCE Magazine, the decision was to continue present procedures. Associate contract management and in-house research and development, he said, "require a great number of people. They are expensive, and we simply don't have the manpower."

One of the most decisive elements of the acquisition process is the relationship between government and its contractors. The assumption that open competition will drive prices down is accepted as axiomatic. While the Air Force is often able to achieve a form of competition based on technical considerations during early stages of a major program, it is difficult to maintain any degree of price competition in follow-on procurement. This is because potential competition usually cannot duplicate the necessary investment in tooling, facilities, and production know-how and still be price competitive with those already involved in the program. Project ACE noted that nearly two-thirds of all Air Force R&D and procurement funds are spent without price competition or price information established by the marketplace. In the view of ACE's experts, sole-source contractors often are not fully responsive to the incentive contract system, which, in theory at least, permits the maximizing of profits within a given contract while serving the government's best interests by meeting or bettering cost, schedule, and performance forecasts.

The ACE findings showed that the contractors often have little incentive to reduce costs because high revenue usually means high profits. Policy changes are being made to provide better incentives for cost reductions.

One reason for the mixed success of incentives, according to Project ACE, is that in most cases corporate image, maintenance of market position, and simple survival are far more influential motivating factors than the profit on any one contract. The very highest incentive is credible evidence that future contract awards will be predicated on past performance. Project ACE urged, therefore, that the Air Force make more and better use of the so-called Air Force Contractor Experience List, both to weed out high-cost performers and as an incentive for at-cost or below-forecast performance. Coupled with this technique, ACE recommended increased and selective use of award fees, which can serve in the manner of a report card and provide motivation through higher profits and the prospect of future business.

Even where source selection is based on competition, programs eventually reach a sole-source state, normally in the development phase, or in case of prototype programs, in the production phase. Two tools are available to combat these conditions, according to the ACE investigators. One involves wider use of second-source arrangements, especially in cases where large production runs are involved. But in order to be truly effective, Project ACE concluded, the decision to seek a second source should be made earlier in the procurement process and need not be confined to entire systems but can be applied to major, costly subsystems.

Commercial operators, such as the airline industry, have been able to reduce ownership cost significantly through the use of warranties that stipulate long-term, failure-free systems operations. Project ACE, after a review of long-term (three to five years) commercial warranties, urged their use by the government to achieve substantial savings in money and personnel as well as improved reliability and maintainability. Finally, Project ACE recommended that the Air Force terminate contracts where the contractor management deficiencies cause contract extensions and cost overruns.

Project ACE addressed with candor one of the most sensitive questions about the US aerospace industry: its size and capacity in relation to the market. There have been no downward adjustments to the industry's steady, high expansion to meet demands of the Korean conflict, the accelerated missile program, the space program, and the war in Vietnam. One of the reasons behind this anomaly, the ACE investigators found, is that the law of supply and demand does not automatically align industry's capacities with current market conditions, because many of the facilities are peculiar to the aerospace field and can't be used for other tasks. Equally important, the government expects its contractors to be able both to develop and produce aerospace systems. As a result, the only way for a contractor to stay in business is to maintain the means to compete for and produce major systems. To do otherwise reduces the chances for corporate survival.

Project ACE hinted at several possible solutions to this dilemma. One is for the government to require contractors to use large-capacity, government-owned and -funded, modern Air Force plants. This would avoid reactivating other facilities that create further overcapacity and higher overheads.

The other alternative suggested by ACE attacks the problem in a fundamental manner; it would recognize, as national policy, that the competitive forces of the marketplace often fail to keep supply and demand of defense business in balance. This could justify a policy of government intervention, even in a free-enterprise system, because overcompetition and ineffective competition damage the national interest. Such a policy, Project ACE's authors argue, is not without precedent in the United States; cited are government regulation of commercial air carriers, control over the com-

munications networks, and the regulation of public utilities.

Yet another approach would be to identify and exclude all excess capacity costs from fee and profit determinations. At present, contractors in effect are encouraged to keep up idle capacity because the associated costs become part of the base for the profit and fee structure. The importance of overhead costs to cost-reduction efforts is pervasive. The indirect overhead costs charged by the aerospace industry make up more than fifty percent of all Air Force contracts and, in 1971, ran close to $3 billion. Even relatively small percentage savings in overhead costs would substantially reduce cost, and the opportunity to do so is formidable.

Project ACE found the incentives to reduce overhead "weak," and the problem compounded by the small proportion of Air Force management attention paid to overhead. Further, it was found that the control of overhead costs is dependent on the competitive character of the marketplace.

It is an economic fact of life that a contractor with a shrinking sales base can't approach parity in overhead costs with a more successful competitor. The contractor whose business is expanding can spread his fixed costs over several programs, and has far more latitude in adjusting his overhead costs than does the contractor with a decreasing sales volume. The only long-term solution, according to Project ACE, is to provide incentives for the contractor to reduce overhead costs, an undertaking that appears obtainable only through uniform DoD policies and procedures. ACE recommended that overcapacity and idle capacity be treated as direct-cost items, that they possibly should be disallowed as recoverable costs, and that a review of national policy be considered.

The High Cost of Labor

On a typical Air Force production contract about forty-two percent of the direct costs are absorbed by manufacturing labor charges. About half of these labor costs, according to Project ACE, are "nonproductive because of inefficiencies of one kind or another." The potential for reducing costs in this area has been pegged in the billion-plus dollar range. A key step suggested by the Project ACE experts is the use of work-measurement programs. These measurements could be based on appropriate military standards used in all contracts issued by the Department of Defense and involving an Air Force or DoD data bank containing information on different types of contractors.

The costs of basic materials and production processing are the second largest factor of direct production costs and make up about twenty-three percent of the total. These percentages, Project ACE predicted, will almost double for aircraft now being developed. There are several reasons for this, including the use of new and nonstandard alloys, the increase in prime contractor "wraparound" costs, the cost increase inherent in small-lot buys, and the proliferation of so-called unique parts and components.

(A major US aerospace company recently lowered the proposed unit price of a new aircraft design from $8.5 million to $5 million, mainly by reducing the number of parts, the so-called parts count, and by such labor and cost-saving techniques as simpler wing design, and machine- instead of hand-welding, without appreciably degrading either the quality or performance of the aircraft. An even more drastic cut was achieved recently by the US Army on its UTTAS helicopter program when the number of parts was cut by a factor of ten, leading to an overall cut in cost by a factor of four.)

General Brown told AIR FORCE Magazine that new manufacturing techniques offer the potential of a "thirty percent reduction in part count." Project ACE, General Brown stressed, found clearcut evidence that "tremendous savings can be had in new or improved materials and new manufacturing techniques. Some of them may still be several years off, but we need to push them. We have been talking about boron and carbon composites for years, but we are just now beginning to fly some fair-sized components on aircraft."

As Project ACE pointed out, one of the most promising ways to cut high weapon-system production costs is to concurrently develop and exploit new materials and new manufacturing methods. The sluggish development of such innovations is not confined to the aerospace industry, but is shared by all of the metals, composites, and electronics supporting industries. The irony is that the feasibility of new manufacturing techniques has been demonstrated through realistic laboratory testing. It is reasonable to assume that they could be made available to the aerospace industry within the next three or four years. According to current estimates, these methods could reduce production costs by some thirty percent, but it would take about $30 million annually over the next few years to get them ready for operational use.

The same condition prevails in the field of advanced composites, which, according to Project ACE, offer the potential of sizable cost reduction coupled with improved structural

efficiency. This potential, too, is not being fully exploited. Composites are being used only in a limited way as metal substitutes rather than as the principal structural element.

Project ACE bemoans this tardiness on two principal grounds: Wider use of composites could drive down their cost to the $2-per-pound level, from the present $55 to $100 range. At the same time, part fabrication could be speeded up 100 percent with composites. This is possible through mechanization of the so-called lay-down process—the forming of the composite structure—combined with newly available tooling, curing, and bonding techniques.

Project ACE found other significant merits associated with composites: They offer an ideal solution to low-volume production since they require virtually no costly production facilities of their own. (With the number of weapon systems purchased by the Air Force shrinking sharply, this is an especially timely advantage.) In addition, the initial experience with composites has shown that their maintenance costs are very low and their fatigue life excellent. These factors, of course, help reduce "ownership" costs. Project ACE concluded that the use of composites can reduce by some seventy-five percent the part count, tools, and fabrication operations, and that designs using composites and other advanced materials will be "significantly cheaper than aluminum, while offering twenty to thirty percent weight savings." While it will take about $40 million for the next three years to refine the composite technology, the payoff promises to be "overwhelming."

Project ACE found that costs of currently used metals can be reduced sharply. Between thirty and ninety percent of certain metals used by aerospace industry is thrown away in the form of chips because of the extensive machining used when making airframes and engines. Better use of metals could lead to a ten to twenty percent cut in production costs.

Machining techniques, Project ACE concluded, are not only wasteful but account for more than half of the cost of producing major engine components and for as much as seventy percent of large titanium structures. Ways to do the job faster and cheaper are in sight. Laser cutting of titanium appears to be about thirty times faster than a band saw. New cutting tool materials can machine hard superalloys eight times faster than existing equipment and can cut tooling costs in half. Opportunities to reduce the cost of electrochemical and other machining processes by a similar margin are also being tested by the Air Force and industry.

Lastly, the complexity of metal joining and assembly, which account for about thirty percent of the total manufacturing costs, can be reduced by almost one-third by novel welding and brazing techniques. Project ACE reported that these new methods would not only cut costs but reduce structural weight and increase reliability.

The Air Force's Program Staff

The Air Force—through AFSC—spends about $5 billion each year for weapons acquisition. Fifteen programs, which combined represent about $3 billion, are being managed by experienced senior program directors. Project ACE found, however, that the remaining 200 programs are often entrusted to less experienced program managers. Project ACE concluded that it is unlikely that the Air Force will ever have enough fully experienced people to fill all its acquisition needs. Changes in current policies and procedures are needed.

On the one hand, there is evidence of underutilization of experienced system acquisition people, mainly colonels with ten to fifteen years of SPO (System Program Office) experience. On the other hand, there is a tendency to push young officers into responsible positions. In the case of system acquisition, the latter tendency should be curbed and every attempt made to fully use the most experienced officers as program managers.

Other steps urged by Project ACE include establishing career-development plans for SPO managers and staff people. Attendance at the Defense Systems Management School at Fort Belvoir, Va., should be mandatory for program directors.

Other recommendations center on balancing the supply of scarce specialists (who are sometimes "hoarded" unnecessarily by autonomous large SPOs) through greater reliance on laboratories, test centers, and other organizations. Conversely, the establishment of program advisory boards as consultants to small SPOs, combined with frequent staff visits, can help stretch rare skills and expertise to the maximum, according to Project ACE.

The Chairman of the US Senate's Armed Services Committee, Sen. John C. Stennis, recently commented: "If the weapons we develop are so costly that we cannot afford enough of them, and if they are so technically complex that they are unreliable and difficult to maintain, we have done the nation a disservice by developing them." By launching Project ACE, General Brown has led the Air Force in a major first step toward preventing such a situation from developing. ■

The top team: Air Force Secretary Dr. John L. McLucas and Chief of Staff Gen. George S. Brown.

USAF celebrates its twenty-sixth anniversary with new top-level leadership established on the Pentagon's E-Ring. Both the Secretary and the Chief of Staff come to their jobs with unique qualifications. Together, they combine an unprecedented breadth and depth of aerospace know-how. AFA welcomes . . .

USAF'S NEW LEADERS

By Claude Witze
SENIOR EDITOR,
AIR FORCE MAGAZINE

On August 1, 1973, Gen. George S. Brown celebrated the thirtieth anniversary of World War II's Ploesti raid by being sworn in as Chief of Staff of the US Air Force. Over Ploesti, he was a major, executive officer of the 93d Bombardment Group, and a hero. He received the Distinguished Service Cross for leading his battered unit back to North Africa after eleven of its planes had been lost in that historic attack.

From an adjoining Pentagon suite, General Brown was welcomed to the job by a new Secretary of the Air Force, Dr. John L. McLucas, who was sworn in two weeks earlier, on July 18. Himself no stranger to USAF and its weaponry—Defense Secretary James R. Schlesinger says Dr. McLucas has flown in almost all current aircraft, including the U-2—Dr. McLucas is also credited with top technological capability.

The new Secretary has been a Deputy Director of Defense Research and Engineering, Assistant Secretary General for Scientific Affairs at NATO Headquarters in Paris, President of the MITRE Corp., Under Secretary of the Air Force for four years, and USAF's Acting Secretary since mid-May. He is an expert in electronics and the holder of ten patents. His doctorate, in physics, is from Pennsylvania State University and is dated 1950.

The advent of this new team in USAF's top positions of leadership gains much of its potency from the combination of the McLucas immersion in applicable science and technology with General Brown's distinguished career in both USAF operations and as Commander of the Air Force Systems Command since 1970. For more than a decade—since 1961—the Chief of Staff has been drawn from the Strategic Air Command, with Generals LeMay, McConnell, and Ryan following each other to the Head Shed.

It is a significant change of command on the uniformed side. General Brown, when he was a colonel, was executive officer to that day's chief, Gen. Thomas D. White. General White liked to give a little sermon, heard many times by this reporter, on the subject of "the art of the possible." General Brown takes office, fresh out of AFSC, with a conviction that there have been changes in what is possible, changes that General White would have recognized almost instantly. One example, General Brown gave in a recent interview, is in the relative weight given to schedule, performance, and cost in the development of a new weapon system. There was a day when it was possible to increase cost in order to maintain schedule and performance. That no longer is true. *(See p. 50).*

Further, General Brown believes, the facts must be accepted and proclaimed. On p. 35 of this issue is published the statement by Secretary McLucas informing Congress of a slippage in the USAF B-1 bomber program. Earlier, it had been announced to the press in the Pentagon. The key reason it was announced was that General Brown, still at AFSC, wanted it on the public record as soon as he knew it was

a fact. There will be no more situations, the Chief is determined, where project status reports will be given out by disgruntled employees of USAF or firms under contract to USAF. It is a practical application of the art of the possible, even if it does result in a Senate Armed Services Committee decision to cut B-1 funding for Fiscal 1974. The alternative could be worse, and probably would be.

Dr. McLucas is not the first man with scientific capability to sit at his desk. The names of Quarles, Brown, and Seamans have been on the door. But Dr. McLucas sees what he calls "a whole new set of challenges." Even the newest clerk can take heart from what he has said:

"The problems of maintaining a military force of high morale during peacetime are going to be formidable problems for all of us. But they're problems that we would rather face than the ones we had in the last four years. It's going to take some very imaginative solutions to recruit and retain the kind of force that we need. At the same time, we've got to provide for this force the equal opportunity that we have pledged all along. . . .

"We have more women in the country than we do men, so there's a majority group that we want to work with very closely, and we in the Air Force are going to increase the number of women by a factor of three in the next five years."

In a private conversation, Dr. McLucas put more stress on the personnel situation. His emphasis is that USAF must make better use of the manpower, and womanpower, that it has. He feels that the Vietnam experience has warped the inventories of both weapons and people. They must be rebuilt in a cool atmosphere that will reorient the Air Force without the distortions brought on by the urgency of war. Research and development will be more orderly, he hopes, and the levels of technology available to USAF will increase, as well as the education levels of the men and women in the force.

Like General Brown, Dr. McLucas is cost conscious. He is convinced that it is the "life-cycle" cost, not the initial cost, of weaponry that should guide USAF in the selection of systems. One reason is that this is an area in which improved technology can pay off. The Secretary cites new maintenance economies that will be realized in USAF's new F-15, as contrasted with the present F-4 fighter.

Dr. McLucas is a native of Fayetteville, N. C., where he was born in 1920. In addition to Penn State, he has degrees from Davidson College, N. C., and Tulane University, in Louisiana. He served in the Navy in World War II and is the founder or cofounder of several small businesses in Pennsylvania and Massachusetts. He is a former member of the Defense Science Board and the Air Force Scientific Advisory Board.

His wife is the former Patricia Knapp of Warren, Pa. They have four children.

General Brown comes from a military family, as does his wife, the former Alice Calhoun. They have three children. The General was born in Montclair, N. J., in 1918. He went to high school in Leavenworth, Kan., and was appointed to West Point in 1937. He won his wings at Kelly Field, Tex., in 1942.

As a young man he was a horseback-riding enthusiast and played polo at the Military Academy. Today he keeps in shape on the tennis court.

General Brown's first assignment was to the initial cadre of the 93d Bombardment Group, organized to fly B-24 Liberators. After a stint at antisubmarine patrol, his unit went to England in 1942 to join the Eighth Air Force. A year later, he took part in the Ploesti raid against Romanian oil facilities that were lubricating the German war machine. When the war ended, he was attached to the Air Training Command.

During the Korean War, General Brown was commander of the 62d Troop Carrier Group at McChord AFB in Washington, and later the 56th Fighter Wing at Selfridge AFB in Michigan. Finally, he was Director of Operations for the Fifth Air Force in Seoul, Korea.

Korean duty was followed by three years as Commander of Williams AFB in Arizona and a year at the National War College, after which he spent two years as General White's executive officer. From here, he was shifted to serve as a military assistant to both the Deputy Secretary and the Secretary of Defense. General Brown took command of the Eastern Transport Air Force at McGuire AFB in New Jersey and then was chosen, in 1964, to organize Joint Task Force II, a Joint Chiefs of Staff unit to test weapon systems. It was located at Sandia Base in New Mexico.

From here, the General went back to the Pentagon as Assistant to the Chairman of the JCS, then the Army's Gen. Earle G. Wheeler. After two years, he went to Vietnam as Commander of the Seventh Air Force and Deputy Commander for Air Operations of MACV. Since 1970, he has been at Andrews AFB as AFSC Commander.

General Brown is a command pilot. His decorations include, in addition to the DSC he won over Ploesti, the Distinguished Service Medal with one oak leaf cluster, the Silver Star, the Legion of Merit with two oak leaf clusters, the Distinguished Flying Cross with one oak leaf cluster, the Bronze Star Medal, the Air Medal with three oak leaf clusters, the Joint Services Commendation Medal, and the Army Commendation Medal. ■

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Under Secretary of the Air Force
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William B. Robinson

Acting Ass't Secretary of the Air Force (Research and Development)
Joe C. Jones

Acting Ass't Secretary of the Air Force (Installations and Logistics)
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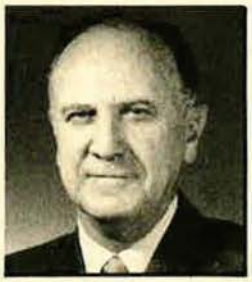

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James P. Goode

Ass't Secretary of the Air Force (Financial Management)
Hon. William W. Woodruff

Director, Office of Space Systems
Brig. Gen. John E. Kulpa

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Maj. Gen. Marion L. Boswell

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Robert N. Ginsburgh

An AIR FORCE Magazine Photochart
(As of August 15, 1973)

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Vice Chief of Staff
Gen. Horace M. Wade

Ass't Vice Chief of Staff
Lt. Gen. Austin J. Russell

Chairman, USAF Scientific Advisory Board
Robert G. Loewy

Chief of Air Force Chaplains
Maj. Gen. Roy M. Terry

The Inspector General
Lt. Gen. Louis L. Wilson

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Maj. Gen. James S. Cheney

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Maj. Gen. Robert P. Lukeman

Chief of Air Force Reserve
Maj. Gen. Homer I. Lewis

Director, Air National Guard
Maj. Gen. I. G. Brown

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Brig. Gen. Brian S. Gunderson

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Chief Master Sergeant of the Air Force
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Director of Administration
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Arnold G. Bueter

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Maj. Gen. Henry Simon
Norton AFB, Calif.

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Lt. Gen. Robert J. Dixon

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Maj. Gen. John W. Roberts

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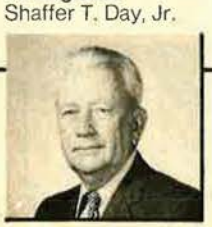
Shaffer T. Day, Jr.



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Brig. Gen. Paul F. Patch

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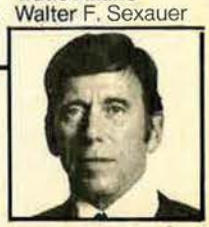
Assistant for Security and Trade Affairs
Walter F. Sexauer



THE MAJOR COMMANDS

Commander in Chief, Pacific Air Forces
Gen. Lucius D. Clay, Jr.
Hq. Hickam AFB, Hawaii

5th Air Force
Lt. Gen. Robert E. Pursley
Hq. Fuchu AS, Japan

US Support Activities Group
Gen. John W. Vogt, Jr.
Hq. Nakhon Phanom, Thailand

13th Air Force
Lt. Gen. William G. Moore, Jr.
Hq. Clark AB, Philippines

Tactical Air Command
Gen. William W. Momyer
Hq. Langley AFB, Va.

9th Air Force
Maj. Gen. Levi R. Chase
Hq. Shaw AFB, S.C.

12th Air Force
Maj. Gen. John J. Burns
Hq. Bergstrom AFB, Tex.

USAF Tactical Air Warfare Center
Maj. Gen. Woodard E. Davis, Jr.
Hq. Eglin AFB, Fla.

Aerospace Defense Command
Gen. Seth J. McKee
Hq. Ent AFB, Colo.

14th Aerospace Force
Maj. Gen. Otis C. Moore
Hq. Ent AFB, Colo.

Air Defense Weapons Center
Brig. Gen. Carl D. Peterson
Tyndall AFB, Fla.

USAF Tactical Fighter Weapons Center
Maj. Gen. Gordon F. Blood
Nellis AFB, Nev.

Commander in Chief, Strategic Air Command
Gen. John C. Meyer
Hq. Offutt AFB, Neb.

2d Air Force
Lt. Gen. James M. Keck
Hq. Barksdale AFB, La.

15th Air Force
Lt. Gen. William F. Pitts
Hq. March AFB, Calif.

1st Strategic Aerospace Division
Maj. Gen. John W. Pauly
Hq. Vandenberg AFB, Calif.

Air Force Logistics Command
Gen. Jack J. Catton
Hq. Wright-Patterson AFB, Ohio

Ogden Air Materiel Area
Maj. Gen. Bryce Poe II
Hill AFB, Utah

Oklahoma City Air Materiel Area
Maj. Gen. William Y. Smith
Tinker AFB, Okla.

Sacramento Air Materiel Area
Maj. Gen. George W. McLaughlin
McClellan AFB, Calif.

Military Airlift Command
Gen. Paul K. Carlton
Hq. Scott AFB, Ill.

21st Air Force
Maj. Gen. Ray M. Cole
Hq. McGuire AFB, N.J.

22d Air Force
Maj. Gen. John F. Gonge
Hq. Travis AFB, Calif.

Aerospace Rescue and Recovery Service (ARRS)
Brig. Gen. Glenn R. Sullivan
Hq. Scott AFB, Ill.

Commander in Chief, United States Air Forces in Europe
Gen. David C. Jones
Hq. Ramstein AB, Germany

3d Air Force
Maj. Gen. James E. Hill
Hq. RAF Mildenhall, England

16th Air Force
Lt. Gen. Richard H. Ellis
Hq. Torrejon AB, Spain

17th Air Force
Maj. Gen. John C. Giraudo
Hq. Sembach AB, Germany

Air Force Communications Service
Maj. Gen. Paul R. Stoney
Hq. Scott AFB, Ill.

European Communications Area
Brig. Gen. William W. Gilbert
Hq. Lindsey AS, Germany

Pacific Communications Area
Brig. Gen.
Howard E. McCormick
Hq. Wheeler AFB, Hawaii

Southern Communications Area
Brig. Gen. Rupert H. Burris
Hq. Oklahoma City AFS, Okla.

Air Force Systems Command
Gen. Samuel C. Phillips
Hq. Andrews AFB, Md.

Air Training Command
Lt. Gen. William V. McBride
Hq. Randolph AFB, Tex.

Air University
Lt. Gen. Alvan C. Gillem II
Hq. Maxwell AFB, Ala.

8th Air Force
Lt. Gen. Gerald W. Johnson
Hq. Andersen AFB, Guam

Alaskan Air Command
Maj. Gen. Charles W. Carson
Hq. Elmendorf AFB, Alaska

United States Air Forces Southern Command
Maj. Gen. Arthur G. Salisbury
Hq. Albrook AFB, Canal Zone

United States Air Force Security Service
Maj. Gen. Walter T. Galli
Hq. Kelly AFB, Tex.

San Antonio Air Materiel Area
Maj. Gen. William A. Jack
Kelly AFB, Tex.

Warner Robins Air Materiel Area
Maj. Gen. Robert E. Hails
Robins AFB, Ga.

Air Weather Service (AWS)
Brig. Gen.
Thomas A. Aldrich
Hq. Scott AFB, Ill.

Aerospace Audio-Visual Service (AAVS)
Col. James P. Warndorf
Hq. Norton AFB, Calif.

Headquarters Command, USAF
Maj. Gen. John L. Locke
Hq. Bolling AFB, D.C.

Civil Air Patrol, USAF
Brig. Gen. Leslie J. Westberg
Hq. Maxwell AFB, Ala.

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Lt. Gen. Albert P. Clark
Hq. Colorado Springs, Colo.

Air Force Military Personnel Center
Brig. Gen. Travis R. McNeil
Hq. Randolph AFB, Tex.

Air Force Reserve
Maj. Gen. Homer I. Lewis
Hq. Robins AFB, Ga.

Air Force Data Automation Agency
Maj. Gen. Jack B. Robbins
Hq. Gunter AFB, Ala.

Air Reserve Personnel Center (ARPC)
Col. Benjamin S. Catlin III
Hq. Denver, Colo.

Air Force Inspection and Safety Center
Maj. Gen. Ernest C. Hardin, Jr.
Norton AFB, Calif.

Air Force Accounting and Finance Center
Brig. Gen. Larry M. Killpack
Hq. Denver, Colo.

Air Force Office of Special Investigations
Brig. Gen. William A. Temple
Hq. Washington, D.C.

Air Force Audit Agency
Maj. Gen. Henry Simon
Hq. Norton AFB, Calif.

Air Force Intelligence Service
Maj. Gen.
George J. Keegan, Jr.
Fort Belvoir, Va.

Air National Guard
Maj. Gen. I. G. Brown
Hq. Washington, D.C.

GENERAL OFFICERS SERVING OUTSIDE USAF*

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Chief of Staff, SHAPE, Belgium

Gen. George J. Eade
Deputy Commander in Chief, US European Command, Vaihingen, Germany

Gen. Theodore R. Milton
US Representative, NATO Military Committee, Brussels, Belgium

Lt. Gen. Lew Allen, Jr.
Director, National Security Agency, Ft. Meade, Md.

Lt. Gen. Gordon T. Gould, Jr.
Director, Defense Communications Agency, Arlington, Va.

Lt. Gen. Earl C. Hedlund
US Representative to Permanent Military Deputies Group CENTO, Ankara, Turkey

Lt. Gen. Daniel James, Jr.
Principal Deputy Assistant Secretary of Defense (Public Affairs), Washington, D.C.

Lt. Gen. Glenn A. Kent
Director, Weapons Systems Evaluation Group, Arlington, Va.

Lt. Gen. Eugene B. LeBailly
Chairman, Inter-American Defense Board, Washington, D.C. (Retired Sept. 1, 1973)

Lt. Gen. Sanford K. Moats,
Commander, Sixth Allied Tactical Air Force, Izmir, Turkey

Lt. Gen. Timothy F. O'Keefe
Deputy Commander in Chief, US Readiness Command, MacDill AFB, Fla.

Lt. Gen. Louis T. Seith
Director, J-5, Joint Staff, JCS, Washington, D.C.

Lt. Gen. James C. Sherrill
Commander in Chief, Alaskan Command (with add'l duty as Commander, Alaskan NORAD Region), Alaska

Lt. Gen. Robert N. Smith
Chief of Staff, US Forces Korea, and Chief of Staff, UN Command Korea

Maj. Gen. James M. Breedlove
Deputy Director, Defense Mapping Agency, Naval Observatory, Washington, D.C.

Maj. Gen. Devol Brett
Chief, Military Assistance Advisory Group, Teheran, Iran

Maj. Gen. William E. Bryan
Deputy Chief of Staff, Operations and Intelligence, Allied Forces Central Europe, Brunssum, Netherlands

Maj. Gen. Maurice F. Casey
Deputy Director, J-4 (Strategic Mobility), Joint Staff, JCS, Washington, D.C.

Maj. Gen. Joseph J. Cody, Jr.
Deputy Director, Contract Administrative Services, DSA, Alexandria, Va.

Maj. Gen. Martin G. Colladay
Vice Director, Joint Staff, JCS, Washington, D.C.

Maj. Gen. Abraham J. Dreiseszun
Commander, Defense Personnel Support Center, DSA, Philadelphia, Pa.

Maj. Gen. Colin C. Hamilton, Jr.
Deputy Director for Command and Control, J-3, US European Command, Vaihingen, Germany

Maj. Gen. William R. Hayes
Deputy Director, J-4, US European Command, Vaihingen, Germany

Maj. Gen. John B. Henry, Jr.
Chief of Staff, US Southern Command, Quarry Heights, Canal Zone

Maj. Gen. William H. Holt
Chief of Staff, Allied Air Forces Southern Europe, Naples, Italy

Maj. Gen. Warren D. Johnson
Deputy Director (Operations and Administration), Defense Nuclear Agency, Washington, D.C.

Maj. Gen. Jimmy J. Jumper
Senior Air Force Member, Weapons Systems Evaluation Group, Arlington, Va.

Maj. Gen. John B. Kidd
Chief, Military Assistance Advisory Group, Rome, Italy

Maj. Gen. James F. Kirkendall
Commandant, Armed Forces Staff College, Norfolk, Va.

Maj. Gen. William R. MacDonald
Director, J-5, US Readiness Command, MacDill AFB, Fla.

Maj. Gen. Edward A. McGough III
Deputy Commandant, Industrial College of the Armed Forces, Ft. McNair, Washington, D.C.

Maj. Gen. John M. McNabb
Deputy Chief of Staff, Plans and Operations, Pacific Command, Camp David Smith, Hawaii

Maj. Gen. John O. Moench
Director, Security Assistance Plans, Policy, and Programs Formulation, DASD (Security Assistance), OASD (ISA), Washington, D.C.

Maj. Gen. Charles C. Pattillo
Deputy Director, J-4, Joint Staff, JCS, Washington, D.C.

Maj. Gen. Edward Ratkovich
Director, J-2, US European Command, Vaihingen, Germany

Maj. Gen. Donald H. Ross
Assistant Director, Plans, Programs, and Systems, DSA, Alexandria, Va.

Maj. Gen. William M. Schoning
Director, Policy Plans and National Security Council Affairs, OSD (ISA), Washington, D.C.

Maj. Gen. Richard F. Shaefer
Assistant Chief of Staff, Operations, SHAPE, Belgium

Maj. Gen. Foster L. Smith
Director, J-5, US European Command, Vaihingen, Germany

Maj. Gen. Howard P. Smith, Jr.
Deputy Director for Intelligence, DIA, Washington, D.C.

Maj. Gen. Lawrence W. Steinkraus
Deputy Director, J-3 (Command and Control) Joint Staff, JCS, Washington, D.C.

Maj. Gen. Lawrence F. Tanberg
Inspector General, Pacific Command, Camp David Smith, Hawaii

Maj. Gen. Walter R. Tkach
White House Surgeon, The White House, Washington, D.C.

Maj. Gen. William W. Wisman
Special Project Officer, Static War, Headquarters, SHAPE, Belgium

Maj. Gen. Kendall S. Young
Air Deputy, Allied Forces Northern Europe, Oslo, Norway

*In addition to those listed above, there are some sixty brigadier generals and many field-grade and squadron-level officers serving in assignments outside the Air Force.

This Anniversary Issue of AIR FORCE *Magazine marks the end of nearly a decade of war. Our pride in the men who have served through years of combat is matched only by confidence in the leaders who now take up the task of assuring a peaceful world. In the pages of this special issue are reflections of a past that has forged an Air Force equal to the demands of the future. The Air Force Association pledges its continued support of the USAF, as the Air Force's new leaders discuss . . .*

AFA—Its and

THE HON. JOHN L. McLUCAS, SECRETARY OF THE AIR FORCE

As Under Secretary of the Air Force during the past four years, I have been privileged to share with the Air Force Association our mutual commitment to national security. As Secretary, I look forward to an even closer relationship as we continue our efforts to maintain and improve our deterrent forces in the critical years ahead.

In the current atmosphere of détente, we dare not lose sight of the military and political realities that must enter into our considerations in building a force structure conducive to peace. We cannot rely on past achievements alone to provide adequate security for the future. Rather, we must temper our hopes for a peaceful world with our knowledge of the military strength of other nations. We must, therefore, continually seek public support for the vitally needed programs to assure unquestionable confidence in the capability of our own defense forces.

The Air Force Association has played a key role in promoting public understanding of the need for an effective Air Force. It has fostered valuable discussion of defense issues, not only within the Air Force, but also in the Congress and in our industrial and academic communities as well. The result has been a greater awareness of the crucial national security issues of our times and of the vital importance of strength as an essential element of the negotiating process that brings us closer to our ultimate goal of a lasting peace.

Toward this goal, the Air Force Association, through its national and local meetings, has provided invaluable opportunities for sharing ideas on how the Air Force can best contribute to the overall defense posture. These forums, together with AIR FORCE Magazine, have been major factors in focusing public attention on the problems and issues of defense. They have brought to public view the opinions, reflections, and recommendations of most knowledgeable observers, covering the whole spectrum of military affairs.

In addition to highlighting the impact of advancing technology on the development of weapons and strategy, you have done an outstanding job of placing in perspective the vital role that each individual plays in our total effort. Coverage of the war in Southeast Asia was particularly noteworthy. It enhanced public understanding and appreciation for the highly professional performance of the men and women of the Air Force in the most difficult circumstances.

Moreover, you displayed exceptional leadership in calling world attention to the plight and courage of our prisoners and their families and have continued to emphasize our sustained efforts to obtain a full accounting of those who are still missing in action.

Since the inception of the Air Force Association in 1946, your officers and members have contributed substantially to the public recognition of the Air Force role as a powerful and effective instrument of national policy. You are to be congratulated for your accomplishments, and I am confident that you will continue to make significant contributions to a strong Air Force fully capable of meeting its commitments in defense of our nation's security. ■

Accomplishments Challenges

GEN. GEORGE S. BROWN, CHIEF OF STAFF, USAF

OVER the years, the relationship between the Air Force Association and the United States Air Force has been true and strong. We have shared a common vision of the capabilities of airpower and a common recognition of the essential role of airpower in ensuring the security and welfare of our country. The members of the Air Force and the members of the Air Force Association have worked together to make that vision a reality. Together, we have contributed to the transformation of airpower into aerospace power; and we have jointly participated in the transformation of a United States Air Force, untried in its newly gained coequal status among America's armed services in 1947, into a force capable of dealing with the full spectrum of modern war.

Because this transformation has been continuous and so far-reaching, it is difficult to identify any single period in the Air Force's past as the most important. Vigilance and readiness have been a part of our experience for every day of our existence; regrettably, war itself has been a reality during much of the time. Certainly, the past few years could be considered among the most challenging and demanding in the Air Force's history.

As I look forward to my duties as Chief of Staff of the Air Force and to continued cooperation and support from the Air Force Association, it appears that the accomplishments of the past could pale by comparison with the challenges of the future.

Achieving public understanding of the essential contributions the Air Force must be prepared to make in support of America's security, foreign policy, and domestic well-being will require a concerted effort from all of us.

I have watched the Air Force Association become a continuously more effective advocate of aerospace power as it has increased in size and stature. AFA Chapters throughout the nation have been leaders in creating public understanding of why aerospace power is needed, how it can most effectively be used in peace and war, and of its requirements for quality people and equipment.

As the voice of AFA, AIR FORCE Magazine has become a highly respected journal, frequently quoted in the press and in Congress. It offers a wide range of accurate professional reading to active-duty and other members of the Association. I regard it as an important independent adjunct to the Air Force's professional education programs.

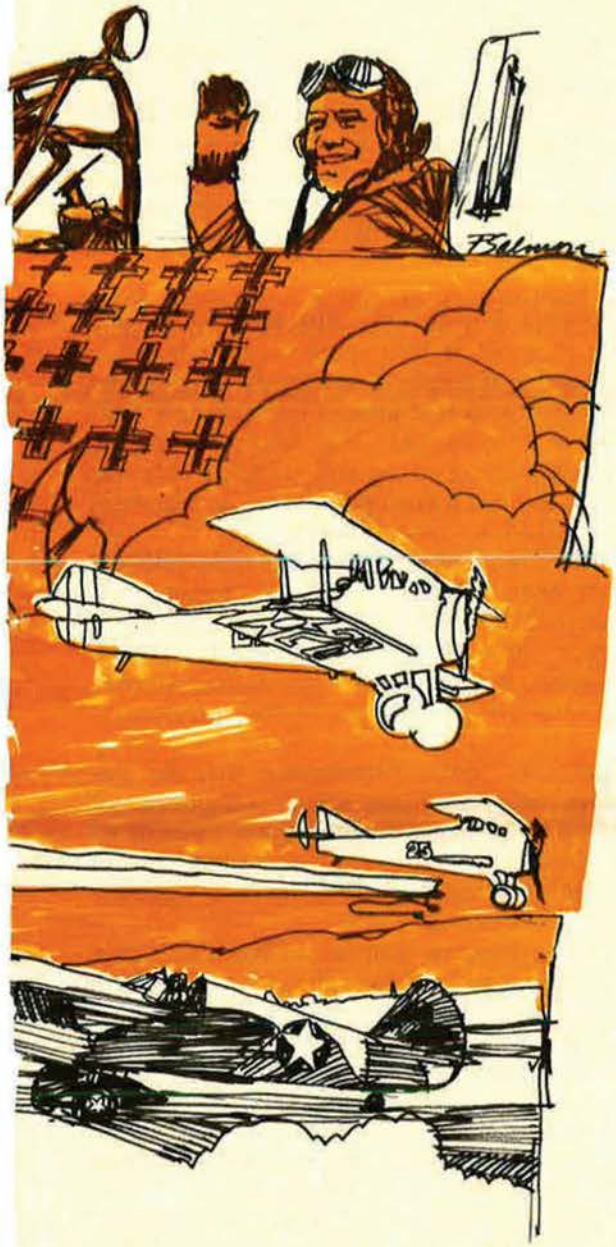
Both AFA members and AIR FORCE Magazine deserve special recognition for their pioneering work and continuing efforts in behalf of our Vietnam POWs and Missing in Action, and for their effective support of Air Force personnel programs in general. In this area, AFA's Councils have provided valued liaison between airmen and officers in the field and those in the Air Staff and DoD who are responsible for personnel policies and programs.

In the past, the Air Force Association, through the efforts of its members and in each edition of AIR FORCE Magazine, has been as effective as the airpower it has championed. That effectiveness must continue. ■

In this informal reminiscence, the author reflects on an Air Force career that has spanned more than three turbulent decades—and beyond that to earlier recollection—as he recalls the events large and small, the changing climate of war and peace, and the men who emerged as Air Force leaders. He concludes that "we have got this far on pragmatism, an ability to see our own faults, and the fact that the air business has always attracted . . . men whose interests and talents lay in the future."

USAF—A Look Back

TWENTY-FOUR years ago, the first blue uniforms began to appear in the Post Exchanges, and just in time, too, for the Air Force had reached a kind of sartorial anarchy. The new blue uniform, we were firmly advised, would be unadorned save for the essential ornaments. No more patches of present or former units on our shoulders. No more Cracker Jack prizes. No more hundred-mission caps. We were, in short, the all-new, sober-



By Gen. T. R. Milton, USAF

ILLUSTRATION BY PAUL SALMON

sided and professional United States Air Force.

There we were—new and big and strong and ready to lick the world. Hell, our team *had* licked the world, or at least a fair part of it! And we had only just fallen into the normal postwar aimlessness when the Berlin blockade and the end of our uneasy alliance with Russia put everyone back in the cockpit.

What a distance we had come in forty years! Forty years had seen military aviation advance from those first shaky flights at Fort Myer—across the Potomac from Washington—to World War I and the Red Baron, Lufbery, and Eddie Rickenbacker and his Hat-in-the-Ring squadron. And then World War II and its great air armadas, which had such a decisive role in the outcome. The first forty years had seen the advent of jets, and yet some of the old originals were still around and very much a part of the scene. Military Aviator No. 3, Benny Foulois, was only yesterday a familiar figure at any Air Force gathering. It was almost as though John Paul Jones had been seen at a recent Navy League dinner.

Foulois had seen it all—from the first Wright brothers airplane bought for the Army, an airplane that could do 42.5 miles per hour, carry two people (Orville Wright and Foulois on the final acceptance test flight), and cost $25,000, to the Air Force of 1967, whose budget was more than $20 billion ($25,000 was what was paid in 1967 for small accessories).

He had seen it all. After World War I and the great baptism of fire for military aviation, there had been the letdown. The war was over, new airplanes were expensive, and, besides, what was wrong with the airplanes they already had?

The Air Corps of the 1920s and 1930s was fun, and dashing, and dangerous, but was it really necessary? Besides, it cost a lot of money—money that could be used for ships, or for improving the breed of cavalry horse, or for all the other things the military institutions required.

It was a time of catching up in the United States for time lost, and we in the military were not really part of the mainstream. In this national mood, suggestions for the creation of a new and separate Air Force made only a slight impression. It would take years and a big war before the Army Air Corps would finally disappear.

THE FIRST AIR WAR

World War II gave us an image and established on the front pages and in everyone's mind the essential role of military airpower. The headlines, day after day, told of the air battles, the exploits of the aces, the losses. The J. C. Meyers, the Dick Bongs, the Dave Schillings became as well known as movie stars. The movie stars themselves became part of the show. Clark Gable, as a captain gunner in the Eighth Air Force, overcame a deep antipathy to flying to go along on a few combat missions. "Rhett Butler" in a leather helmet and flight suit tried very hard and with considerable success to be part of the Air Force

The author, Gen. T. R. Milton, a 1940 graduate of USMA, served with Eighth Air Force during World War II and led the Schweinfurt raid of October 1943. During the Berlin Airlift, he was Chief of Staff of the Combined Airlift Task Force. Following a number of operations assignments with MATS and duty as Executive to the Secretary of the Air Force, he commanded Thirteenth Air Force; served as DCS/Plans and Operations, PACOM; Chief of Staff of TAC; and Comptroller of the Air Force. General Milton is now US Representative to the Military Committee of NATO. His article, "Behind NATO's Shiny Facade—A Troubled Future?" appeared in the August 1972 issue of AIR FORCE.

USAF—A LOOK BACK

After his death at the age of eighty-seven, in 1967, Benjamin Foulois was described as the "link between the Wright brothers and the astronauts." It was an apt description. Here, Foulois is shown in the spring of 1910 at Fort Sam Houston, Tex., where he was a one-man air force. From 1931–35, he served as Chief of the Air Corps, and after his retirement he never really left Air Force circles.

and not just an actor on location. Jimmy Stewart was a B-24 group commander in the same Eighth Air Force—not as an actor at all, but to fight the war.

The picture comes back easily of Maj. Glenn Miller and his Eighth Air Force band taking over the flight line on a soft English evening with "Chattanooga Choo-Choo" and "You'd Be So Nice To Come Home To," followed in due course by Bob Hope, Jerry Colonna, and Frances Langford. The stage would be some engine crates, and the format was raucous and impromptu.

Those same English evenings in 1943 saw, as well, the RAF going out to work. The Wimpeys, Halifaxes, Stirlings, and Lancs all struggling for altitude and in every-man-for-himself formation.

It was an aviator's war in those years before D-Day, and we began to develop some notions as to how wars should be fought. We learned, for example, to concentrate our forces, and we learned how essential it was to deal first with the enemy air force. In fact, we applied this lesson so well, it is now hard to find a combat-decorated US soldier who has ever seen, let alone been attacked by, an enemy airplane. At the same time these notions were developing, the personalities who would set our future began emerging in full view.

THE LEADERS EMERGE

There was, of course, Gen. H. H. "Hap" Arnold, the same Hap Arnold who had come along just behind Foulois and, as one of Billy Mitchell's supporters, had seen his career sidetracked in the late twenties. Because of this, Arnold was sent to Fort Riley, Kan., as commander of the Air Corps detachment to the Cavalry School. He took the job as a missionary challenge and set to work on such unbelievers as Patton and Wainwright and, in passing, two twelve-year-old boys.

The airfield at Fort Riley was, as it is now, laid out along the bank of the Republican River. The airplanes of the day were mainly relics of World War I—Jennies, DHs, and a single-engine Douglas transport.

One Saturday morning, two cavalry brats rode their bicycles out to the airfield, as they often did, to watch the airplanes. Major Arnold was standing near the transport as it was running up its engine. One of the boys made a wistful remark having to do with the luck of people who got to fly. Acting on impulse, Arnold opened the door, and the boys were in the airplane—no parachutes, no formalities—they were on their way. Afterward, two happy kids returned at high speed on their bicycles, trumpeting the news of their great exploit, and Hap Arnold found himself in immediate difficulty with a few old cavalrymen. His defense was simple and, in the end, sufficient: "It was a nice day and a good pilot." He also recruited, as it turned out, one of the boys.

Then there was Jimmy Doolittle, the old stunt pilot, air racer, hell-raiser, business executive, MIT Doctor of Science, and Medal of Honor winner for the Tokyo raid. As Lt. Gen. Doolittle, he brought the accumulated wisdom and experience of all his various lifetimes to the job at hand. It was during his time as Eighth Air Force Commander that we saw things we'll never see again—a thousand or more bombers in a single column, covered by another thousand fighters—the whole sky of northern Europe from the Channel to Germany etched in contrails.

There was, of course, LeMay, who had proved himself a great air tactician in both Europe and the Pacific; Spaatz, the wise commander of our first strategic air forces; Eaker, whose adroit leadership made the first tenuous days in England go smoothly. There was George Kenney in the Pacific, who earned the confidence of MacArthur and hence a major role for the AAF in that campaign.

There are too many names to recall here. Names that bring back all sorts of memories, good and bad. Names that can start an endless string of anecdotes.

We emerged from World War II with a five-star general—Arnold—and as a separate service in everything but name. As the only service, moreover, with the means of delivering the ultimate weapon.

AIRLIFTED OUT OF THE DOLDRUMS

The war had ended suddenly, in two mushroom clouds. Just as suddenly every nonnuclear weapon in the arsenal began to look suspect, if not downright obsolete.

There was, besides, no inclination in the country to think about defense expenditures in those brief euphoric years immediately after the war. A defense strategy that could be met by a few bombers seemed a fine idea. The real and only job for the rest of the military was to occupy Japan and Germany.

Those days, only three years after World War II, found the United States more bemused than worried over the 1948 Berlin crisis. We had, after all, just demobilized, and consumer products were once again beginning to reach the stores. You still had to know someone to buy a new car, and housing was scarce and badly inflated. New York was a great place, La Guardia was the last word in airports, and everyone was looking forward to the postwar boom. Those of us who remained in uniform were regarded with tolerance, even affection, for past services rendered, but our future contributions seemed doubtful.

The postwar Air Force, created while James Forrestal was serving as the first Secretary of Defense, took shape in this atmosphere and under the heavy hand of Forrestal's successor, Louis Johnson. In some ways, the omens were all good for the Air Force, at least in relation to the other services, for Johnson was committed to a defense policy through global airpower, and morale of the other services was, understandably, low. However, Johnson's view of airpower itself was a very narrow one, and there was not much room in it for anything beyond strategic bombers and air defense.

But the Berlin Airlift had already come along, in the summer of 1948 as we were drifting into the doldrums of occupation duties, to give a new sense of purpose to the transport forces. And not only to the transport forces. Fighter pilots were dragooned into service as copilots. Communicators, civil engineers, traffic controllers all found steady work. Even the information officers could operate without wraps, and the stories were all up-beat, if a little stereotyped.

The driving genius of the airlift was Maj. Gen. William Tunner, who believed in air transport with the same conviction that LeMay believed in bombers (although, in fairness, it was LeMay who conceived the Airlift and began it).

Just prior to the Berlin blockade, the air transport forces of the Navy and the Air Force had been put together in an uneasy shotgun marriage. Gen. Larry Kuter had, with tact and diplomatic finesse, supervised this affair so as to cause the least pain to the Navy. But before MATS had truly got started, most of its assets were in the Airlift Task Force and driven to their limit by Tunner whose long suit—how shall we say it?—was not diplomacy and tact, but an ability to make people perform beyond their normal capacity.

It was a fascinating operation, and one that had great political impact, for here was evidence of the US intention to hold the line in Europe. And here was also evidence of the great technical capability we had. It made a deep impression on both sides of the Curtain.

There was some real pioneering in the Airlift. Radar air traffic control, to name one thing, was first tried on a large scale in Berlin.

Finally, the Airlift established beyond any question the essential role of air transport in the Air Force list of essential missions.

KOREA: END OF THE DEMOLITION DERBY

So there we were with three missions, at least, that seemed solid: strategic bombing, strategic airlift, and air defense. It was up to the tactical people, and especially the fighter types, to prove they had a role left to play. The new F-86s were very fast, but there was a lot of skepticism around as to their real value in combat. They were, in fact, too fast, said the skeptics, and no one would be able to dogfight at jet speeds. Moreover, Secretary of Defense Louis Johnson was hard at work dismantling the structure, and anything that was not in his judgment essential was fair game.

Given another year or two, the demolition job might have been complete. As it was, the damage was pretty severe when the Korean War caused an abrupt one-eighty in defense planning. An occupation Air Force, one learned, was not to be confused with the Ninth Tactical Air Force of 1945. A few short years of pinched budgets, easy living, and lack of purpose had done in our superb tactical air. We had to rediscover this talent in the face of some early and mortifying North Korean successes.

However, in time, the Korean War took care of the problem of tactical air. The bombers were in it, and nuclear weapons were always in the background—there to keep everyone honest—but it was tactical aviation that fought the war that the people read about. And while the Korean War never involved the nation the way World War II had, the heroes of MIG Alley—McConnell, Jabara, Fernandez, and the WW II Meyers and Gabreskis—were front-page news.

Tactical air once more had its day, but after Korea the preoccupation again became Russia. And if it was Russia you were worried about, then SAC was what you spent your money on. This next decade, from Korea to Vietnam, was a decisive one in our history. This was the great era of the SAC buildup. It was the era when the Air Force got the lion's share of the

USAF—A LOOK BACK

budget in most appropriations. Magnificent new bases were built in the United States, in Morocco, in Spain—anywhere, in fact, where they were needed and could be built. When the strategy required northern basing, the bases

The doldrums of postwar occupation duty were interrupted by the Berlin Airlift. Here, coal-hauling C-54s are being unloaded in the beleaguered city.

The Korean War saw F-86s like these roar off for combat in MIG Alley. There, they set impressive records and produced history's first jet aces.

appeared, complete with family housing, shopping centers, and 12,000-foot runways.

Some of these bases came and went pretty quickly. From conception to ghost town in ten years. If we had it all to do over again, perhaps we could have salvaged more from this great construction effort, but then again, maybe not. For the driving motive behind base openings and base closings was the mission itself. How could it best be done? Not much else ever mattered.

ICONOCLASTS AND PROFESSIONALS

This is a story of where we have been. It is a story of strong individuals who at the precise moment were there to advance, with single-minded zeal, their particular cause.

The Air Force has been built, thus far at least, on rivalry, not back scratching. It has been a constant, and sometimes bitter, struggle of rival apostles, a survival of the fittest. If the other services are founded on tradition, and thus have some distinctly institutional aspects, we have grown up as iconoclasts. If a base is no longer needed, close it! Never mind how attractive the facilities. If SAGE is no longer competitive in the budget, phase it out! Never mind its cost and the fact that it is still new. So it went in the years between wars and crises.

This last war is now over for everyone, with the Air Force the first in and the last out. For more than twelve years, Air Force pilots were in combat in Southeast Asia, beginning with the first and unpublicized missions over Laos and carrying on through the whole gamut of air warfare.

It is difficult for those of us who are older to realize how utterly professional this Southeast Asia operation has been. The wing commanders in this war had more real experience than anyone in the AAF had in World War II. The flight leaders in this war have had more experience than squadron and group commanders had in World War II. The dangers have been very great and the rewards minimal.

Thirty years ago, anyone in a pilot's uniform who looked like he might have been in the war was made to feel very important. No problems for him with hotel reservations, theater tickets, tables in restaurants. It was hard to pay for a drink. This time around, as we all know, things have been a little different.

One curious thing about the Air Force is the way it has avoided becoming an institution, at least, up until now. Maybe it's because of the way we started and maybe it is because, during the great expansion of World War II, the Air Force necessarily was run by young men. We came out of World War II with colonels still mainly under thirty-five and generals not much older. ("No Drinks Served to Air Force Colonels Under 21" said the signs over bars.) And the generals, they seemed old to us in the late forties, but they really weren't very old at all. Larry Kuter was a brigadier at thirty-six, as was Larry Norstad. Vandenberg was forty-eight when he was Chief of Staff, and LeMay was only forty-two when he became Commander in Chief of SAC.

Thus far, at least, our history has been grounded in pragmatism. From time to time, we have looked wistfully at the theorists—the Mahans and the Clausewitzes—and wished we had one too. But our theorists have not really had much to do with where we have been. Airpower is, however complicated in its hardware and the skills required, very simple in its

application. The hard work goes in getting things ready; having the best equipment, in knowing how to use it, and in having the finest possible aircrews, determined to do their job. Once they are off the ground, it is up to them, though the theorists and dogmatists of airpower sometimes make interesting reading, or listening.

It was fascinating, for example, to listen years ago to one of the great theorists lecture on the Schweinfurt raid of October 1943. The exquisite planning, the diabolically clever deception, the precise relays of fighter escorts, everything was right out of the book—Baron von Münchhausen's book. The real story of the Schweinfurt raid was, in spite of bad weather and general disorganization at the outset, how a determined group of men got through to the target, though with appalling losses. The high-level planning of that mission had little to do with its execution.

PROLOGUE AND PROSPECT

No, we have got this far on pragmatism, an ability to see our own faults, and the fact that the air business has always attracted, in remarkable quantity, men whose interests and talents lay in the future and in foresight.

Men like Spike Momyer, whose knowledge of tactical air was such a great factor in the Vietnam War. Take, for example, the siege of Khe Sanh, conceived by General Giap as America's Dien Bien Phu. It became, instead, a burial ground for enormous numbers of North Vietnamese. It was a victory for airpower and the bold and confident concept of Momyer. But, again, the aircrews had to perform or the concept was worthless.

Khe Sanh itself might not have been possible except for Gabe Disosway, who foresaw, in 1965, the immense task that lay ahead for tactical air and the consequent need to turn his Tactical Air Command from a ready force to one big training organization. This concept paid off many times over.

However, there was a period, in those years between Korea and Vietnam, when the only bandwagon passing through town was the strategic one. Thus, it was only natural, if perhaps too bad, that everyone jumped on it, for this preoccupation with nuclear war gave the tactical forces some catching up to do when the Vietnam affair grew into a war. The fact that we have come out of Vietnam with the finest tactical forces ever is a measure of the years of training, and R&D and procurement, and fighting that have gone on. At the same time, we rediscovered—shades of the B-17—the heavy bomber's utility with iron bombs.

Perhaps—and it is by no means certain—we lacked a little foresight in those big budget years. Somehow, small—or shall we say less-than-total—wars seemed improbable. Certainly, they did not seem worth preparing for.

Hap Arnold had foresight to spare. He had it when he told a group of incredulous West Point cadets, in 1939, that some of them would be majors in 1943. He had it when he persuaded President Roosevelt to commit the United States to produce 50,000 airplanes a year. And he had it when he wrote, in the AIR FORCE Magazine of October 1945, about the inevitability of such developments as supersonic aircraft and ICBMs, of SAMs and ABMs, and of other things we now take for granted.

During the Vietnam War, the siege of Khe Sanh was a great victory for airpower. Here, a C-130 Hercules brings in supplies under enemy fire.

And now what is down the road? A little of the glamour has rubbed off the airplane, as is always the case when something becomes commonplace. And perhaps a little disenchantment may have set in, here and there, in the Air Force itself, for it is very hard to take day after day the articulate venom of those who get that nice warm glow by sniping at the military.

But this will pass, and the next generation of Air Force leaders, on their record thus far, are a source of great expectations. They will inherit a going concern, and, as for what they do with it—well, the sky is the limit. Nothing else. ■

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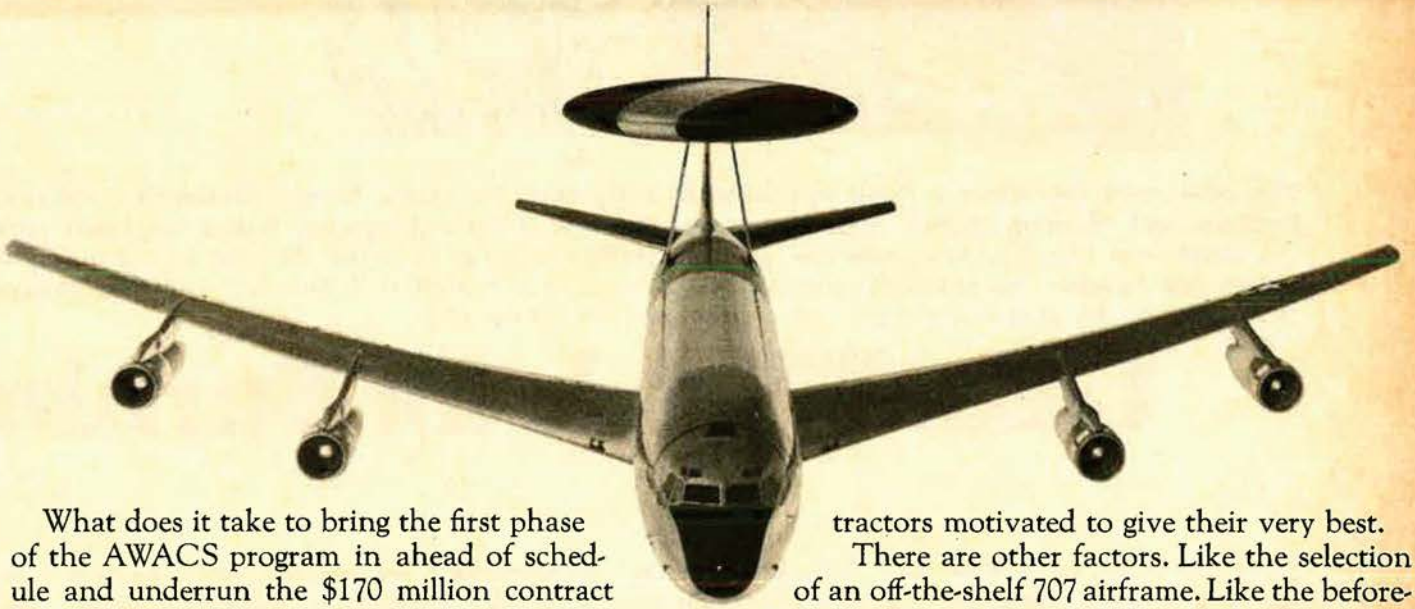

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THE WORLD WAR I BALLOON-BUSTER

The skies over the Western Front in France in 1918 were the stage. Spads, Nieuports, *Drachens*, Fokkers, and "flaming onions" were the props. The star of the eighteen-day drama was Frank Luke —a loner from Phoenix, Ariz., who ran up an incredible string of victories. On what turned out to be Luke's last mission, his squadron commander planned to "court-martial him first and then recommend him for the Medal of Honor." He did the one, but not the other . . .

Luke: "Watch for Burning

Lt. Frank Luke, Jr., was the first airman to be awarded the Medal of Honor. The recommendation for the award cited his record as one "which is unparalleled in the United States Air Service and, as far as is known, was not approached by any pilot in any other Army during the war. The brilliance of his work may be appreciated when it is considered that he destroyed eighteen enemy aircraft in eighteen days. . . ."

The Arizonian was recommended for this highest decoration as soon as the facts of his last flight became known. He died in an act of defiance that typified much of his spectacular but brief career. Had his brash ways not been matched by an absolute fearlessness, Luke would have earned little more than the contempt of those who flew with him. But his only real flaw was impetuous youth, and his was the total commitment of the young. For Luke, at twenty, the challenge was the war in Europe and the means was the airplane.

Born May 19, 1897, in Phoenix,

Balloons"

By Lt. Col. Raymond H. Fredette, USAF (Ret.)

ILLUSTRATION BY PAUL SALMON

Ariz., Frank Luke made a better record on the football field than in the classroom at Phoenix High School. Before his graduation, in 1917, the US had already entered the war against Germany, and in September of that year, Luke enlisted. His preflight training was at Austin, Tex., and he got his flight training at Rockwell Field, San Diego, Calif. It didn't take him long to solo. While most cadets found straight and level flying memorable enough on this occasion, Luke improvised by putting his Curtiss "Jenny" into a loop. He was grounded for three days for the stunt.

After forty hours in the "Jenny," Luke won his wings and went proudly home for fifteen days of leave. In mid-February 1918, Luke was part of a contingent of officers sent from San Diego on a long, cross-country train trip to Hoboken, N. J., where they boarded the *Leviathan* and sailed for France.

TO FRANCE— BUT NOT TO WAR

On March 25, 1918, Luke reported to the Third Aviation Instruction Center at Issoudun, south of Paris, where pursuit pilots were being trained for the newly organized American squadrons. Luke had to wait—impatiently—for three weeks before making his first flight in France.

"I have not started to fly yet," he wrote early in April, "as the weather has been holding us up. . . . We have classes every day, and they are really interesting. . . . Everything must be learned thoroughly now. . . ." The training center at Issoudun was American, but the airplanes were French. More than half of the trainers were Nieuports of various types, which the squadrons at the front had discarded for more advanced types.

Luke began his advanced training with dual instruction on the slow, twenty-three-meter Nieuport, so named after the surface area of its large wings. Impatient, Luke did not do well in this measured training. After soloing and more dual instruction, Luke progressed to the fifteen-meter Nieuport, a smaller and faster single-seater. But his flying continued to be marred by a series of minor mishaps and a few narrow escapes. At the end of the course, his "combatting" was evaluated as not "as good as it should be with his experience."

Early in June 1918, he was sent to the gunnery training center for American pilots at Cazaux, in southern France. Luke's performance during the two-week course was better in the classroom than in the air. He was returned to Issoudun for an additional week of training.

On June 28, a disappointed Luke was sent to an acceptance park at Orly Airdrome near Paris, a depot where new airplanes were received and serviced. His job was to ferry airplanes to the combat squadrons. The other ferry pilots disliked Luke, who kept to himself and grumbled about wanting to see action.

This article is a condensed version of a chapter on Frank Luke from the author's forthcoming book on Air Force Medal of Honor winners to be published by the Office of Air Force History. It appears here by special arrangement with the author and will be followed by other selections in future issues. Retired Lt. Col. Raymond H. Fredette has a B.A. in history from Tufts University, Medford, Mass., and an M.A. in international affairs from the Fletcher School of Law and Diplomacy at Tufts. He is a veteran of a combat tour in Europe with the Eighth Air Force in World War II. Recalled in 1951, he served in a variety of intelligence assignments until his retirement last year. Colonel Fredette has taught courses at the University of Maryland and the Black Hills Teachers College, S. D. He has written articles on aviation history for the Encyclopedia Americana *and other publications. He is the author of* The Sky on Fire: The First Battle of Britain and the Birth of the RAF, 1917–1918. *While working on his history of USAF Medal of Honor winners, he is also writing a military biography of Charles A. Lindbergh, to be published by Harcourt Brace Jovanovich.*

BALLOON-BUSTER

At the front, the Germans were massing their best pursuit squadrons in the Château-Thierry sector. Aerial combat intensified when the enemy launched a final offensive on July 15. A few days later, the Allies counterattacked. As losses in the air mounted, a call went out for pilots. Luke was one of eight replacements who arrived at Saints, the field of the 27th Aero Squadron, in late July.

ACTION AT LAST

Luke claimed his first aerial victory on August 16. His combat report for that day was the longest he ever submitted. Noting that he was one of several pilots sent out to protect a Salmson machine on a photographic mission over the lines, Luke wrote that he had taken off after the others because his "machine was not ready." He never found the Salmson and its escorts, but reported seeing a German formation northeast of Soissons.

"I cut my motor and dove down on the rear man, keeping the sun directly behind me," Luke reported. After attacking "with both guns on him until within a few feet," he claimed that the German "sideslipped . . . like a falling leaf and went down on his back."

Luke was said to have bragged that either he would down his first "Hun" that day or never return. Maj. Harold E. Hartney, then commanding the 27th Squadron, was convinced that Luke had won a victory, but there were no witnesses and it was never confirmed. Many of the pilots ridiculed Luke as a "boastful four-flusher." Hartney recalled that "Frank Luke was a lonesome and despised man from that day until he brought down his first balloon. . . ." (Attacking the heavily defended balloons was extremely hazardous. *See box.*)

He scored that victory on the St.-Mihiel front on the morning of September 12. As he made three attacks, "each within a few yards," the German crew frantically lowered the balloon. Close to the ground, the gas bag "burst into great flames and dropped on the winch, destroying it." This time, Luke would not be denied the credit. Landing in a small field near an American balloon, he had two lieutenants sign a confirmation blank that he had laboriously typed out in advance and attached it to his report.

BALLOON-BUSTING

By this time, Luke had found a friend and ally in 1st Lt. Joseph F. Wehner, a courageous, self-effacing pilot from Everett, Mass. Luke once praised him as "great stuff, but too damned modest." Wehner was also trying to prove himself. Because of his German origins, he had been detained and investigated before going overseas.

On the morning of September 14, Luke attacked an enemy balloon and its defending guns at Boinville. He dived six times, leaving the balloon "on the ground in a very flabby

The Fine Art of Balloon-Busting

Clearing the skies of the *Drachens*, as the Germans called their observation balloons, was often a task of the most urgent priority and danger for the Air Service. On a clear day, a balloon observer enjoyed a sweeping view of the front lines. With a telephone linking him to his gun batteries, the observer could direct shells on Allied targets and quickly correct misses.

With the opening of the St.-Mihiel offensive on September 12, 1918, all squadrons of the 1st Pursuit Group "were ordered to participate in low-flying and ground-strafing operations, particular attention being paid to balloons which were to be attacked wherever found. . . ." A few days later, Col. Billy Mitchell, who commanded the Air Service of the American First Army, urged the group commander, Maj. Harold E. Hartney, to change his balloon-strafing tactics, since "the orthodox way of attacking balloons was pretty well understood by the Germans."

Although huge and inflammable, the *Drachens* were not easy to destroy. They had to be fired at from above, usually from head to tail, because the hydrogen inflating them was concentrated in the upper part of the bag. Bullet punctures had to be grouped closely together to allow enough gas to escape and mix with the oxygen in the air before the balloon would burn. Since regular ammunition often failed to ignite the gas, Hartney ordered one of the two .30-caliber guns on the attacking Spads replaced with a .45-caliber "balloon gun." This larger gun fired only incendiary bullets.

On a windy day, a *Drachen* could not rise much above 3,000 feet. An attack on a balloon was often a race between its crew manning a winch mounted on a truck and the strafing pilot. Lowering the captive bag quickly forced the pilot to dive lower at a greater risk of being hit by machine-gun fire. His best defense was to skid his airplane first on one side and then the other by "walking on the rudder."

An enemy balloon site was usually defended by six or more machine guns. The Germans also had fortress guns that fired glowing phosphorous shells. Although far less accurate than machine-gun fire, these "flaming onions" were unnerving to attacking pilots. Antiaircraft batteries, and Fokkers patrolling high above, further added to the hazards of balloon strafing. In crediting victories, destroying a balloon counted equally with shooting down an airplane.

The 1st Pursuit Group was credited with thirty-two balloon victories during a one-month period beginning September 12, 1918. Hartney later wrote that the majority of the *Drachens* were shot down in dusk strafing, with only two destroyed "in broad daylight." Fourteen of the balloons were burned by a single pilot of the 27th Aero Squadron, Lt. Frank Luke, Jr., who conceived the idea of attacking during hours of darkness.

condition." That afternoon, he was attacked by a formation of eight Fokkers after burning another balloon at Buzy. As bullets ripped through his machine, Luke's guns jammed. Wehner, flying cover, took on the enemy formation, allowing Luke to escape.

After landing at Rembercourt in his riddled Spad, Luke insisted on being given another airplane to attack a second balloon he had seen. Capt. Alfred A. Grant, his new commanding officer, refused because "balloons or no balloons, we must have discipline." Major Hartney, now commanding the 1st Pursuit Group, witnessed the heated exchange. Although sympathetic to Luke, Hartney did not interfere. He later wrote that "Luke was simply not susceptible to ordinary Army discipline."

Luke added three balloons to his score the next day. He had been attracted to the third when he saw a light in the darkening sky beyond the German lines while flying patrol in the early evening. He hit upon the idea that the best time to attack balloons was at dusk. Landing at night with a fast Spad was risky, but he convinced Hartney. Col. Billy Mitchell, the American First Army's Air Service Commander, had only recently ordered Hartney to devise some new way of destroying balloons.

FIVE DOWN IN TEN MINUTES

Before taking off with Wehner on the evening of September 16, Luke pointed to two German balloons barely visible in the distance beyond Verdun and called out the time to the minute when they would be destroyed. Shortly after 1900 hours, spectators on the field saw one of the specks in the sky flare up as the balloon caught fire from two bursts of incendiary bullets fired by Luke and Wehner. The pair then separately attacked and shot down two more balloons before returning to Rembercourt. An observer, Lt. Edward V. Rickenbacker, called the flight "a most spectacular exhibition."

Luke had now destroyed eight enemy balloons in four days, a feat for which he was awarded the Distinguished Service Cross. Flying again with Wehner on September 18, Luke outdid himself with an incredible record of five aerial victories in ten minutes. After dropping down through the clouds to burn two balloons, the two pilots encountered a flight of Fokkers. Wehner, flying above, was attacked first. As Luke began to climb "to join the fight," two Germans pounced on his tail.

"I turned on them, opening both guns on the leader," he reported. "We came head on within a few yards of each other, when my opponent turned to one side in a nose dive, and I saw him crash on the

—The National Archives

This is the wreckage of the German two-seater Luke downed on September 18, 1918, the day he got two other enemy planes and two balloons. Luke is standing before the wreckage.

Frank Luke strikes a warlike pose behind a machine gun.

FRANK LUKE'S CONFIRMED VICTORIES

Date (all 1918)	Aircraft Type
September 12	Balloon
September 14	Balloon
September 14	Balloon
September 15	Balloon
September 15	Balloon
September 15	Balloon
September 16	Balloon
September 16	Balloon
September 18	Balloon
September 18	Balloon
September 18	Fokker
September 18	Fokker
September 18	Two-seat airplane
September 27	Hannoveraner
September 28	Balloon
September 29	Balloon
September 29	Balloon
September 29	Balloon

BALLOON-BUSTER

ground. I then turned on the second, shot a short burst, and he turned and went into a dive."

During the melee, Wehner had disappeared. On his way back alone, Luke saw some French Spads pursuing a German reconnaissance machine. He headed it off and shot it down inside the Allied lines. Much distressed about Wehner, Luke then wandered off on his own and may have spent the night with the French Spad pilots. When he did return to Rembercourt after nightfall the following evening, his fears that Wehner was dead were confirmed.

LUKE OVERTAKES RICKENBACKER

The sadness Luke felt over the loss of his closest friend overshadowed his moment of triumph. In less than a week, he had scored thirteen confirmed victories and had overtaken Rickenbacker to become, for the time being, the ranking American ace. In praising Luke, Rickenbacker hailed him as "the most intrepid air fighter that ever sat in an airplane." Hartney recalled that Luke "wanted no hilarity. . . . Almost by force, we sent him off on a leave to Orly from which we knew he would make his way into Paris."

While reading combat reports less than a week later, Hartney was surprised to find one signed by Luke telling how he had shot down a Fokker on September 26. Returning early from his leave, he had gone on a patrol with two other pilots late that afternoon.

Flying alone, Luke burned another balloon two days later, diving very low with both guns firing to destroy it in its nest. His daring attack failed to placate Captain Grant, who angrily reprimanded Luke for again staying away from the airdrome overnight.

The 27th Squadron had recently sent its B Flight, commanded by Lt. Jerry C. Vasconsells, to an advance field close to the front near Verdun. Luke had pleaded with Hartney to be allowed to fly as a "lone wolf" from that field. Defying Grant, Luke flew there on his own some time on September 29.

Grant had complained to Hartney that morning that "Luke is going hog-wild. . . . I can't handle him unless you back me up. He thinks he's the whole Air Service." But Hartney had already decided to let Luke "take a crack at the enemy balloons on the upper Meuse near Milly." He notified Vasconsells not to allow Luke to take off until dusk. Becoming "nervous over the situation," Hartney himself flew to the advance field later that day. Before he left, Hartney again had to order Luke out of his cockpit until the appointed time.

MEMORIALIZATION OF LUKE'S NAME

Frank Luke has had two installations named in his memory. On April 30, 1919, the Air Station on Ford Island at Pearl Harbor, Hawaii, was designated Luke Field. With its transfer to the US Navy in late 1939, the facility became the Naval Air Station at Pearl Harbor.

In 1941, the new Luke Field was completed at Phoenix, Ariz., and became the largest Army Air Forces advanced fighter training center of World War II. Deactivated on November 30, 1946, it continued to be used by units of the Arizona National Guard. The field again became fully operational during the Korean War, and, on February 1, 1951, it was redesignated Luke AFB.

On September 29, 1957, the thirty-ninth anniversary of Lieutenant Luke's death, the 388th Fighter-Bomber Wing, then stationed at Etain Rouvres Air Base, France, erected a monument shaft and plaque at Murvaux, near the spot where Luke landed his Spad on his final flight.

LAST FLIGHT

As dusk came, Luke roared out of a hangar in his Spad and took off. Still concerned about confirmations, he banked low over the headquarters of the American 7th Balloon Company to drop a note which read: "Watch for burning balloons. Lt. Luke." Within minutes, a balloon was seen falling in flames beyond the German lines. A little further away another burst into flames, and then still another flared up in the twilight sky.

Confirmation of the three victories was promptly received, but Luke did not return that night. He was still missing weeks later when Grant told a fellow squadron commander, Rickenbacker, that "if Luke ever did come back, he would court-martial him first and then recommend him for the Medal of Honor."

The first news that he had been killed came in a tentative report from the International Red Cross. In November, Grant finally acted to have the highest decoration awarded to Luke, but approval was deferred until the facts about his death could be determined.

The full story of Luke's last flight was not known until after the Armistice when the grave of an "unidentified aviator" was found in the village of Murvaux. The inhabitants recounted that the American pilot, pursued by Fokkers, had destroyed three balloons "toward evening." Evidently hit by ground fire in his last attack, he then flew low over Murvaux and strafed some enemy troops in the village before landing in a nearby field. The pilot left his machine and walked some fifty meters toward a stream. As German soldiers approached him, he drew "his automatic and held off the enemy until he died from the effects of his wound."

From these details, the pilot was identified as Frank Luke, and he was again recommended for the Medal of Honor. Promptly approved, the decoration was presented to his father by Brig. Gen. Howard R. Hickok on May 29, 1919. Frank Luke, Sr., chose to accept it at his home in Phoenix, Ariz., so that the entire family could be present for the ceremony.

Lieutenant Luke was permanently interred at the Meuse-Argonne Military Cemetery at Romagne-sous-Mountfaucon, France, in 1919. To his father, "it seemed right to leave him there where those thousands of other boys are. He would have wanted it, and I wanted to do the thing that would have pleased him most." ■

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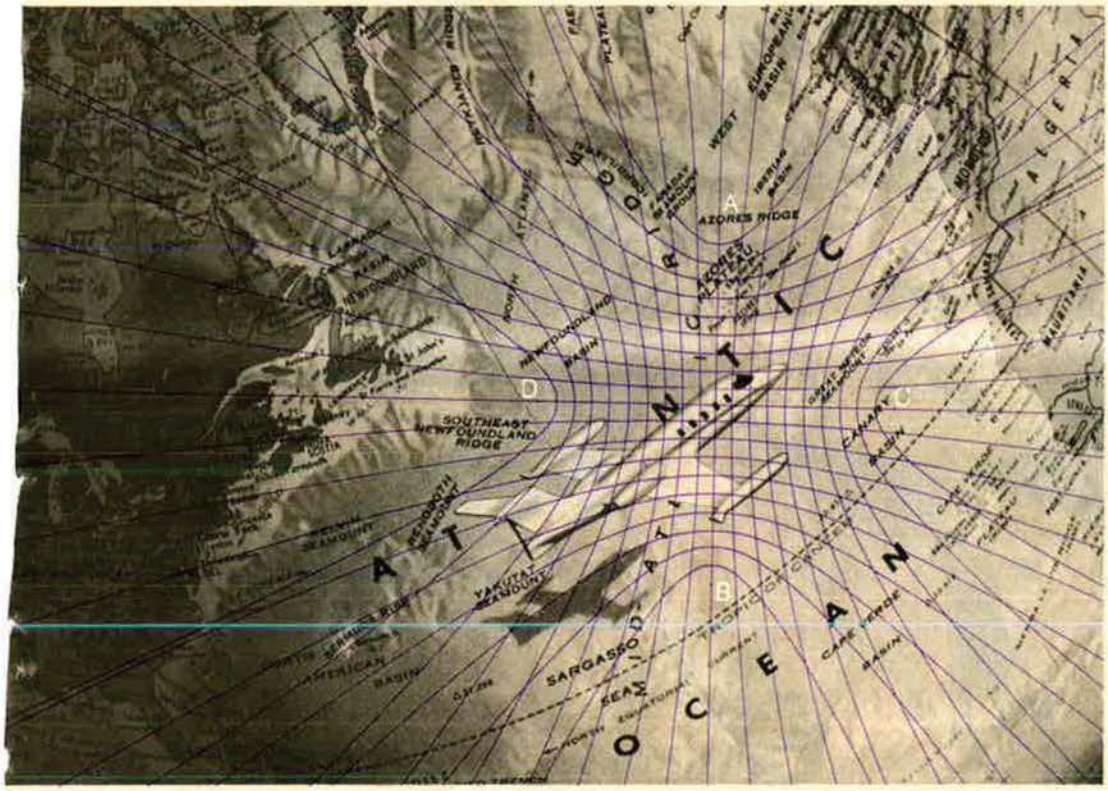

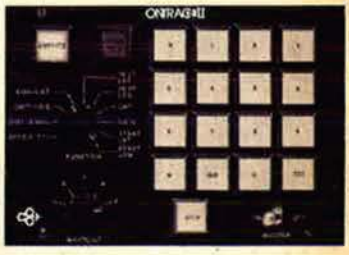

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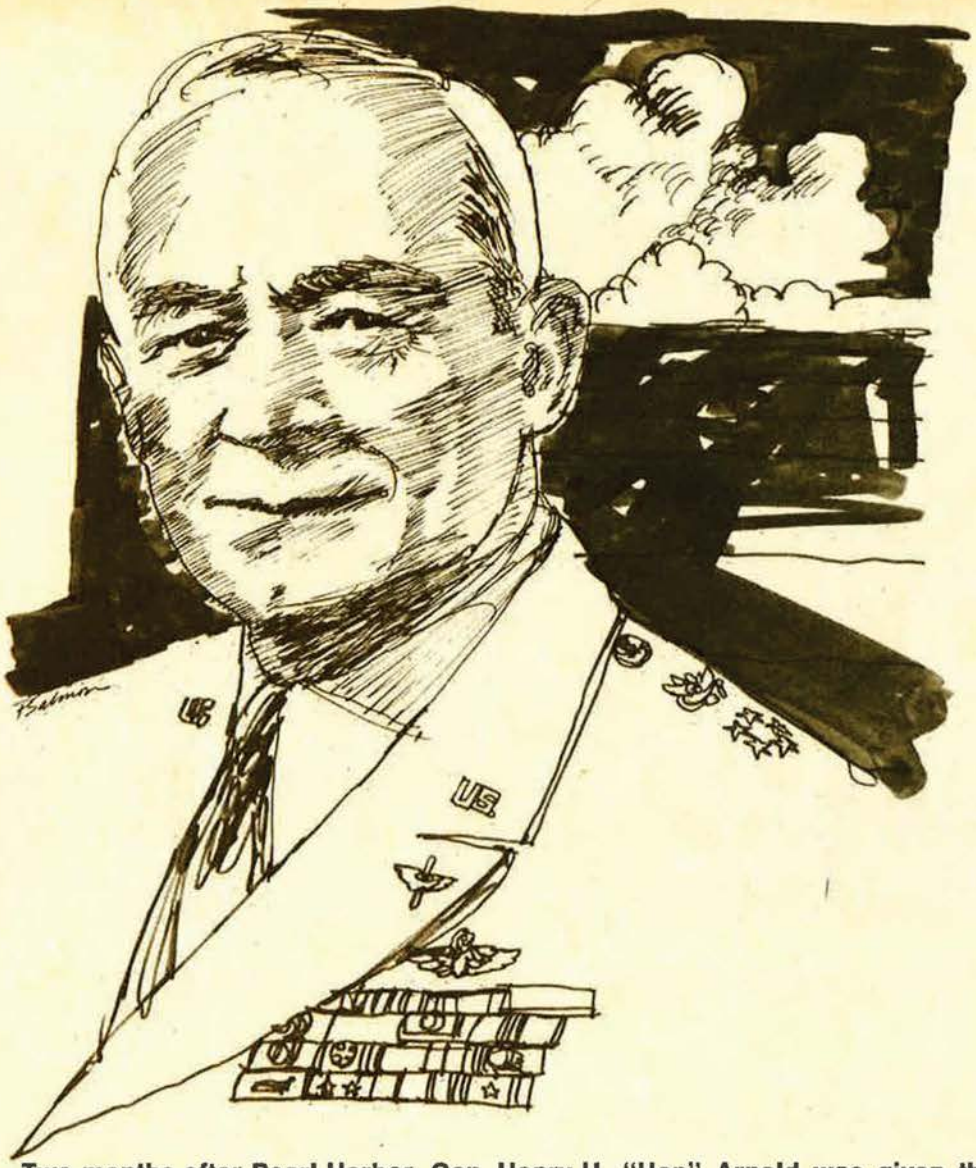


Two months after Pearl Harbor, Gen. Henry H. "Hap" Arnold was given the job of expanding the newly created Army Air Forces from its prewar strength, numbering in the thousands, to a fighting force of more than two million. He did it with wildly unorthodox methods and by "passing out ever bolder and more vigorous challenges to his subordinates." Here, one of Hap Arnold's principal planners—in 1942, the youngest general officer in the armed forces—tells about the miraculous results of those methods and of some of the challenges to a devoted staff in this account of . . .

How Hap Arnold Built the AAF

By Gen. Laurence S. Kuter, USAF (Ret.)
ILLUSTRATION BY PAUL SALMON

In the beginning God created the Heaven and the earth. Considerably later, Gen. H. H. "Hap" Arnold created the Army Air Forces. The axioms of sound business management were not adhered to very closely in either case.

AFTER OUR shocking setback at Pearl Harbor, and in the knowledge that the Germans were already through France and threatening Britain, the Army Air Forces had to be built in the shortest possible time. It was one of history's biggest jobs: expanding the Army Air Corps of early 1942, with its thou-

sands of people, into the millions needed to equip and train the AAF.

Gen. Henry H. "Hap" Arnold was one who could get the biggest jobs under way in the shortest possible time.

Gen. George C. Marshall, then Chief of the War Department General Staff, put Arnold in command of the Army Air Forces when that command was formed in February 1942. Marshall was intimately familiar with Arnold's characteristics and capabilities. He knew that Arnold's antagonism to the functioning of a large military staff was equaled only by his indifference to its organizational structure and procedures. His allergy to methodical and careful staff study and action was acute and chronic. Nevertheless, Arnold (like Marshall) was the right man in the right place at the right time.

SETTING THE ORGANIZATIONAL PATTERN

Soon after Pearl Harbor, in January 1942, General Marshall picked Maj. Gen. Joseph T. McNarney and three other officers to form a War Department Reorganization Committee. The committee was directed to reorganize the unwieldy peacetime War Department into a structure that could rapidly build great fighting forces, direct them, and win World War II.

I was Assistant Secretary of the War Department General Staff and was selected as one of General McNarney's three assistants, responsible for a radically new Army Air Forces organization that could be put into effective operation by our early March deadline. (The other organizations were the Army Ground Forces and Army Service Forces.) I had to prove to General McNarney, General Marshall, Secretary of War Henry L. Stimson, and finally the Combined Military Affairs Committee of the House and of the Senate that the new organization provided a sound structure for an explosive expansion into the world's largest air force. That was the start of my close wartime association with General Arnold.

In my job, I relied heavily on the assistance and collaboration of Gen. Byron E. "Hungry" Gates. Hungry in turn assembled a group of newly inducted Army Air Forces officers with credentials in management and organization. Among them was a twenty-six-year-old M.B.A. from Harvard, Lt. Col. Robert S. McNamara.

Hungry also had another young officer—Col. Charles B. "Tex" Thornton—who, not long after the war, organized and managed Litton Industries. Also in the group were Guido Perrera, subsequently a leading corporation lawyer and corporate director in Boston; and Joseph S. Clark, a future Mayor of Philadelphia and later a US Senator from Pennsylvania.

GETTING THE CHIEF'S EAR

With this new talent and with the aid of many long-time Army Air Corps officers, we laid out a form of organization designed to recruit, train, and build an Air Force a hundredfold larger than the entire Army Air Corps of the previous years. Since this was no conventional task, the organizational structure had little conventional flavor.

This unique staff organization, while not designed primarily to fight a war, was intended to rapidly build the airpower that would be able to win. It was expected that the staff structure would change after the force had been built, and the problem became one of fighting and of replenishing the combat forces.

Early on, I had a few sessions with General Arnold, to determine his own intentions or preferences and to get his endorsement. My sessions were scheduled for the first hour and a half on his early morning calendars. By getting to him before the daily distractions began, I had hoped to hold my Chief's attention for as much as a full hour. I knew that the effervescent and sometimes explosive Hap Arnold never sat still for as long as an hour and a half in any circumstances, except where the presiding officers were quite senior, even to Arnold.

My hope of getting as much as one hour of concentrated attention out of ninety minutes of his time was greatly overoptimistic. After ten or fifteen minutes, the General would begin to fidget. At about the thirty-minute mark, he would say, "Well, Larry, if that's what you and your experts say we have to have, I guess we'll have to have it, but it looks awfully big and complicated to me." Then he'd bolt out of his office, not to return until all of the charts, and I, had gone away. Hungry Gates and his experts generally were even less successful than I.

Once, General Marshall, Secretary Stimson, and some congressmen—notably the chairman of the Special Committee to Investigate the National Defense Program, a relatively obscure Senator from Missouri named Harry S. Truman—had approved the reorganization of the War Department, they all knew more about the organization of the Army Air Forces than did the Commanding General of the Army Air Forces himself.

MIDNIGHT CRITIQUES

Even the newest officers of the Air Staff didn't have to serve long under the bright-eyed, energetic Hap Arnold to learn that he was not at all inhibited by standard operating procedures or any other management controls. They also learned that the dynamic Hap expected things to be done immediately—right then!

Not infrequently, Arnold would meet an Air

BUILDING THE AAF

Known as one of USAF's most talented planners, strategists, and military/political experts, the author, Gen. Laurence S. Kuter (Ret.)—a 1927 graduate of USMA—was also an outstanding pilot and wartime commander. In the early 1930s, he was a member of Claire Chennault's famous aerial acrobatic team. In late 1942 and 1943, before returning to General Arnold's staff, he was one of the first Eighth Air Force wing commanders and the US Deputy Commander of the Northwest African Tactical Air Force (see his article "Goddammit, Georgie!" in the February '73 issue of AIR FORCE*). He participated in several of the decisive World War II conferences, including Yalta. After the war, General Kuter commanded MATS (now MAC), Air University, PACAF, and NORAD. He retired in 1962 to become Executive Vice President of Pan American Airways. He and Mrs. Kuter now live in Naples, Fla.*

Force officer he believed was a live-wire operator, in the halls of the Munitions Building or, later, in the Pentagon. He might tell this officer to drop whatever he was doing, go to another place, and get another very big job done in a hurry—*right now!* Occasionally, if the Chief was particularly interested, he would find a second officer he also regarded as a "doer" and give him similar, though rarely identical, instructions. He never told either officer of the instructions he had given the other and rarely told the Air Staff anything at all about his actions.

General Arnold's free-wheeling procedures produced a wide variety of results. The first and most obvious was that things got done very quickly indeed. It is also true that his results were not always in harmony with the programs and projects the Air Staff was struggling to keep in reasonable coordination. Sometimes the final results were a surprise to Arnold himself.

One end result of the Hap Arnold management technique was to provide his staff with an unfailing source of self-sympathy and a reliable platform on which to base high-level critiques, or what might less elegantly be called old-fashioned gripe sessions. These sessions usually occurred late at night in the kitchen of one of the small sets of quarters assigned to senior officers at Fort Myer, Va. The group might meet over a bottle of inexpensive whiskey in Gen. "Santy" Fairchild's kitchen or next door in the quarters of Gen. Harold Lee "Hal" George or my own quarters, across the street.

We three had worked together for several years, and from time to time had worked closely with General Arnold and were devoted to him. None of us could understand how we could be so consecrated to the concept of American airpower and so devoted to a Chief who could be so aggravating. After reviewing our problems of the day, we would almost always find an example of what we regarded as the Chief's fetish for dodging normal staff procedures.

In our late night sessions, we would add a new QED to the theorem that the Chief always gave the wrong orders to the wrong person at the wrong time. There were cases to prove our theorem. In almost every one, we believed that standard staff and command procedures would have provided a better solution. If pressed, we would reluctantly admit that our Chief got "fairly good results" in a whale of a lot less time than standard procedures would have required. If pressed *very* hard, we might have grudgingly admitted that, in early 1942, speed was far more important than precision.

FOUR FRANTIC DAYS

A case in point was General Arnold's idea, put in motion over one long and frantic weekend in early 1942, of training airplane mechanics in the factories that were building airplanes.

On a Thursday afternoon, General Arnold told me to bring Luke Smith into his office. Luke was a colonel whom the Chief knew could get things done. At that time, Luke was serving as a staff officer under Gen. Barton Yount. The conversation ran something like this:

"Larry, do you know the number of B-17s, B-24s, B-25s, and all other types of airplanes that each factory is committed to produce on each of the upcoming months?"

"Sir, I don't have the exact figures here, but I know where I can lay my hands on them."

"Luke, on my last trip I was told that we were not training enough airplane mechanics in our schools and that we're not training them well enough."

"Well, Sir, we should do better, but we have brand-new types of airplanes, and we're hard pressed to train the instructors to train the recruits."

"Yes, I know that. How many mechanics should we have for each new airplane?"

"We're straining every effort to get two or three."

"Two or three! Well, we're going to do better by superimposing some training in the factories that are building the airplanes.

"Larry, you tell Luke the number of each type airplane that each factory is producing this month and for the next several months.

"Luke, you line up new trainees and get them on railroad trains so that five new men for each new airplane will arrive at every one of the factories and be ready to start training first thing on Monday morning. Then arrange for additional groups of five for each succeeding month.

"Larry, start telephoning each factory. Talk to the company president himself. Tell him what has to be done and how many trainees are coming this weekend. Tell him that he is responsible for training them and also that there will be no relaxation of his manufacturing quota due to this training load. Tell him that he is responsible for housing and feeding these men. I know that there will be severe problems in Seattle, Long Beach, and some other plants. But also tell him that these are orders, not subject to modification.

"I am now leaving Washington for points

unknown, and I'll be back on Tuesday morning to hear your reports on this training program. It should be well under way by that time."

After hours of vigorous, sometimes anguished, and even violent telephoning, all of those things were done over that hectic weekend. Not everything was done the right way. In Seattle, for example, beds in private homes had already been requisitioned and were being used on the hot-bed principle by the day and night shifts of relatively green workers who were learning how to put B-17s together.

I did everything I could to rush tents, tent floors, field ranges, cooks, and the like from Fort Lewis, Wash., to Seattle, where Boeing was locating and clearing vacant land. Nevertheless, the first contingent of newly uniformed trainees was housed in every church and church basement that could be found, and the balance lived in Seattle jails until suitable shelter could be improvised. This was not the "right" way to treat AAF recruit mechanics, but there is no doubt that it was the "fast" way.

On Tuesday morning, General Arnold was given a report on the results. Thousands of young men were getting some kind of training on new types of aircraft, and—right way or wrong way—progress was being made. It's just possible that the war could have been lost if the program had been handled in the "right way."

"GO TO ALASKA AND FIX THINGS"

On a morning in June 1942, it seemed clear to me that General Arnold again gave the wrong orders to the wrong man at the wrong time.

In April or May, a spokesman for the US Junior Chamber of Commerce had telephoned the General. The caller referred to the Junior Chamber's national convention, scheduled for Dallas, Tex., in June, and to the splurge of press attention given on February 2 and 3 to the President's nominations for promotion to brigadier general of Col. Walter Bedell Smith and Lt. Col. Laurence S. Kuter. The press had headlined "Emphasis on Youth," "Jump Promotions," and "The Youngest by Far." The Junior Chamber proposed to honor the "youngest general," if General Arnold approved. General Arnold approved.

En route to Dallas, I was scheduled to visit a flying training base at Tulsa and a bombardier training school at Midland, Tex. Three or four members of the Air Staff involved with such training were assembled, and we took off from Bolling Field in a Lockheed Lodestar C-62.

In Midland, while at breakfast, I was told that General Arnold wanted me on the phone. Our conversation went about as follows:

Hap Arnold directed that mechanics be trained in the plants where new aircraft were being produced. Here is Boeing's Plant No. 2, Seattle, with acres of new B-17s.

Hap Arnold flanked by some of his top advisers a short time before the US entered World War II, from left: Lt. Col. Edgar P. Sorenson; Lt. Col. Harold L. George; Brig. Gen. Carl Spaatz, Chief of the Air Staff; Maj. Gen. H. H. Arnold, Chief of the AAF; Maj. Haywood S. Hansell, Jr.; Brig. Gen. Martin F. Scanlon; and Lt. Col. Arthur W. Vanaman.

"Larry, where are you, and what are you doing?"

"Today I'm in Midland to check up on our biggest bombardier training school, and tomorrow night I'm to be in Dallas, where you have sent me to make a speech at a Junior Chamber of Commerce convention."

"Have you got an airplane you can fly?"

"I have a C-62 that I managed to fly down here. It's a pretty elegant small transport that was built for airline service by Pan-Air-Do-Brazil. Flying it is a bit sporty since all instruments are in the metric system and the operating instructions are in Portuguese."

"OK. Get in it and go to Alaska."

"Yes, Sir. I presume you want me to take off immediately after my speech. Incidentally, I'm here with white dress uniforms."

"Skip the speech. You better go straight to

BUILDING THE AAF

A smiling Hap Arnold, wartime chief of the AAF, shown during a visit to Randolph Field, Tex.

Alaska today. Jack Curry is running our depot in Denver, and he can probably give you some field clothes. If not, your whites would cheer up the troops in the Aleutians. Send your staff home some other way."

"Yes, Sir, if you say so. Since you told the Jaycees that I'd make the speech, I trust that you will be responsible for telling them that I'll not be there; that there's a war on or something? By the way, is there anything special that you want me to do in Alaska?"

"Don't worry, I'll tell the Jaycees you can't make it. As to Alaska, you know things haven't been going right since the Dutch Harbor attack a few days ago. You'll see some things to fix. Get going! Goodbye."

"Understood. But one final point, General. Won't Gen. [Simon Bolivar] Buckner [the Army Commander] or Admiral Theobald [the Navy Commander] or even Gen. Bruce Butler [General Buckner's AAF Commander] be a bit surprised if I just pop up in Alaska to fix things?"

"Don't worry, Larry, they'll know you're coming. Goodbye, now, and get in your airplane!"

PICKING UP PIECES

I decided to take Hungry Gates with me for two reasons. First, Hungry was our Chief of Statistical Control, and, if we were ever to keep track of activities in Alaska, Statistical Control's new reporting system would have to be understood there and followed properly. Second, the C-62 was normally flown by a pilot and a copilot, and I could see myself getting awfully lonesome in the left-hand seat all the way to the Aleutians.

It did seem to me that General Arnold had picked the wrong time. He seemed to have picked the wrong man, a brand-new brigadier general who had never been to Alaska, had never met Admiral Theobald, and who had not seen General Buckner since 1923 at West Point, when then-Major Buckner gave Cadet Kuter ten demerits. Since General Buckner was responsible for all US Army and US Army Air Forces activities in Alaska and reported, not to General Arnold, but directly to General Marshall, my orders to "fix things that I found to be wrong" seemed to me far from the "clear, concise, and correct" orders that senior officers are expected to issue.

I delayed my takeoff long enough to telephone Colonel Curry at the AAF Depot in Denver to have clothing and equipment suitable for Alaska laid out for Hungry and me and for our sergeant crew chief, along with any available spare parts and support material our nonstandard C-62 should carry with it on that kind of trip.

I then called Gen. Hal George at Headquarters, Air Transport Command, at Gravelly Point, Washington National Airport.

Hal had his flying aide, then-Capt. Hank Myers, gather up Hungry Gates's and my suitcases, the best Alaska air route maps available, radio guides and aids, and especially a pilot who had flown "bush" airplanes in Alaska. Captain Myers, with the bush pilot and all of the equipment, met us at Edmonton, Alberta, in the early evening.

Today, touring Alaska by air poses no special problems for an experienced pilot, but in those days of few navigation aids—especially when flying a sparsely instrumented airplane that was not equipped for icing conditions—it was something else. General Arnold knew this. Only eight years earlier, he had been awarded a Distinguished Flying Cross for leading a flight of elaborately equipped B-10 Martin bombers to Alaska. But he saw all problems as challenges that could be met by passing out ever bolder and more vigorous challenges to his subordinates.

The flight was not without its humorous and sometimes hair-raising moments—including a twilight encounter with barrage balloons on our return flight to Seattle. Little that happened between Edmonton and our return to the States was either normal or expected, but that's another story.

THE RANK REACTS

The trip was marked by at least one occurrence that came to be normal and expected. Every place we landed, the senior military official wanted to know what my mission was.

When we landed at Fairbanks, General Butler's first question was: "Why were you sent up here?" Later at Kodiak, Admiral Theobald showed obvious concern over the arrival of a new, young brigadier general from Washington in his area of US Navy authority. Finally, at Anchorage, Admiral Theobald, General Buckner, and General Butler all met us at our last stop before our return to Washington. My responses to the repeated questions were variations of the vague theme that I was expected to make a first-hand report on my visits with the units then involved in the Kiska operations, which followed the Japanese attack on Dutch Harbor.

Our final visit was with General DeWitt, who commanded the Fourth Army Area from

the Presidio of San Francisco. General DeWitt was the overall Army commander on the West Coast and senior to General Buckner.

In moving backwards from the somewhat haphazard Aleutian "front line" of our air and naval operations against the unknown Japanese force at Kiska, it had become grimly amusing to hear successive intelligence staffs up the chain of command each add its own factor to the lower level's evaluation of the seriousness of the enemy threat.

The few crews who actually bombed the Kiska base had trouble locating any installations at all. But at Headquarters, IV Army, 2,000 miles to the rear, the enemy was estimated to be up to a 15,000-man division in size, and the threat of Japanese invasion of Alaska and then down the West Coast was viewed as very grave indeed.

DEVIOUS DIPLOMACY

In Washington, my oral reports were received with a considerable degree of interest by General Arnold and then by General Marshall.

The basic reason why General Arnold gave such questionable orders to such an unprepared staff officer at such an inopportune time was never explained. One reason was suggested to me sometime later by Gen. Bruce Butler. He said the first time that the three commanders of the Army, Navy, and Army Air Forces in Alaska had ever been in a tripartite meeting was when they converged at Anchorage, presumably to learn what I would report on my return to Washington.

At Pearl Harbor, and later at the time of the attack on Dutch Harbor, communication between the Army, Navy, and air commanders was far from satisfactory. The concept of a unified command, with a senior officer of one service responsible for a large theater of operations and exercising command over components of all services in the theater, had to await the formation of the JCS (still under study in Washington) as the overall authority qualified to issue orders to all services and to which a unified command could report.

I believe that General Arnold sought some means of forcing the commanders of the three services in Alaska to get together. He would not have asked for General Marshall's or Admiral King's concurrence. That would have generated discussions of methods for bringing the commanders together and debates as to who would direct whom to go to the other. The Secretaries of the Army and the Navy would probably have had to be brought into the picture, and Mr. Stimson and Mr. Knox were not too predictable in matters where precedence or authority of their services were involved. It was quite possible that the matter might have eventually gone to the President.

I suspect that General Arnold mentioned casually to General Marshall that he was going to send me on a quick trip to the Aleutians to get a reading on our operations against Kiska and the conflicting intelligence estimates.

PRODUCT AND BY-PRODUCTS

There were several incidental by-products of the trip. My first-hand reports were the sources of a large number of actions in the Air Staff and some by the General Staff.

The problems of flying in the Aleutians, where storms are born from small but intense areas of low pressure, called for the development of airplane altimeters that were not dependent upon atmospheric pressure. We lost airplanes and crews when a flight through a few unforecastable miles of low pressure caused barometric altimeters to indicate falsely high altitudes. Radio altimeters eventually removed this hazard.

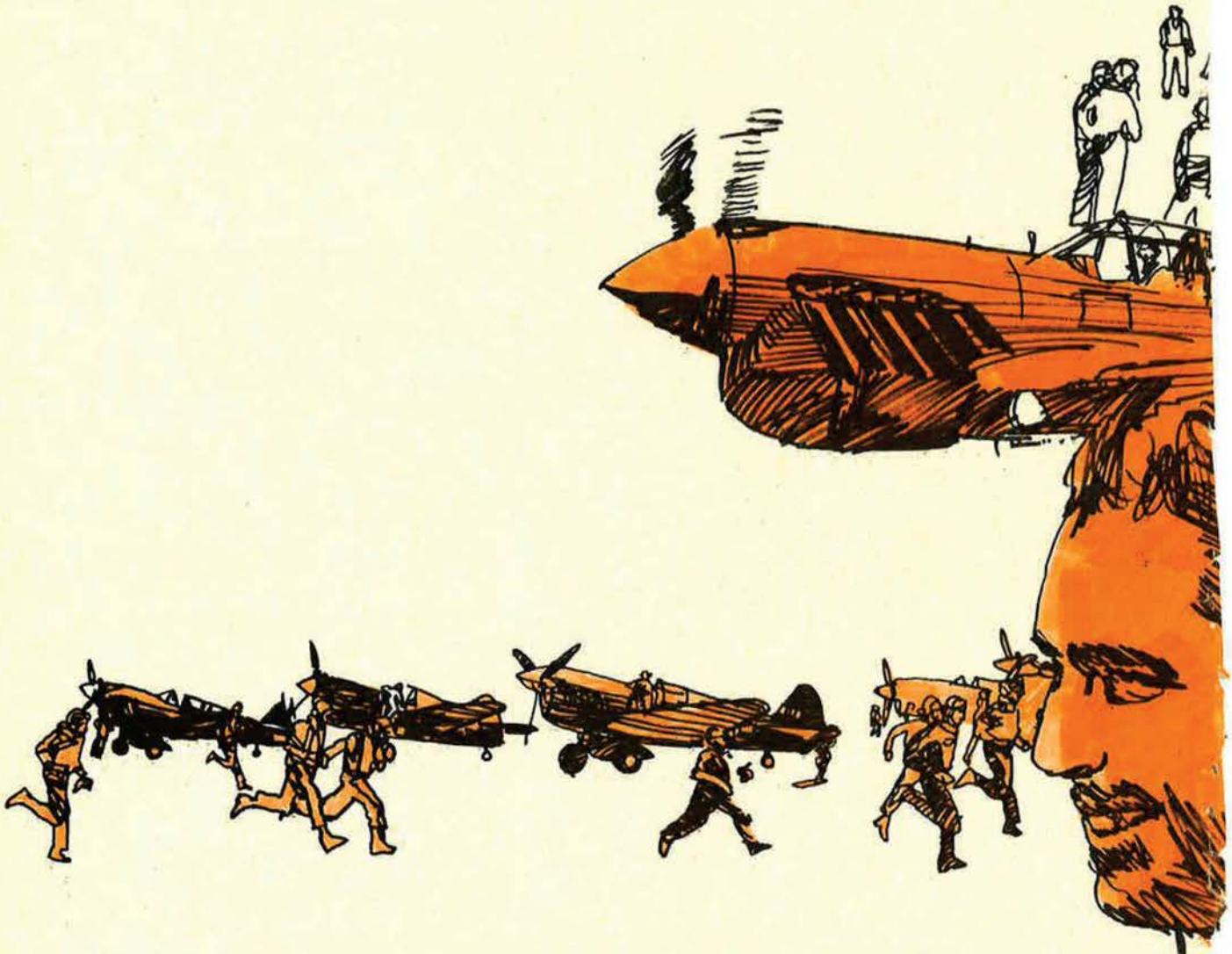
The problem of bombing ships from very low altitudes and greatly reduced visibility had led to the ingenious effort to dive bomb with Navy torpedoes. In one case, a torpedo was reported to have imbedded itself in the deck of a Japanese carrier. The development of suitable bomb fuzes and skip-bombing technique followed.

Col. William O. "Wild Bill" Eareckson, in command of B-24s based at a muddy, rain-blown field in the Aleutians, was flying a mission as a tail gunner when I landed at Umnak, because his tail gunners were not trained for low-level, bad-weather operations. On his return to base, he went into a muddy mess tent and made biscuits, because his cooks didn't know how. He got better cooks and trained gunners.

We had lost several fighter aircraft and pilots because of bad weather during our hurried reinforcement of our units in Alaska. Fighter pilots' instrument flying training was improved, and a unit of expert ferry pilots was established.

A method of bypassing protocol and prerogatives to get the independent leaders of proud services into direct communication was perhaps the greatest challenge of all. Arnold knew how to make each wonder, "What in the hell is that new young general from Washington doing in my territory?" They had to get together to find out.

Again Arnold achieved quick action by management methods far removed from orderly staff procedures. Some of the results were a surprise to the staff. It is just possible that some even surprised General Arnold. ■



He was one of that handful of pilots in the Philippines in the days after the Pearl Harbor attack who were outnumbered and outgunned but never outfought. It was Zero vs. P-40 in the skies over Luzon, and Lt. Boyd D. "Buzz" Wagner proved himself an extraordinary flyer. His fellow pilots called him . . .

'The One-Man Pursuit

SAY "ace" to someone who remembers World War II, and the familiar names come immediately to mind—names like Dick Bong, Tommy McGuire, Francis "Gabby" Gabreski, Bob Johnson, John Meyer, Dave Schilling, "Bud" Mahurin, Don Gentile, and Glenn Eagleston.

These men flew planes whose names were also household words back during World War II—planes like the Lockheed P-38 Lightning, the Republic P-47 Thunderbolt or "Jug," and the North American P-51 Mustang.

The name of another man, not so easily recalled, belongs high up on that list of World War II greats. In fact, his name leads all the rest, since he was the first American in the uniform of the Army Air Forces to become an ace. His name was Lt. Boyd D. "Buzz" Wagner, and he flew the Curtiss P-40 Warhawk in combat.

Within four months of the time he became the AAF's first ace of the war, Wagner had risen in rank from lieutenant to lieutenant colonel

Force'

By S. Samuel Boghosian
ILLUSTRATION BY PAUL SALMON

(at twenty-five, certainly one of the youngest light colonels in the whole US Army). Eight months later, the nation would be mourning his death.

"Buzz" Wagner was one of the handful of US fighting men based in the Philippines in 1941 who found themselves pitted against the overwhelming superiority of the invading Japanese. Men like Wagner, Ed Dyess, Grant Mahoney, "Bud" Sprague, Sam Grashio, and a pitifully few young and inexperienced pilots challenged an enemy who had something like a thirty-to-one advantage in aircraft and whose main fighter—the Mitsubishi Zero—was more maneuverable than the first-line US fighter of those days—the P-40—and could outclimb the Warhawk every time. But the P-40 was better built and more rugged, with self-sealing tanks and some armor plating around the pilot.

MASTERS OF THE AIR

It was the dark time after Pearl Harbor. Though the Philippines had some nine hours of warning after the sneak attack on Hawaii, the islands lay confused and wide open to the overwhelming Japanese air offensive when it came. In a stunning blow, the Japanese wiped out half the US bomber strength and half the US fighters. All the bombers were destroyed on the ground, as were most of the fighters.

In two furious days, the Japanese won the air war. By December 10, 1941, they were the undisputed masters of the air over the Philippines. The once-proud 19th Bomb Group hastily withdrew its surviving B-17 Flying Fortresses 600 miles southward, to Mindanao. On Luzon, the main island, only about thirty fighters remained of the force that a few days earlier had totaled some 150 P-40s and P-35s.

To their chagrin and dismay, the fighter pilots found themselves rele-

The author, S. Samuel Boghosian, has a special interest in "Buzz" Wagner. He saw Wagner fly from Clark Field during the days after Pearl Harbor. In his words, "The evening we heard that 'Buzz' had been knocked out of action, a black cloud descended over Clark Field. I can't describe the demoralizing effect." Sam Boghosian, a long-time and very active AFA leader in Fresno, Calif., was a radioman/gunner on one of the B-17s of the 19th Bomb Group's 30th Bomb Squadron. His plane was destroyed on the ground on December 8, 1941. By Christmas, he and the other personnel from Clark had withdrawn to Bataan. With other aircrews led by then-Maj. Emmett "Rosie" O'Donnell, he escaped to Mindanao where he served with the Philippine Army until his capture by the Japanese. He was officially Missing in Action for two years and was in POW status for eighteen more months after that. For the last ten months of the war, he was on the "receiving end" of day and night B-29 bombings while in a POW camp in Japan.

"BUZZ" WAGNER

gated to reconnaissance. Some pilots referred to their hidden P-40s as "the finest fighter that never left the ground."

Out of this frustration, Wagner and his fellow pilots devised aerial guerrilla tactics of hit and run, using single or two-plane elements. This tactic—and Wagner's extraordinary skill as a pilot—had a good deal to do with his becoming the nation's first AAF ace.

A NATURAL FLYER

"Buzz" Wagner was a natural flyer, all who knew him agreed. He kept his head in tight situations and made a point of knowing his equipment intimately. He'd studied aeronautical engineering at the University of Pittsburgh for three years and probably knew as much about aircraft and aircraft engines as any man in the US military at that time.

Wagner had prepared himself well. He used to fly mock combat at every opportunity. His nickname, "Buzz," came from his fondness for singling out bombers or even airliners as targets. He'd make mock attacks on these unsuspecting victims, always at full speed and usually to the demoralization of the aircrews.

Also a fine instructor, Wagner was quick to share with his squadron mates what he'd learned. After he first encountered the Japanese Zero, Wagner stressed, over and over again: "Never dogfight a Zero unless you absolutely must." It was good advice.

Born on October 26, 1916, at Emeigh, Pa., he received his appointment as an Army Air Corps flying cadet on June 26, 1937, after his three-year aeronautical engineering stint at the University of Pittsburgh. He took his primary flying training at Randolph Field, and advanced at Kelly Field, both in Texas. He was commissioned a second lieutenant in the Air Corps Reserve on June 16, 1938.

Wagner had other interests than flying, however. He was a jazz enthusiast and had a large jazz record collection. Music was one of his favorite topics of conversation.

He arrived in the Philippines on December 5, 1940, a year before Pearl Harbor, and was based at Nichols Field, near Manila, becoming Commanding Officer of the 17th Pursuit Squadron of the 24th Pursuit Group. Wagner later would fly from both Nichols Field and from Clark Field.

THE AIRCRAFT

The 17th Pursuit Squadron had earlier been equipped with Boeing P-26s, but these aging little fighters were replaced first by Seversky P-35As and then by the Curtiss P-40 Warhawk (or "Kittyhawk", as the P-40E was called by the British).

The P-35A was a modification of an original Seversky design. It was manufactured by Republic Aircraft as the EP-1-06 for export to the Royal Swedish Air Force. Sweden had ordered 120 of the planes, and deliveries began in 1939, but were suspended in mid-1940. That October, President Roosevelt requisitioned the sixty still-undelivered P-35As and had forty-eight of them sent to the Philippines, many still marked with the Swedish three-crown insigne.

Of these forty-eight, forty were lost in the first two days of the war in action that marked the P-35A's operational debut and its last action of any real consequence.

The P-40 was the AAF's main fighter weapon in the Philippines when the war began. There were about 100 Warhawks on hand on December 8. The 20th Pursuit Squadron had eighteen P-40Bs, while the 3d, 17th, and 21st Squadrons all were equipped with the later-model P-40E. Some additional P-40Es were still being assembled at Nichols Field and the Philippine Air Depot on the eve of Pearl Harbor.

The P-40 would shortly fly to fame in another theater of the war, in China, where Chennault's American Volunteer Group (AVG), the "Flying Tigers," painted their aircraft noses with garish sharks' teeth and ran up an impressive record of victories over the Japanese.

But the P-40 had less chance for prolonged combat in the Philippines. Four of the Warhawks, from the 20th Pursuit Squadron at Clark Field, did manage to get off the ground and into combat when the main Japanese assault came, and their pilots claimed three enemy aircraft.

But by December 10, only twenty-two of the P-40s remained intact. These and the handful of surviving P-35s were withdrawn from combat and assigned to recce duty.

THE JAPANESE LANDINGS

As soon as the Japanese had seized air superiority in the Philippines, their landings began. Some 2,000 men hit Aparri, on the northern coast of Luzon, and Vigan, on the western side of the island, early in the morning of December 10. Their mission was to set up advance airfields. Behind them were coming troopships from Formosa, ready to pour in reinforcements.

Before dawn on December 10, FEAF (Far East Air Forces) headquarters learned of the convoy heading for Vigan. Five of the B-17s from the 19th Bomb Group were ordered up from their refuge on Mindanao. At 6:00 a.m., the Flying Forts began bombing the invasion force, which included a cruiser, six destroyers, and four transports.

Wagner and other P-40 pilots from the 17th Squadron flew top cover for the Fortresses. When the B-17s broke off their attack, Wagner's fighters bored in to strafe the barges and landing craft, and the landings were disrupted, but only temporarily.

Early the next morning, Wagner took off from Clark and headed north on a solo recce mission to Aparri. There, the Japanese had already prepared a sod runway and had moved in a dozen aircraft.

As Wagner flew past Aparri, descending through heavy cloud cover over the invasion fleet, he spotted two enemy destroyers, which opened fire on him. Wagner dove for the

"Buzz" Wagner, far right, CO of the 17th Pursuit Squadron, poses at Nichols Field, Philippines, in 1941, with some of his colleagues, from left: Captain Philips, Lt. William Feallock, and two unidentified majors.

—Air Force Museum, Wright-Patterson AFB, Ohio

If you can walk away, it's a good landing. This 17th Squadron P-35A pranged at Nichols, which had been built on reclaimed swampland. Operations were sometimes tricky during the rainy season.

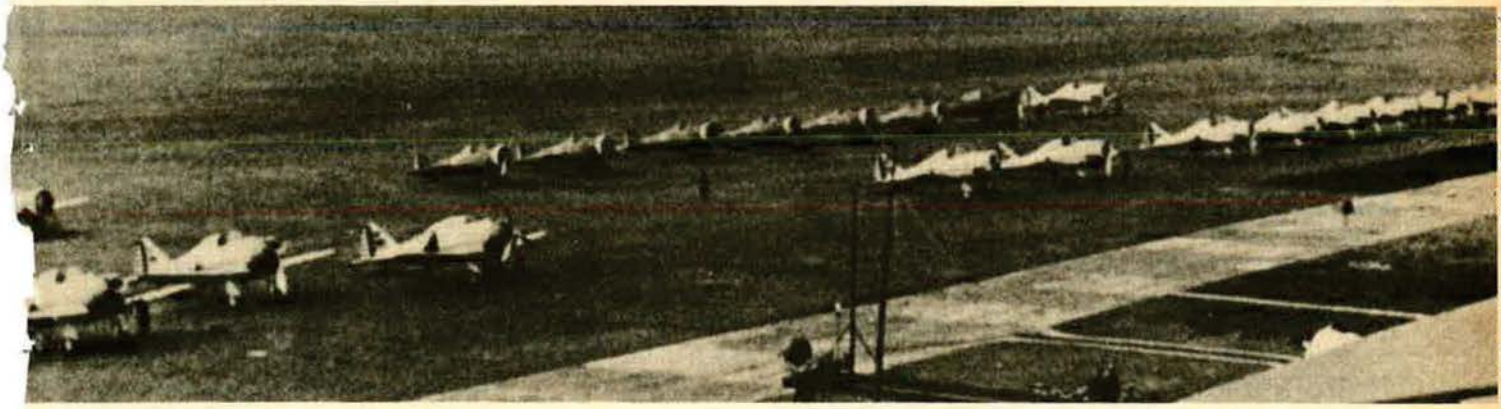
—Photo by Carlton E. Edsall

This was one of the first Curtiss P-40s received by the 17th Pursuit Squadron, during the fall of 1941. The Warhawk was soon to prove itself in battle against the Japanese Zero.

—Photo by Carlton E. Edsall

This frame from a home movie made by 17th Pursuit Squadron pilot Lt. John Brownewell shows one of the P-35As, still with Swedish markings, being reassembled at Nichols Field, early in 1941.

—Air Force Museum, Wright-Patterson AFB, Ohio



—Air Force Museum, Wright-Patterson AFB, Ohio

During 1941, with life still at its prewar tempo, this was the view from the control tower at Nichols Field, with the 17th Pursuit Squadron's P-26s and P-35As all neatly lined up.

sea and raced back toward land. There he was attacked by five Zeros. He turned his P-40 into the sun and lost the enemy, who turned back toward Aparri. Then Wagner took up the pursuit and shot down two of the Zeros before they realized what was happening.

In the resulting confusion, Wagner attacked the airfield itself, happily finding the twelve Japanese aircraft neatly lined up. He'd made two strafing runs, leaving flaming wreckage behind him, when the three remaining Zeros bounced him from above and behind. Again, Wagner headed inland, but with two of the Japanese on his tail.

Suddenly, Wagner throttled back, and the two Zeros flashed past him, overhead. Wagner took advantage of his position and shot both Zeros down. Turning again, he went back to finish the job on the airstrip.

Finally back at Clark, he was all but out of fuel. On a single mission, he'd shot down four Zeros, had left

"BUZZ" WAGNER

five other fighters burning on the ground, and had damaged, it was estimated, seven more. His fellow pilots came up with a new nickname: "The One-Man Pursuit Force."

Of this exploit, Associated Press war correspondent Clark Lee quoted Wagner as saying only: "Gas was low, so I went home."

One thing Wagner learned during this mission was that the P-40 could outrun the Zero at sea level, and he would tell the other pilots: "Outrun? Yes! But don't try to outmaneuver the Zero!"

DAWN STRIKE AT VIGAN

A few days later, on December 15, reconnaissance reported twenty-five Japanese planes on the new airstrip at Vigan. The 24th Pursuit Group was ordered to make a dawn attack. Lieutenants Wagner, Russell M. Church, Jr., and Allison W. Strauss—all from the 17th Squadron—were picked as the pilots who were thought to be best qualified to carry out the bombing and strafing mission.

The three took off from Clark's bomb-cratered runway in the predawn darkness of December 16. They headed out over the ocean, planning to turn and come in at wavetop level. As they approached, Wagner sent Strauss up to fly top cover, while he and Church swarmed in with their half-dozen thirty-pound fragmentation bombs.

Wagner hit first. As Church followed him in, the Japanese antiaircraft and automatic weapons opened up. A shell burst in the nose of Church's P-40, setting the plane afire.

Nonetheless, Church continued his run, dropped his bombs (on target), and started strafing the remaining planes. Then, his P-40 a ball of fire, he pulled up, did a slow half-roll, and exploded into the ground.

Wagner later said, "I think a man gets really mad for the first time when he sees his friends killed."

MAKING OF AN ACE

After seeing Church killed, Wagner disregarded the enemy barrage and swept back and forth across the field, again and again, until he ran out of ammunition and nearly out of fuel.

Of the twenty-five Japanese aircraft, only a single Zero succeeded in getting off the ground. Wagner was just starting another strafing run and the enemy plane was half hidden from Wagner by his own wing. To get a clear view, "Buzz" rolled his P-40 onto its back—a maneuver few would dare at strafing altitude.

Lt. Boyd D. "Buzz" Wagner was the first US Army Air Forces (AAF) ace of World War II, but he was not the first American ace of the war. That honor goes to William R. Dunn, who, as a Pilot Officer in the RAF's Eagle Squadron, got his fifth victory on August 27, 1941. His story appeared in this magazine in the April '73 issue, p. 78, as told by James R. Patterson.

He spotted the Zero, righted his plane, and throttled back to let the Zero get up to speed. Then "Buzz" shot it down. (*Time* Magazine later reported that Wagner "shot a Japanese Zero down while he was flying upside down." This made a better story, but that's not the way it happened.)

With this victory, Wagner became an ace. It was a good day's work, ace or not, for he had destroyed ten planes that morning and had left seven others burning on the runway. Again, ammo gone and—as usual—fuel nearly so, Wagner recalled Strauss and the two flew home.

END OF A CAREER

Four days later, Wagner's flying career in the Philippines ended when a 20-mm explosive shell hit the windscreen of his P-40 during a support mission against new Japanese landings. Wagner's face and chest were riddled with glass splinters. One fragment entered his left eye.

"Buzz" was evacuated to Australia early in January 1942, flying out in an aging Beechcraft with a planeload of pilots for whom there were no longer any planes.

By April, Wagner was a lieutenant colonel (he skipped the rank of major altogether) and Director of Pursuit for the Port Moresby area on New Guinea. Though his left eye was still bothering him, he led a P-39 mission against Lae and Salamaua, enemy strong points on the other side of the island.

A flight of Japanese fighters suddenly appeared. In no time, four of the Americans had been shot down. Wagner led what was left of his force into battle, and before the melee ended, four Japanese also had been downed, three of them by Wagner. He'd run his streak of aerial victories to eight.

Though he pleaded to be allowed to stay in combat and longed for the day he could return to the Philippines, Headquarters ruled that Wagner would be more valuable in training back in the States. There, it was felt, he could pass along to others the valuable lessons he'd learned in combat.

So it was that America's first ace returned to the US. On November 29, 1942, just short of the anniversary of his first combat victory, he took off on a routine flight from Eglin Field, Fla., bound for Maxwell, in Alabama. He never arrived.

While a stunned nation waited, the search went on. Wagner's father, from Johnstown, Pa., joined in the search for his son and spent weeks in the effort until exhaustion forced him to return home.

The search went on for five weeks. Then, a farmer, out looking for strayed cattle, came on the wreckage and the body of the flyer. The aircraft was demolished and partly buried, indicating that on his last flight, "Buzz" Wagner had plunged to earth out of control, probably from a steep dive. ■

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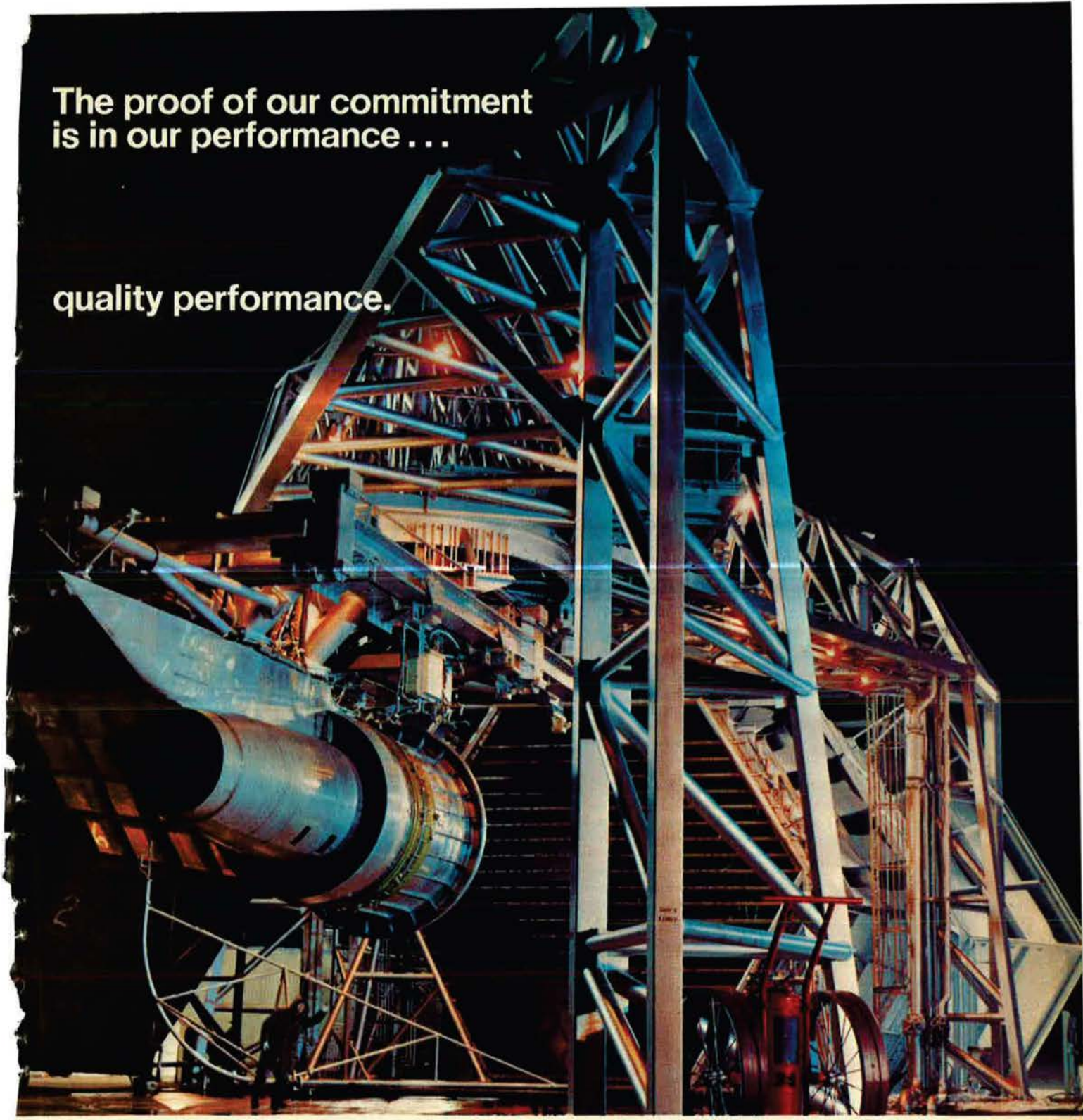

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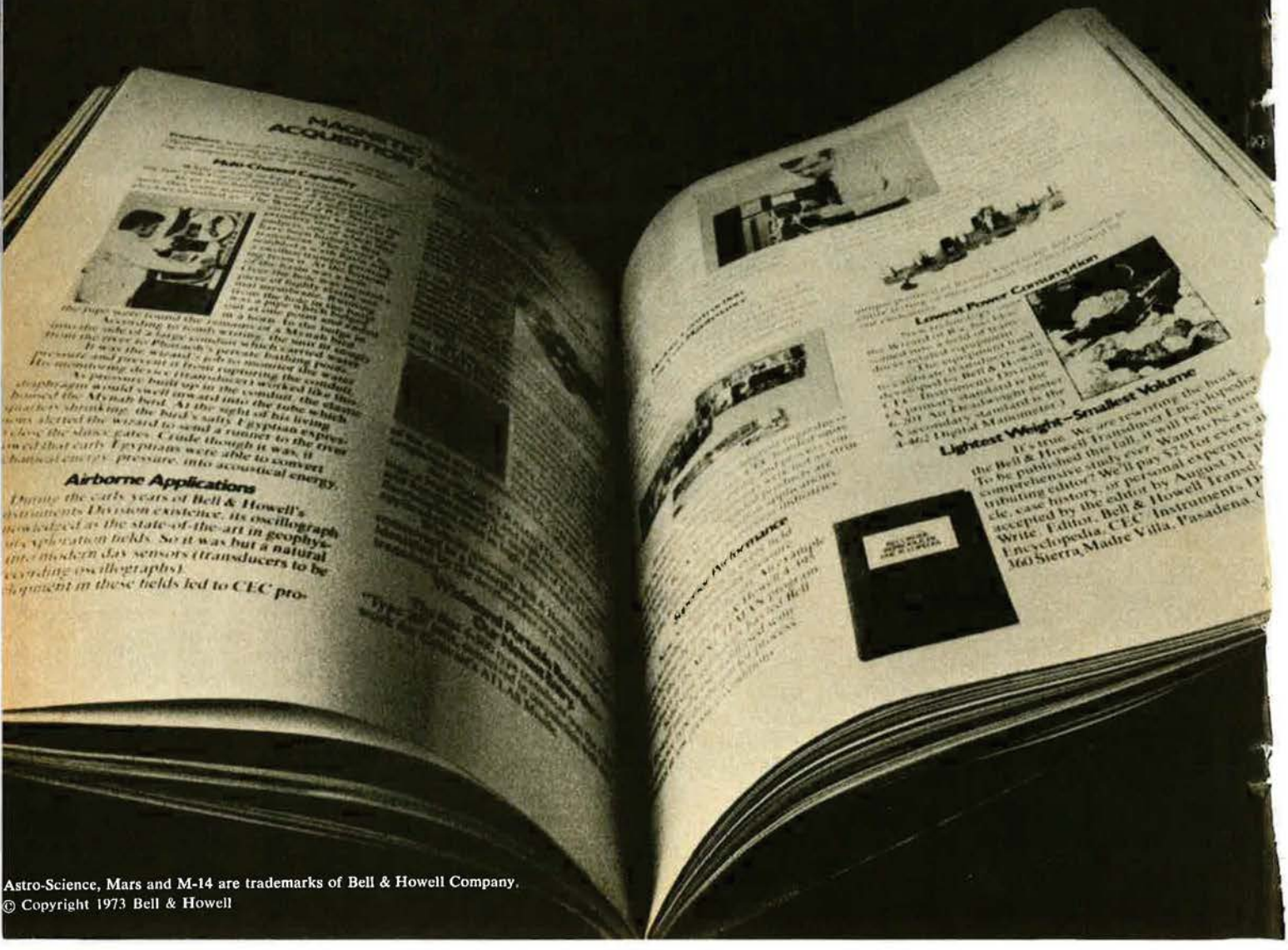

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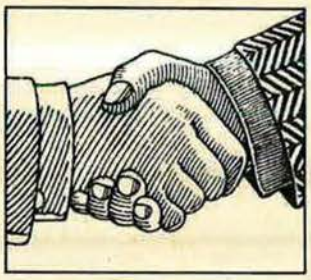

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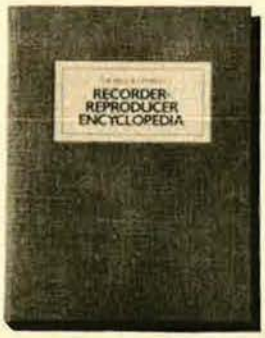

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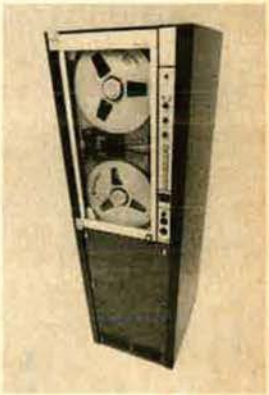

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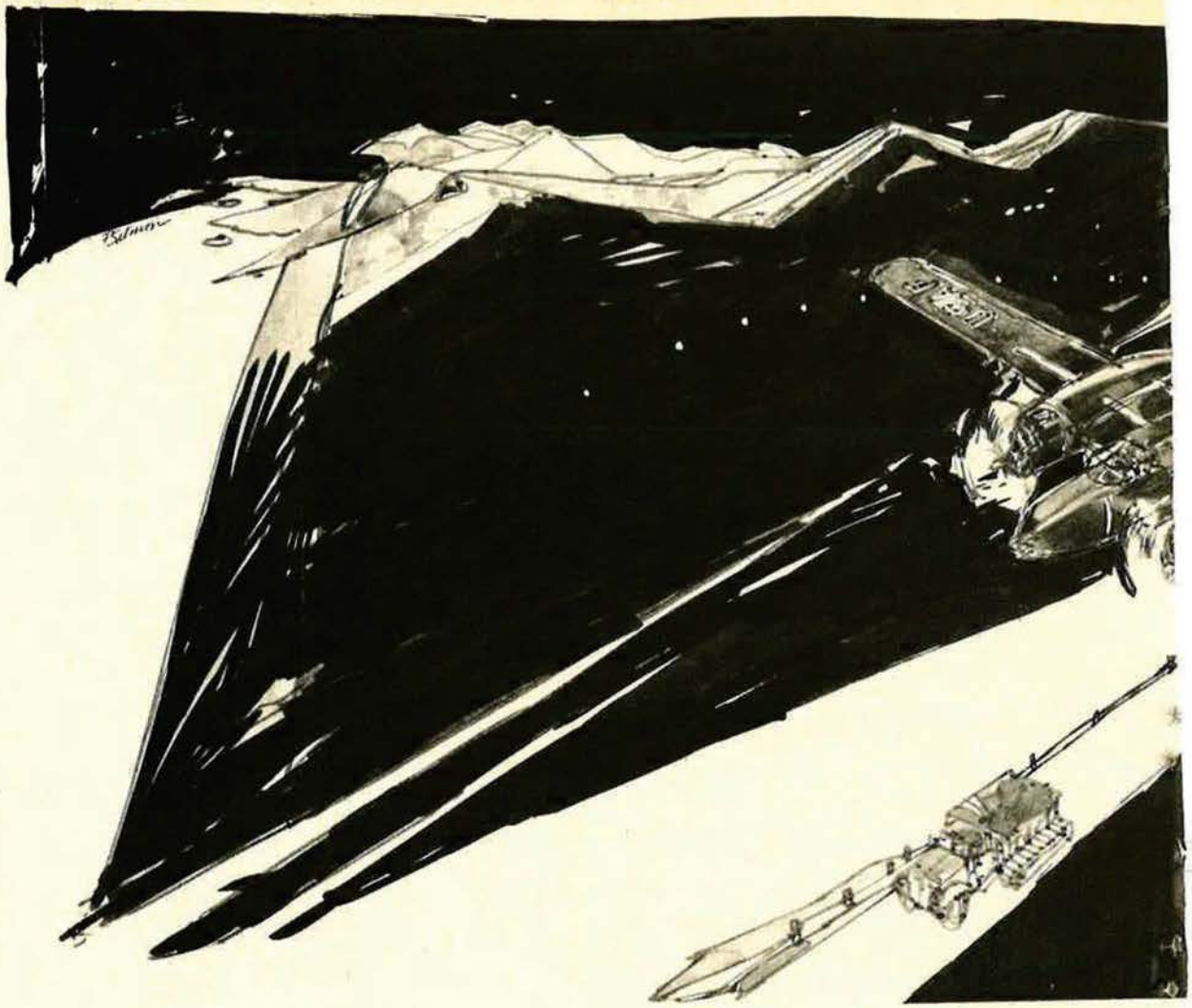
B-26s PROWL THE KOREAN SKIES



A World War II plane that proved its durability in Korea was the B-26 light bomber—the Douglas Invader, or "Intruder," as it was called in its night-warfare mission. The B-26s and their crews—many of whom were also World War II retreads—nightly prowled the Korean skies, pounding convoys and supply dumps and the North Korean rail system in a campaign to prevent the Communists from assembling the material to launch major new ground assaults . . .

On the Graveyard Shift

THIS is the story of the Intruder crews, the men and planes behind that one brief sentence in the communiqués: "B-26s were out again in force last night."

They head into enemy territory at dusk as the last fighter-bombers waggle a greeting and head for home. All night long they dovetail missions to keep every supply route under continuous attack.

The Commies have planted enough antiaircraft to make it unprofitable for B-26s to venture very far by day, but the twin-engine Douglas is proving equal to the cat-and-mouse tactics of night warfare.

Since October 1950, FEAF's two B-26 wings have flown more than 53,000 sorties—more than four-fifths of them at night. They are credited with destruction of 38,500 vehicles, 3,700 railroad cars, 406 locomotives, 168 bridges, and seven enemy aircraft. They have dropped almost 100,000 tons of bombs, including about 3,000 tons of napalm.

There's plenty of room for ingenuity and few fixed rules. Each crew is on its own from the time it leaves the base; probably no two crews operate just alike. The trick is to avoid the traps a cunning

By Allan R. Scholin
ILLUSTRATION BY PAUL SALMON

enemy and the rugged Korean terrain are always ready to spring on the unwary.

To new crews on their first mission, it looks like duck soup. From the Yalu to the combat lines, trucks with headlights aglow are picking their way along the pocked roads. Traffic looks as heavy as a Sunday on the New Jersey Turnpike. But just as the B-26 dips into its bomb run, the lights below disappear, and in the pitch darkness the plane has to pull up.

In mountainous country the Commies work a deadly variation on this trick. After a B-26 breaks off a run, the string of lights will suddenly reappear. Lining up on them, the crew may discover too late that these lights are strung on the side of a cliff.

Contact with enemy fighters has been rare in recent months, though a few crews have reported being jumped apparently by YAK-9s, similar to the F-51 Mustang. However, B-26 losses to Commie fighters in night missions are virtually unknown.

WITHOUT A TRACE

One of the more disagreeable morale factors in B-26 operations is that, though losses are light, planes which go down usually disappear without a trace. A disabled plane has rarely had time to radio its plight, and cases of crew members walking home from a combat mission are even rarer.

Another factor with an adverse effect on morale is flak, often heavy and sometimes too accurate. It's bad enough by day. It becomes disconcerting to even an experienced crew at night when muzzle fire, tracers in every fifth shell, and bright shell bursts combine to make a terrifying display.

The Commies have also been known to string cable from peak to peak across narrow valleys. It's hard to tell how many B-26 losses may have resulted from this device, but several planes have limped home with torn rudders, and at least one landed with cable wrapped around a propeller.

But for most of these tricks, B-26 crews have an answer. Crews are assigned the same area on mission after mission so that they soon know their route as well as they know the road into town back home. They may vary their technique from night to night, bombing from altitude tonight and from the treetops tomorrow. They may throttle back and glide down to bomb a convoy before it gets the signal from mountaintop lookouts to shut off its headlights.

Intruders carry flares to light up a target area, but they're not often used. The flare tends to blind the crew long enough for a convoy to pull off under the trees that line most Korean roads. Too, the light of the flare may make the plane a target for antiaircraft. Nor is moonlight a help. Most Korean roads are white gravel. In moonlight, Commie drivers merely shut off their lights and barrel down the road.

Trains, especially locomotives, are a prize target. One of the best locomotive hunters among B-26 pilots is Capt. Charles F. Wolfe, of Chula Vista, Calif., who recently returned to the US after sixty-two missions with the 3d Bomb Wing.

"You'll never believe," he said, "that they ran their trains pretty much on schedule. We'd mosey up toward the Yalu, spot a train's headlight while it was still on the Manchurian side, and get out of sight until it had time to cross into Korea. Then we'd drop a fire bomb behind it. It didn't matter if we hit the track or not, just so we were close. The train crew would think we had hit the track and they couldn't go back. It isn't too easy to hit a fast-moving train, so we'd range on ahead and drop another fire bomb at the mouth of a tunnel. The engineer would slow up while he tried to assess the damage. We'd swing around behind him, come up

The author, Allan R. Scholin, is Special Assistant to the Public Affairs Officer, Hq. US Readiness Command, MacDill AFB, Fla. Earlier this year, he retired as a colonel, after thirty-one years of active and Reserve duty. From 1962 until 1968, Colonel Scholin was an Associate Editor of AIR FORCE *Magazine, and prior to that served in the Office of Public Information at the National Guard Bureau. He has been a free-lance writer for many years and for a variety of publications. This article first appeared in the July 1953 issue of* AIR FORCE *Magazine and was one of the selections later used in the anthology* The Wild Blue *(G. P. Putnam's Sons, N. Y., 1961).*

B-26s IN KOREA

the track at minimum altitude, spot him by his smoke, and drop an egg."

Using this technique, Wolfe and his crew were credited with twelve locomotives destroyed, plus three others unconfirmed.

Wolfe added, though, that trains weren't stopped for long. "We'd bust up a train and maybe cut the road in a couple of places, too. The next night they'd be running again as usual."

Hunting is better than ever now, Wolfe reports, as Commies are pouring more trains into their supply lines in attempts to offset the constant beating from Intruders and fighter-bombers. "I saw four times as many trains coming out of Manchuria when I left Korea as when I started my tour," he said.

TRUCK-HUNTING MISSION

Capt. Bob McDowell of Middletown, Pa., is an observer with the 3d and a relative newcomer to Korea, though he did a full stint in B-24s in India during World War II. He describes a typical truck-hunting mission.

"Your crew is scheduled for takeoff at 0020," he writes, "so you get to group by 2300. After briefing, you have a cup of coffee and cake, then to squadron ops for chute, life vests, dinghy, and radio.

"At the plane you check the bombsight, pull the pins, and sign for the bombs. The pilot runs through the escape ritual, and now it's midnight and time to board.

"In a few minutes you're lined up on the runway. Sixty seconds later, you're roaring along, the speed hits 120, and the bird lifts off. Wheels come up, runway lights fall away, and it's black. You've flown into an inkwell.

"Five minutes later you turn north, up the corridor. A plane passes overhead. His work is finished for tonight. You navigate over checkpoints, cross the bomb line, and, before long, you see truck lights.

"You peer into the night, make a few course corrections. Things look good. Bomb bay open, crammed with weapons. Frags for personnel, 500-pounders for heavy damage, fire bombs, and flares to find targets and check results.

"Then, just before you're ready, the doggone Reds turn off their lights. You call off the run and head left in a circle until they turn them on again. You can see the front lines thirty miles south. You also see lights on a road to the right, but that's someone else's route. You see the flak bursts and count the rate of fire by the tracers. Now lights are back on below and you try again. This time they're too late turning them off and you drop. One small fire. A truck? You hope.

"Gunner calls, 'Fireballs—break right,' but you're looking at the road. Maybe you got one, maybe not. You make about nine runs and suddenly gunner calls: 'Bomb bays empty,' and pilot wants the heading home.

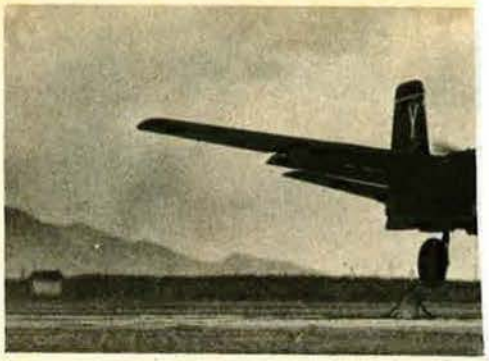
"Hell, where did the time go? It's 0230, and the next ship is due to hit your route. You switch to command and call Al, its navigator. You played bridge with him earlier that night. Now you tell him about the traffic and bombing conditions and wish him luck.

"Back at base you debrief and trade jokes over the usual after-mission stimulant. Then to the mess hall for eggs, bacon, and toast. Dawn is breaking as you relax for that last cigarette before hitting the sack. No more until tomorrow night."

Scheduling of crews varies, but most are on tap two or three consecutive nights, then lay off for about the same period.

Close timing is necessary to maintain route patrols, for half a dozen crews may be assigned to the same route on a staggered schedule through the night. They fly a stipulated corridor at specified altitudes to and from the target and are required to radio in on arrival and departure from the route area. A crew chasing a juicy target sometimes runs over its time limit and gives base ops some anxious moments until it gets a report.

One night, a B-26 breaking away late felt a slight jar. With no apparent damage, the pilot figured he had hit a bird and continued on to base. Next morning, the crew chief found a damaged wing bomb shackle smudged with the same color paint used on the wingtips of another squadron. Checking with that squadron, he found a wing with a matching dent. Both planes had worked the same area the night before.



WELL SUITED FOR ITS ROLE

B-26s have been in the Korean War since the first combat on June 26, 1950. First into action was a squadron stationed at Iwakuni, Japan. It was joined by another squadron based elsewhere in FEAF, and eventually a third squadron was assembled to make up the 3d Bomb Wing.

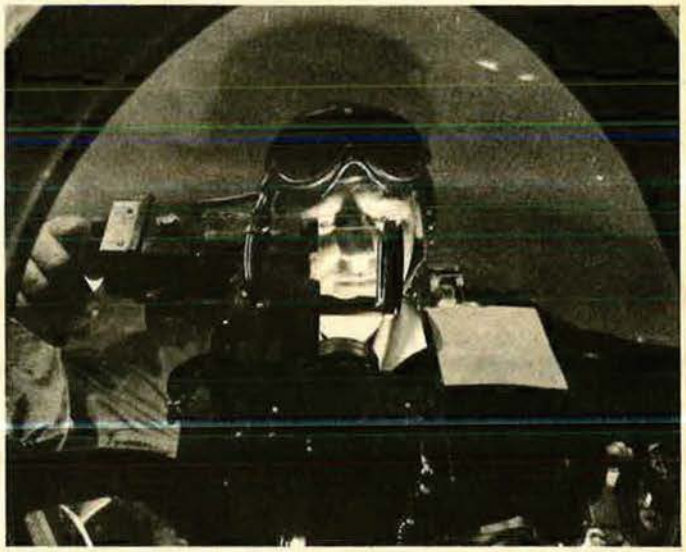
The B-26 proved well suited for its role, so USAF ordered a Reserve B-26 wing, the 452d from California, to active duty on August 1, 1950. Just seventy-four days later—after sixty days of intensive training at George AFB, Calif., and thirteen days of island-hopping to Japan—it flew its first combat mission.

These two wings still run the B-26 business in Korea, splitting the peninsula between them. (In what amounted to little more than a paper transfer, the 452d became the 17th Wing on May 1, 1952. After twenty-one months on active duty, the 452d was returned to Reserve status in California, but its equipment and the greater part of its personnel remained.)

The two wings carry on a running feud and profess bitter enmity except when in the presence of B-29 jockeys or the glamorous fighter types. The worst that one B-26 crew can call another is "pussy cat," while "tiger" is the rarest of compliments. Tigers are supposed to

A B-26 of the 3d Bomb Wing takes off at dusk to strike tactical targets.

Two airmen of the 3d Bomb Wing check the twin .50-caliber machine guns mounted in the nose of this B-26.



Key man aboard the night-flying B-26s was the navigator-bombardier, whose job it was to pinpoint the targets.

The terrain in Korea was rugged. One enemy tactic was stringing cable from hilltop to hilltop, to try to snag low-flying aircraft.

B-26s IN KOREA

relish getting down on the deck and snarling into the barrels of ack-ack guns as they shoot up locomotives and mule trains. Pussy cats prefer bombing from "safe" altitudes—5,000 feet and above.

While both wings have their share of tigers and pussy cats, the two do tend to operate differently, governed by the area they work in. The 3d, based in southeast Korea, sweeps across the western plains in the lower strata of airspace known to newspaper readers as MIG Alley. The 17th, working out of the Pusan area, patrols the mountainous area of eastern Korea, where targets are harder to come by and a low-level run between the peaks may lead into a dead-end valley.

There is also a squadron of RB-26s in Korea assigned to a tactical reconnaissance wing. It, too, usually works at night, leaving daytime photo work to jets. A recce flight is usually assigned to work with the Intruders, so that a crew which believes it has hit a valuable target—perhaps has boxed in a convoy—may call for an immediate photo. If it looks good, the Joint Operations Center may divert other B-26s to push the attack or set up a fighter-bomber mission to work over the area at daybreak.

The standard combat tour runs fifty-five missions, but it takes quite a bit of preparation before a man winds up in Korea in a combat crew. After the usual preliminaries in the Air Training Command, crew members assemble at Langley AFB, Va., for combat training. Pilots come from Vance AFB, Okla., observers from Mather AFB, Calif., gunners from Lowry AFB, Colo., and flight engineers—now standard equipment—from Sheppard AFB, Tex.

Langley's course is conducted almost 100 percent by veterans of Korea under Col. J. W. Ruebel, of Alameda, Calif. It runs nine weeks, including ground school and twenty missions in the B-26, eleven at night. From Langley, crews go to Stead AFB, Nev., for three weeks of survival training. A brief stop at Stoneman for the usual departure formalities, and then off by B-26 to Korea.

The first leg of the overwater flight to Hawaii puts a premium on cruise control. In fact, takeoffs are allowed only when a fifteen-mile tailwind seems assured over the distance. After Hawaii, the steps are a little shorter.

OCCUPATIONAL HAZARDS

In Korea, crews start training all over again with ground school at Pusan U., where they're zeroed in on the combat situation, Commie techniques, and other orientation topics. Then the crews are broken up to take their "dollar" rides as fillers with experienced crews. After three or four break-in missions, each crew member is evaluated. If he stacks up, he rejoins his crew, and the crew then takes its place in the lineup.

In earlier Korean days, some crews managed to complete tours in three months or less, but it takes a good deal longer now. For one thing, there are more crews. For another, all rated officers assigned to desk jobs in the wing—from the commander on down—are booked for at least one mission a week. Today, regular crews average about two missions a week and, with one or two rest and recreation leaves in Japan sandwiched in, take from eight to nine months to complete a normal tour.

There are still enough occupational hazards that crews needn't blush when collecting flight pay, but constant refinement of operational technique has cut losses to less than one plane a week. Since in a normal week the two wings will fly hundreds of sorties, the loss rate is substantially lower than any comparable combat operation in World War II.

Both wings employ three modifications of B-26s. One is a hard-nosed model that packs eight extra .50-caliber guns in the nose, used for armed reconnaissance and close-support missions. The other two are plexiglass-nosed, and of these one carries special radar equipment.

Crews used to fly all three types. Now a crew not only sticks to one type but, as much as possible, to the same plane on each of its missions.

Mission instructions come down from the theater Joint Operations Center. If the combat situation warrants, the JOC may direct daylight close-support missions. When reports of troop or supply concentrations come in, B-26s may go out in train behind radar-equipped pathfinders to bomb on targets outlined with fire bombs by the pathfinders. Radar is also used extensively on bridges and other pinpoint targets, especially in bad weather. But the large majority of missions are armed recon and interdiction over specific route areas.

Maintenance has been a bright spot throughout. Ground crews relish working days and sleeping nights. In recent months, planes have averaged more than seventy-five hours a month, and aborts are virtually unknown. Only organizational maintenance is done in Korea. Elements of each wing's maintenance and supply group are stationed in Japan to accomplish the 100-hour inspections and do the heavy maintenance.

"The enemy holds just enough territory in Korea to give him real transport problems," says Langley's Colonel Ruebel. "If the lines were closer to the Yalu, Intruders wouldn't have as much room to work in. If the front were further south, we'd need more B-26s to provide the coverage. Right now, we're able to keep it just a little crowded over target areas."

In summary, B-26s take pressure off the ground troops in three ways. They hack away at trains and vehicles carrying supplies and replacements. They take a second crack at what does get through by hitting supply dumps and replacement pools. Finally, they join with fighter-bombers in close-support missions to cut down the force of enemy attacks.

Teamed with the planes that work over Communist-held Korea in daylight, Intruders keep up the incessant pounding by night, to carry out with a vengeance the old proverb that "there's no rest for the wicked." ■

Dr. von Kármán, the first recipient of the National Medal of Science created by Congress in 1963. President Kennedy presented the award. Also in the picture, Brig. Gen. G. McHugh, General B. Schriever, Judge V. L. Anfuso, General Curtis LeMay and Dr. Lee DuBridge.

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To the Award Committee

Dr. Theodore von Kármán
Born 11 May 1881 – Died 7 May 1963

The name of von Kármán is synonomous with aerospace. He was one of the small group of scientific giants who made feasible the phenomenon of manned flight – converting the visions of da Vinci into the reality of today. Dr. von Kármán combined uniquely many traits: the scientific brilliance of comprehending the complexities of nature in the realm of flight, the creativity of envisioning theoretical concepts, the practicality of developing such concepts into a realistic optimum and the leadership qualities for successful achievement.

Widely recognized in academic circles as an educator, as well as for his outstanding scientific contributions, Dr. von Kármán received approximately 30 degrees from universities all over the world, as well as perhaps two score major medals and awards from governments and international societies. Shown above is his award of the first National Medal of Science, created by Congress.

Among the major positions held by Dr. von Kármán was that of Chairman of the Scientific Advisory Board to the USAF, 1944–1955, and Chairman of the Advisory Group for Aeronautical Research and Development (NATO) from 1952 until his death. Among his other positions was that of Technical Director for Tool Research and Engineering Corporation from the inception of our company to his death.

It is now 10 years since his passing. Because of our close personal association as well as his technical direction of our company during its early years, we wish to pay homage to his memory. And we wish also to provide a means of recognizing and rewarding the outstanding developments in structures-materials technology for aerospace during this decade; as a continuation of the progress he had initiated in aerospace, and in keeping with the spirit of his numerous and major contributions in pursuit of man's never ending quest for accomplishment.

L. S. Wyler

L.S. Wyler
Chairman of the Board.

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Awards will be given for the outstanding developments in structural-material technology during the past decade, which have contributed most meaningfully to aerospace. (Excludes TRE's titanium-diffusion bonded Stresskin honeycomb or any other TRE product or process.)

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- ☐ Selection of awards will be made by the following outstanding leaders in the structural sciences:
  Dr. R. Bisplinghoff, Chairman;
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  Dr. E. Sechler; Professor—Cal Tech
  Dr. J. McCarthy; Professor—MIT
- ☐ Decisions by judges will be final
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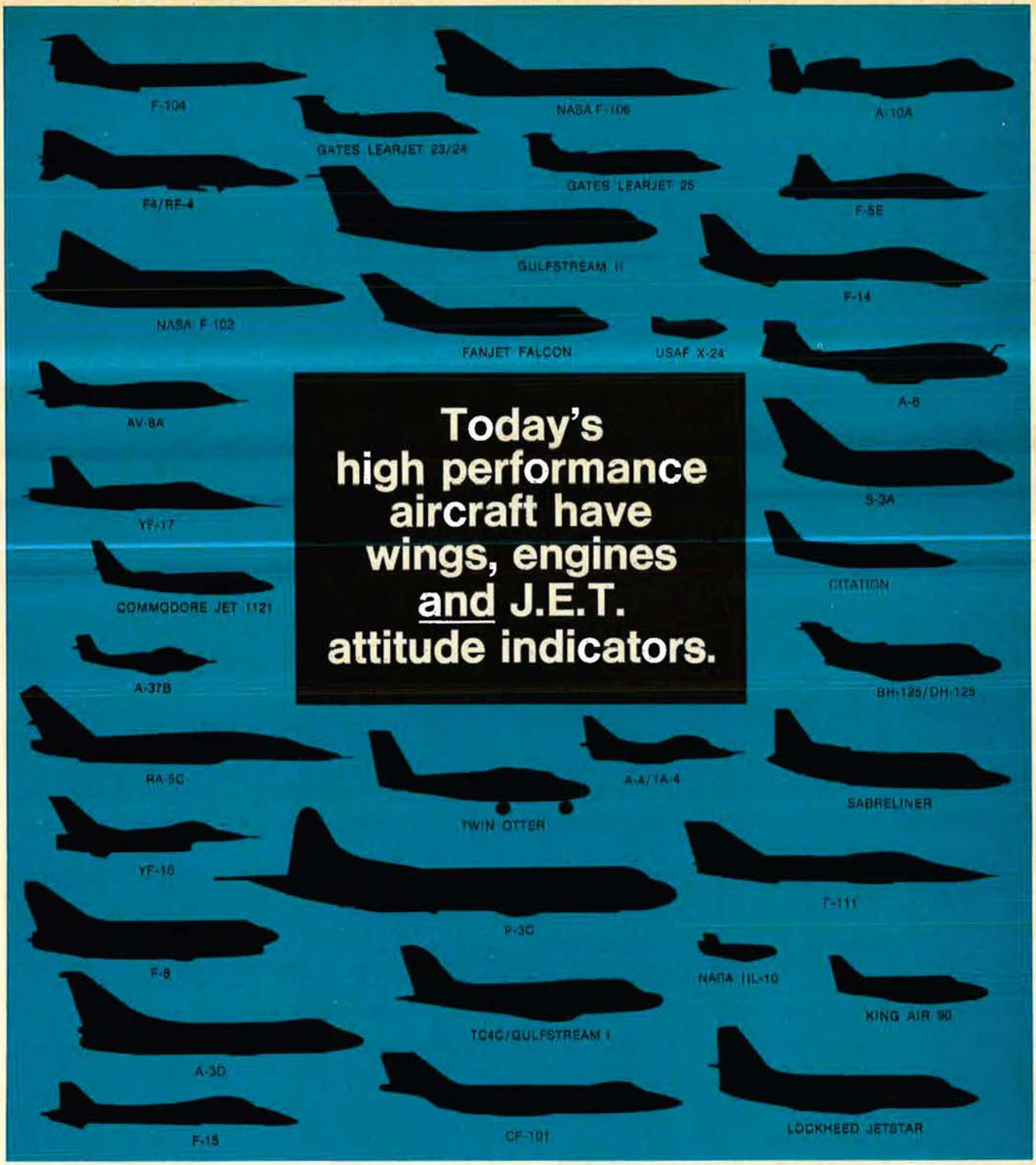

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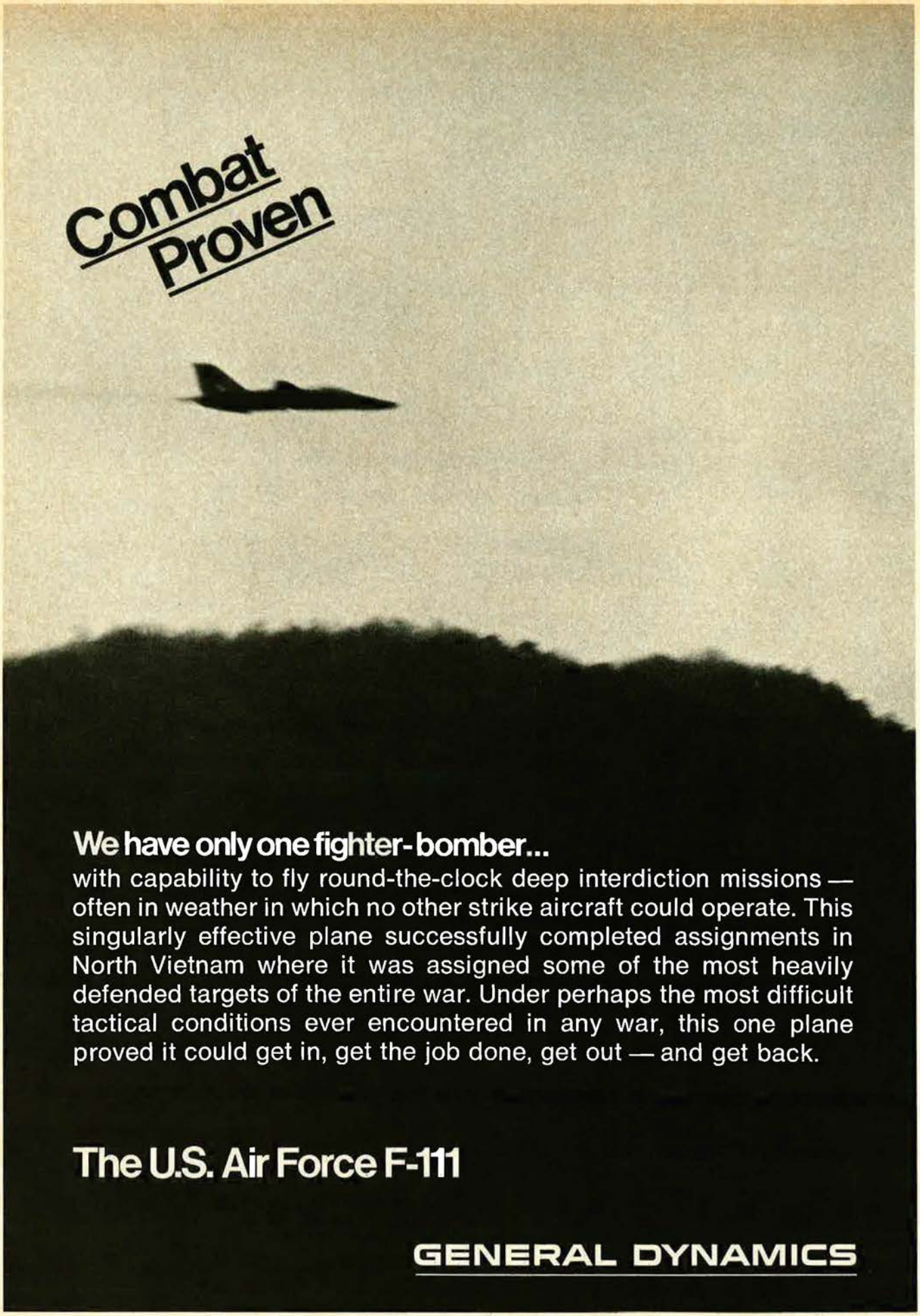

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THE AIR WAR IN SOUTHEAST ASIA

You're an F-105 "Thud" pilot, scheduled for a predawn takeoff on an armed recce flight to the panhandle of North Vietnam. It's your next-to-last mission in this combat tour, but this mission is to an area you've been over plenty of times before and you hope this one will be an "easy counter." But that's not the way it works out . . .

Down on the Ninety-Ninth

By Lt. Col. James R. Mitchell, USAF

ILLUSTRATION BY PAUL SALMON

You were set up last night to fly your ninety-ninth combat mission over North Vietnam. Hope-

fully, it will be just like the previous ninety-eight: You will be reasonably successful in getting to the target, inflict some damage, and then make it back to home plate. This has been the name of the game these past six months.

The F-105 Thunderchiefs you have been flying have been good birds. They're not what every fighter pilot dreams about, but they do carry a heavy load a long way and at a pretty decent speed, and they are single-seaters with a forward-firing cannon. But if you want to pull a few Gs, forget it. The old "Thud" just wasn't made for that. It has been rather pitiful these past six months to watch guys (including yourself) try to bend it around over a target and still keep the objective in sight inside that enormous turning radius. This has gotten particularly ludicrous a number of times when the visibility was bad.

But for just out and out lugging the mail to a fixed point on the ground, whether at medium or low altitude, there hasn't been a fighter plane in SEA that has been able to go as far or as fast with as much. This particular capability of the old "Thud" has been great at times, particularly when you've tried to get into tough targets around Hanoi and then out again.

"EASY COUNTER"

But for the mission today (your ninety-ninth), you're called Moonglow Lead, flight lead of a two-shipper set up to recce in the southern panhandle of North Vietnam. It's a predawn takeoff, which hopefully will let you get into the designated area in time to spot some of the night-time stragglers along the jungle supply routes — hopefully, some of them out in the open where you can get in a few good shots.

Not really too much sweat with this mission, you think, because you've been over there plenty of times before. In fact, so many times that you recognize all the landmarks as though they were in your own local training area. Sort of like hopping off to the gunnery range for a little air-to-ground practice. No cumbersome maps needed in the cockpit for this one.

But you must be careful this time. You've had it drilled into you from the day you arrived that overconfidence in any combat situation can be your undoing. There were plenty of other missions way up North that got your pucker count up, but somehow things have always seemed much more tranquil down in the panhandle. These missions are the "easy counters." In fact, you have felt all along that if you could fly all your missions down there in Route Package One, things would be just peachy-keen.

You finish your briefing before daylight, having rather perfunctorily gone through the whole ordeal in the usual and "standard" fashion: short discussion about the target area, the route of flight, call-signs, radio frequencies, emergency procedures, and so forth. Not really much different from the previous ninety-eight. You give your personal equipment a quick once-over, making sure the batteries in your four emergency radios check out. Some guys have been taking along extra food, water, bolo knives, large hand guns, and so forth. You've always put the emphasis on emergency radios; as a result, you have taken a little kidding about it in the past. "Nobody," they've said, "needs that many radios." It's too late to change your habits now, so you just give them all one last check and then head for the airplanes.

No problem on takeoff. About forty minutes later, you are crossing the border into the southern panhandle and beginning to strain the old eyeballs for targets of opportunity. You swing up the river from the Quang Khe ferry crossing, watching for either water or road traffic as you go. There are plenty of water and road arteries to scan, and, at 400 knots at low level, you have to be quick to catch something before it pulls off into the trees and virtually disappears.

It's getting light now. You've timed it just right so shooting should be good. You're now down below a 4,000-foot deck of broken clouds and looking in earnest for something to zap. You hope to find something soon, because fuel will be a problem on this mission. This was one day you didn't get a drink from the tanker.

Maj. Dan McIntosh is with you today in the other F-105. It's one of his first missions in SEA, and he hangs out there in fighting formation as though he'd been doing it forever.

BRAILLE BOMBING

As you both swing up a navigable waterway, something catches your eye. It looks as though a rectangular-shaped part of the river bank has become unhooked and is floating just outside a perfectly symmetrical rectangular-shaped niche in the bank itself. Since this is just about half a mile from one of the major river crossings, you know from experience that this is no barge-shaped island. It's a good-sized ferryboat being put into its moorings after the night's work.

You call it out to Dan, he spots it, and you both climb up for a little dive-bomb work. It's going to be touch and go with those clouds in your way, but you've just got to give this one a go.

Once you climb on top of the cloud deck, you lose sight of the target, so you're going to just about have to use the braille method in your dive-bomb pass. They only gave you two bombs each today. No bomb shortage; they just have too many airplanes!

You spot a hole in the cloud deck on a heading and angle you think will get you in for a pass, but it's going to be hard to get a good hit. So you roll the wing up, pull the nose down, and aim yourself right for the hole in the clouds. Dan is just a few seconds behind. When you break out underneath, it's going to be right at release altitude so there won't be much time for a last-minute tracking correction.

Sure enough, there's the ferry, but it's slightly off to the left. You jam the stick left, roll the wings level, let the pipper come quickly up to the target, and then pickle off both 750-pound bombs. The whole operation takes about two or three seconds.

You come on with about five Gs and start a hard left turn around the target, your neck muscles straining against the G-forces. The bomb impact point is about fifty feet from

DOWN ON THE 99th

The F-105—one of the workhorse aircraft of the war in Southeast Asia—was sturdy and reliable.

The author, Lt. Col. James R. Mitchell, is a 1953 graduate of the University of Utah and holds a master's degree in management from that institution. He earned his wings in 1956 and has spent much of his Air Force career as a fighter pilot. Colonel Mitchell flew two tours in F-105s in Southeast Asia, later served as DCS/Comptroller at Wright-Patterson AFB, Ohio, and is a 1973 graduate of the Air War College.

the ferry and in the water. As you continue your turn under the cloud deck, you see Dan sliding down through the hole. His bombs are off slightly too, but the impact of the bombs has broken the mooring lines they were using to put it to bed.

As Dan pulls off, you see muzzle flashes and smoke from automatic weapons about 300 yards from the target and on the opposite bank. They were firing at you too when you finished your pass, but you didn't see them.

You feel badly about missing the ferry. Just then, Keystone flight checks in on the same radio frequency, and you remember from the briefing this morning that they are fragged to the same general area. You give them a quick call and directions to the ferry. They get a visual on it and climb up through the cloud deck to repeat your tactics. Dan calls bingo fuel, so you tell him to head on out for home base, you'll catch him en route.

You tell Keystone flight about the automatic weapons, and, since you have a little extra fuel, you tell him also that you'll pop up from over a nearby hill and zap the automatic weapons with 20-mm just as Keystone Lead rolls in. You figure the Commie gunners will be watching up through the hole for Keystone Lead just as you sneak up on them.

TWO IN THE BELLY

You get off behind the hill about three miles while Keystone flight is in its climb, all the time keeping yourself masked from the gunners' view. When Keystone calls, "Rolling in," you get up a big bagful of airspeed, nip smartly up over the top of the hill, roll inverted, pull the nose down, and then line up on the gun position just as Keystone breaks beneath the clouds. The only trouble is that Keystone Lead aborts his pass and pulls off above the clouds. This leaves you with your pipper on the automatic weapons site and with nothing to do but squeeze the trigger and hope awfully hard.

Since you have a thousand rounds of 20-mm, and a rate of fire of 6,000 rounds per minute, this gives you about ten seconds of steady fire. No use being conservative now. Aim a little high to start with, and then bring your pipper down as the range decreases. Just as you squeeze, you see their muzzle flashes. You stay on that trigger, and the rounds spew out at a rate of a hundred per second.

You begin to see your own high-explosive and armor-piercing incendiaries impact right on the guns. You work the rudder a little as if you are painting a picture on them with a lot of gray smoke and sparkles. Your range is decreasing fast now, but you stay mashed down on the trigger. You've covered the area of the gun site well, and, as you pull off, you know you must have gotten them all.

But at that instant something happens! You feel a couple of healthy whumps in your belly, and immediately you get smoke in the cockpit. The caution and warning light panel is now decorated with bright red and amber lights, but, because of the smoke, you can hardly see which ones are on. You know now you've been hit and are going to have to pay a price.

Instinctively, you plug in the afterburner and hope it will light and at least carry you a few miles away from here. You know without thinking about it that this trusty old bird has been mortally wounded.

Luckily, the burner lights, and, as it does, you simultaneously mash down the mike button and call out that you've been hit and are on a heading of 126 degrees from the target. You repeat this a couple of times with your call sign, hoping to be heard before the radio goes dead.

Right away, Dan, already headed home, acknowledges your call and heads back. Part of your briefing has been for any surviving airplane in this situation to pickle off his empty fuel tanks, return to the scene of the bailout, try to get radio contact with the downed pilot, and to recover at Da Nang Air Base in South Vietnam, which is not too far away, even when the lower bingo fuel level was reached.

You try to get some altitude and distance between you and that automatic weapons site, which is over

relatively open and flat terrain. Remarkably, the afterburner is still cooking, but it's getting hotter than blazes in the cockpit, and the smoke is now so thick you can't see out. You're on 100 percent oxygen, but you jettison the canopy to clear away the smoke. You come out of afterburner and then check to see if anything improves. More warning lights are on now, including both fire lights, and the engine is vibrating and making a screeching noise. It won't be long now.

You check the terrain below and are happy to see the lush green of the jungle. You have at least made it to what you hope will be a safe area for concealment and evasion when you are forced to eject.

Your flight controls are beginning to jerk and act up now. You're pretty keyed up, but you try to check your hydraulic gauges. Still so much smoke being blown around that it's hard to see them. When the controls finally begin to freeze up, which is the signal that they're just about ready to crap out for good, you make the decision to step smartly over the side. You don't debate much with yourself. The decision comes easily and automatically.

THE LONG RIDE DOWN

Head back against the headrest, back straight, up with the armrests, reach down for those triggers and squeeze them both. You're surprised when a rather comfortable but positive jolt pushes you up and out.

The first thought you remember is looking down at the top of an airplane flying along without its canopy—sort of convertible style. Then there's some tumbling, the sound of the parachute shroud lines paying out of your back pack, and then ka-WHUMP! You've reached the end of those lines and are delighted to look up and see that rather handsome looking tricolored parachute all filled with air above you.

You look straight ahead just in time to see your stricken F-105 pitch up violently about half a mile away and then plunge straight down into that green morass below you. You expect a giant explosion when it hits, but, oddly enough, there is only a minor whiff of smoke to mark the spot. After that dissipates, there is nothing.

Better get back to the ride down now. You look down past your feet and see that you're oscillating pretty severely. You remember what they told you in training; grab some risers and dampen your swing. Sure enough, it works. But now you can see you're drifting back toward the place from whence you've just come. It's now you remember the weather briefing you got before takeoff. Winds in the target area from the south at twenty to thirty knots! Wow! Since you're at about 4,000 feet and three miles from where you were hit, you just could drift back out into that flatland.

You reach up and pull down hard on all your upwind risers, collapsing part of the chute, and, sure enough, just like in the book, you come down like a rock and with very little drift. You hang onto those nylon lines until you're a couple of hundred feet above the jungle canopy and then let go. The chute blossoms once again, and you prepare for impact.

Since you are going into the trees, you decide against deploying your survival kit and liferaft from your seat pack. You've heard stories about guys getting hung upside down in the treetops in all those dangling lanyards.

You see the trees coming closer now—much closer. Not at all like it was there at 4,000 feet. At that altitude, it felt as though you'd stay up there all day. All of a sudden, there's no way you're going to prevent what's about to happen. You hit the trees with a crash, and the next thing you know you're dangling there in your harness about twenty-five feet off the jungle floor.

You sort of wiggle around and test yourself to see if everything is in one piece. Everything appears to be intact, so your next problem is to get to the ground. A few seconds of struggling with your harness to get your descent lanyard rigged, and you accidentally dislodge your chute canopy hung high in the tree branches above you. The rest of the trip to the jungle floor is completed with a twenty-five-foot drop and a crunch. Again, somehow, you are still unhurt.

WAITING FOR SANDY

Your first impressions are, "Boy, is this jungle floor cluttered," and, "Wow, are those trees tall!" You can hardly see any sky through the branches above, and moving about with ease in all this entanglement of underbrush is impossible.

You quickly turn off your emergency beeper radio, which was automatically actuated at the time of bailout and which has told everyone else who was airborne in that vicinity that you were out and in your chute.

You switch to one of your voice radios and try to contact Dan. Sure enough, Dan comes right on the air and acknowledges that he knows you're down. He tells you that Rescue has been alerted and will be on the way shortly. He also tells you he must leave the area for fuel reasons, but you're darned glad someone at least knows your approximate location.

The next thing you begin to do is inventory all your gear, throwing aside things that are useless and would only slow you down if you had to make a run for it. The parachute goes, as does the liferaft, the chute harness, helmet, and so forth.

You fill the small portable rucksack provided in your seat pack with everything you think you'll need. But in all your searching, you fail to find your compass. You're sure you kept one in your flying suit, but right now you find that you're without one. You had made a mental note during your nylon descent that you would need one for sure if you were to have to hike out of that jungle. This no compass business could be trouble.

You notice the heat. Boy, is it hot, and the big black ants are getting all down inside your flying suit. You open a can of emergency water and drain it. Your flying suit is drenched with sweat.

You suddenly jump at the sound of a voice coming through your radio. It's Sandy 31 calling to Moonglow Lead. Hey, that's you! You snatch up the radio and reply.

DOWN ON THE 99th

He tells you to give him directions to your location. Since you can't see anything from below this 150-foot-high jungle canopy, you give him steers into your position just by the sound of his engine.

You guide him into a 360-degree circle around you. He then instructs you to fire a marker flare up through the branches above, and, miraculously, that beautiful Roman candle finds a patch of blue, and then he has you spotted.

He then tells you to turn off your radio to conserve battery power, and that he will be back with the Jolly Green Giant helicopter in about an hour and a half. In the meantime, he's going to loiter elsewhere so he won't give your position away to the enemy. He also lays down a string of small bomblets he has aboard into a ravine nearby, just to discourage any would-be searchers. It makes a heck of a racket, and you can hear the monkeys jabbering.

You continue to sort through your gear, and look at your watch. It's taking a long time for this hour and a half to go by. You think as you stumble around in that dense morass of vines and tangled foliage that you would almost have to get down on your belly underneath it all in order to make any kind of progress. You hope you don't have to try it, because you aren't very sure you could make it as far as the edge of the jungle.

At the appointed time, you switch on your radio. Actually, five minutes early; you're getting anxious. Right away you hear the sound of that guy with the great voice, Sandy 31. He tells you the Jolly Green is a few minutes out, which is the best news you've heard all day. He tells you you'll have to vector Jolly Green 15 into your position just as you had before with him. That's all right with you—you're getting good at it.

You can hear the whapping of his giant rotor blades now and continue to give him right and left heading changes as he approaches. He sounds awfully close, but the agonizing seconds pass slowly. You hope he can find you. You fight the thought that perhaps he won't.

PICKUP

Suddenly, you can sense the jungle reacting to the tremendous downwash of the huge propeller blades, but you aren't able to actually see him until he is right over the top of you. You then catch a glimpse of the pararescueman, A1C Dennis C. Hughs, in the open side door. Simultaneously, the word comes over your radio that the pilot, Capt. David C. Henry, has a glimpse of your parachute, so they lower that heavy plumb-bob-shaped jungle penetrator to you. The wind blast from his rotor is tremendous as he hovers motionless over the top of the jungle roof.

You instinctively gather up most of your belongings and try to get hold of the penetrator. When it finally reaches you, it's a struggle to get it unfolded, get strapped on, and then hang onto your belongings at the same time. With the branches and tree limbs being beaten about by the downwash, you wonder whether or not you'll ever make it up into that lovely big green monster.

But you finally get saddled up, give a wave of the arm, and up you go. There's only one slight problem. The helicopter has started to move off station a little, and you're being dragged up through the tree limbs at an angle. Never mind, just hang on!

You're up about 100 feet now and still in the jungle, heavy branches and limbs breaking over your shoulders. For Pete's sake, just hang on and worry about the battered shoulders and legs later. This might be your last chance out of here.

You finally break free of the canopy top and see that the chopper is really starting to climb. You're about thirty feet from the open doorway when you look down. Holy cow! Better not look down again. You're really way up in the air now, so whatever you do don't let go of this thing.

As you get up to the doorway, Airman Hughs yells and motions for you to let him handle you and for you not to let go. The understatement of the year! He swings you aboard on the end of that cable, unhooks you, and then the medic, A1C Jerry W. Johnson, nonchalantly tosses you a half-pint medicine bottle all plastered up with adhesive tape. You take off the cap and smell it. Just as you figured. Good old hundred-proof "medicinal" whiskey.

You hand it back with a smile, and with a gesture that you don't really feel you need it. You then make the rounds with the crew. It's noisy, but it doesn't prevent many shouted words of thanks and good strong handshakes. You go forward and meet Captain Henry and the copilot, 2d Lt. Elmer Lavender, who looks to be about sixteen years old.

Then you look back at some of the jagged bullet holes they picked up in the floor while coming in to get you. You suddenly realize that these Jolly Green crews are the greatest guys in the world. You will remember this day and what they did for you for the rest of your life. When you tell them how great you think they are, they just shrug their shoulders and say they had always thought F-105 crews were the greatest. You know now it's quite a fraternity you belong to.

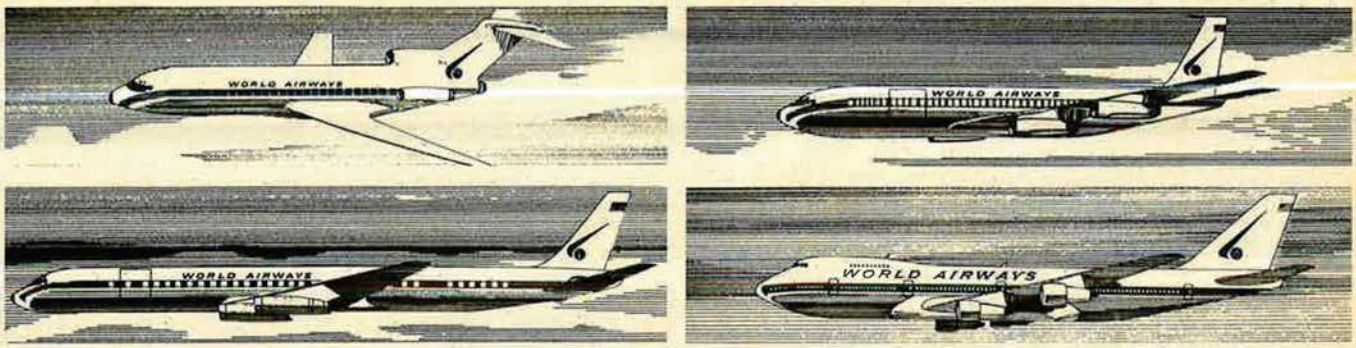
Well, you make it back to base that evening. Your squadron buddies have the champagne ready, and with everybody talking a mile a minute, you find it hard to believe that a few hours earlier you were where you were.

You are thankful—very thankful.

You also know that you are very lucky. Many of your friends before you and many after you will not be so lucky. You think about them and hope they all have some of the same kind of good fortune you have had. Although you know many of them have been captured, you hope to see them all again someday. You know also that this will not be possible in every case, but you will never forget them.

You go out a couple of days later and fly that 100th mission. But this time, you take it just a little bit easy. ■

Fly with us just for the fun of it.



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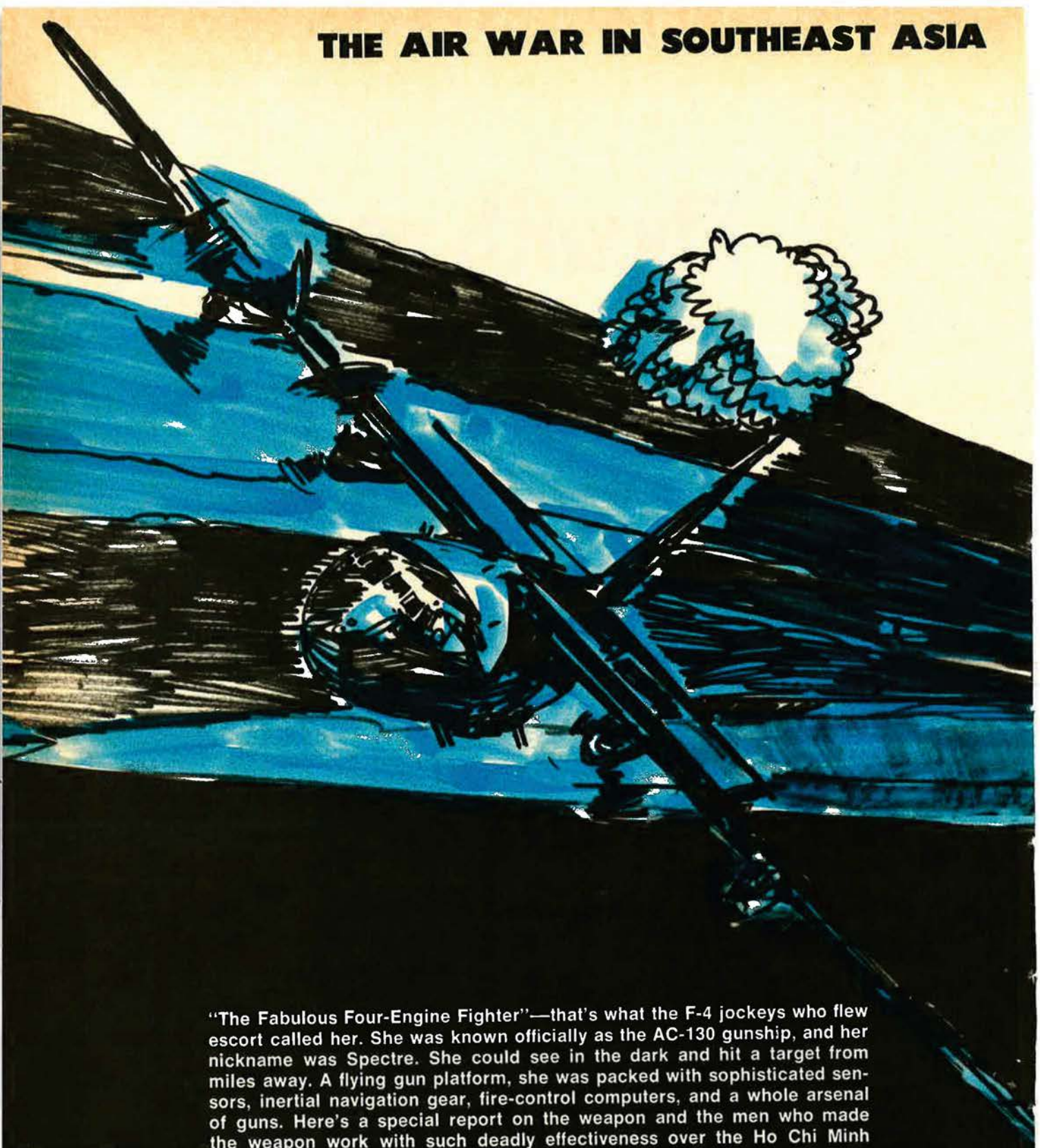

"The Fabulous Four-Engine Fighter"—that's what the F-4 jockeys who flew escort called her. She was known officially as the AC-130 gunship, and her nickname was Spectre. She could see in the dark and hit a target from miles away. A flying gun platform, she was packed with sophisticated sensors, inertial navigation gear, fire-control computers, and a whole arsenal of guns. Here's a special report on the weapon and the men who made the weapon work with such deadly effectiveness over the Ho Chi Minh Trail . . .

The Ghost Rider in the Sky

By Maj. Richard A. Lehnert, USAF

ILLUSTRATION BY PAUL SALMON

"TRIPLE-A, six o'clock, accurate—break right, pilot! Break right!" The copilot shoves the throttles forward, and you bend the bird into a sixty-degree right turn.

"Harder, pilot—break harder!" yells the illuminator operator (IO).

You go to full right rudder now, override the autopilot altitude hold, and start hauling back on the yoke, using elevator to suck you around. You're afraid to look at the G meter. Burning red balls of 37-mm zip past your left window, between your props, and you hear and feel the detonations as they burst above you. You can smell the stink of cordite in the cockpit.

"All clear, eight rounds of 37," calls the IO. You yank it back to the left, follow your guidance, and listen to the television operator (TV) tell you he still has the target. "Beautiful, TV. Coming to you," you call over the main interphone.

"Barfly's in," calls your escort over the strike frequency. You go into the sight, and above and ahead of the reticles you can see a steady stream of tracers arching up at where the F-4 escort was just seconds ago. You watch transfixed as he lays finned napalm on the enemy gun position.

"Gimme number six gun, full auto, rapid-fire," you tell your engineer. "Pilot's in the sight!"

"Number six on the line, Sir," calls your engineer.

You watch the two reticles come together, squeeze the trigger, and, when the pippers superimpose, the coincidence lights blink out, and you feel the 40-mm begin to kick.

"You got him!" yells the infrared operator (IR). "He's a burner! One truck destroyed!" You can see it mushroom up into fire now under the reticles in your gunsight. It gets so big that it lights up the whole area like a giant flare. It makes little prickles up and down your spine. Maybe it's so bright that the "Gomer" gunners can see you up here now.

"IR's got a mover," calls IR. "IR's in the computer, pilot—you're clear to fire," calls the table navigator ("Table") . . . and so it went over the trails when you rode the "Ghost Rider in the Sky," the AC-130 Gunship called "Spectre."

FABULOUS FOUR-ENGINE FIGHTER

For those of us who trundled around the world yanking airlift Herkey Birds through the sky, there were some pretty exciting times. Putting 124,200 pounds of "A" model or 155,000 pounds of "H" model C-130 onto mud-slick, postage-stamp strips required considerable skill and cunning. Your heart pumped a little water until you came to a shuddering stop on the overrun, and you always prayed that the antiskid wouldn't fail, and that all four engines would go into reverse.

Some of those fantastic guys spent more than three years doing this. Dodging enemy 37-mm at Khe Sanh, and ZPU (automatic weapons) at Kontum. But some of us went on to fly an even more exciting kind of mission in this machine—a bird that could shoot back.

The F-4 jocks who flew escort for us called her the Fabulous Four-Engine Fighter. Fabulous is probably the only word for it—the machine, the mission, the crews, the escorts, the whole bit!

Spectre crews have dodged more triple-A in one night, hanging over more targets, than Carter has pills. Talk about hearts pumping water! I can remember my first flight—they called it your "dollar" ride. I stood up all night as a third pilot behind the aircraft commander and watched the enemy triple-A come up. We took more than 1,100 rounds, and I spent all my time trying to sit in the flight engineer's lap to get away from the triple-A. I couldn't understand how we could make it back. Those people down there were shootin' at us and trying to kill us!

My pilot got eleven trucks that night. I was to do as well a little later, but some of our hotshots became real sharpshooters and got as many as thirty a night.

The author, Maj. Richard A. Lehnert, was commissioned in 1955 through the AFROTC Program at Oklahoma State University, Stillwater, Okla. After completion of his AF Reserve commitment, flying C-119G and C-130 aircraft at Ashiya AB, Japan, and Sewart AFB, Tenn., he returned to civilian life until he reentered the Air Force in 1963. He flew C-130s at Patrick AFB, Fla., and Edwards AFB, Calif., for Air Force Systems Command and then returned to Tactical Air Command to fly C-130s at Tachikawa AB, Japan. He then volunteered for Palace Cobra and the AC-130 Gunship Program. He flew combat missions in the AC-130 gunship in Southeast Asia, before being assigned as Chief of the Gunship Branch, Hq. Seventh Air Force, Saigon. On completion of this tour, he was assigned to the 415th Special Operations Training Squadron, Hurlburt Field, Fla., where he is presently serving as an instructor pilot and as an AC-130A Stan/Eval pilot. He has logged more than 300 combat hours and has some 5,500 hours in the C-130 aircraft.

We got our gunship training in those days at Lockbourne AFB, Ohio. Five rides and two weeks, and you were on your way to get checked out over the trails in combat. Our first mission was along

AC-130 SPECTRE

well defined roads. The IPs wouldn't have to sweat a slow learner's sluggish reaction to triple-A, and the newborn sensor operators could practice following a real road they could see, not one covered with foliage. There would be some trucks down there, and you could hose them at will and not get hosed back too badly.

On my second mission, they stuck me in the left seat to "sparkle" for the escort (mark the target by firing the guns). I got lucky and hit one, and he blew. I became so fascinated by the fire and explosions that they couldn't get me out of the gunsight. It was as if all my brains were in the sight. I couldn't hear anyone. All I could do was watch that truck blow. It was obviously an ammunition truck, as tracers began to squirt off in all directions, somersaulting over the trees and zipping up and down the road.

For almost three years, I've been flying and instructing in the AC-130A gunship. I can personally attest to its effectiveness both in combat and in the training environment at Hurlburt Field, Fla. Properly used, the system is accurate to within feet of a target some miles away. The "E" model, with its 105-mm howitzer and increased sophistication, is even more accurate.

Most important to me, perhaps, has been the attitude and aptitude of the student crews I've trained. We are very lucky to have such men. Most of them are volunteers, have exceptional flying skills, and are completely motivated. I haven't had to motivate them. The weapons system has done that for me. One demonstration ride and they're hooked. Nothing motivates a man quicker than a system that hits—and the gunship does hit.

HOW IT ALL STARTED

The gunship business started in 1964 on a test-bed C-131 at Aeronautical System Division at Wright-Patterson AFB, and over the Eglin AFB water ranges. It was called Project Little Brother, and they worked on something called pylon turns. The razz-ma-tazz of sophistication, like sensors, inertial navigation, fire-control computers, and bigger guns, was to come later.

Back before the "Big War"—World War II—bush pilots in South America delivered mail to remote areas by flying the "pylon turn." The pilot would maneuver over the village square, while a guy in back lowered a rope with a weighted pouch attached. When the pouch got close to the aiming point, the pilot would orbit and fly a pylon turn. He'd put his left wing navigation light on a prominent point on the ground, and with the right combination of airspeed and bank angle for the altitude, he could keep that navigation light on the target (if the winds were light). But, more important, the mail sack would stay in one place long enough for someone on the ground to swap letters . . . the pylon turn!

Essentially, that's what the gunship business is all about. The weighted mail pouch has been replaced by a target, while the rope becomes a stream of 7.62-mm, 20-mm, 40-mm, or 105-mm howitzer rounds coming down from around the orbit, to land on a fixed point on the target.

Experiments were made flying a C-131 aircraft with pylon turns while firing three .50-caliber machine guns from the left windows. The pylon turn had a new name now, called "geometry." Computations to figure out how to "lag" the weapons so as to compensate for aircraft speed, gun elevation angles for ballistic fall, and a hundred other problems were resolved.

Then came the birth of "Spooky," the AC-47 gunship. Spooky was almost all mechanical, but who needed sophistication? The friendlies needed air-ground support, and old Spooky did it so well with 7.62-mm Miniguns and .30-caliber weapons putting down a ring of fire that "Charlie" never knew what hit him.

From old Spook or "Puff," the Aeronautical Systems Division boys continued gathering facts to feed their imagination and pressured the Pentagon and industry for hardware. They figured bigger was better—and were so right. The friendly forces wanted more gunships—fast.

"Gunboat" was born on paper—

Undisputed champion of the truck killers along the Ho Chi Minh Trail, the AC-130 could stay on target longer than any other system.

the first AC-130 gunship prototype with one 7.62-mm Minigun, a Starlight scope or NOD (Night Observation Device), a primitive infrared sensor, and a breadboard computer that filled half the cockpit with bundles and circuitry. An attempt was being made to integrate and coordinate all those variables—airspeed, gun lag, angle, sensor input, wind, bank angle, and time to fall for ordnance to reach the target. It all worked.

Spectre, designed primarily as a vehicle for ground support, flew its first mission over the Ho Chi Minh Trail. The primitive IR sensor picked up six enemy trucks, and, in less than fifteen minutes, all six trucks were burning. Spectre was no longer just a support weapon for friendly ground forces, to augment Spooky, but was to become the greatest truck killer in Air Force history.

SPECTRES IN TWO FLAVORS

Things moved rapidly from the Gunboat study in '66 and the first Spectre in '67, to seven Spectres that deployed to SEA in 1968. They each delivered a punch of four 7.62-mm Miniguns for close air support and four 20-mm Vulcan cannons for armed recce along the trails.

We were to call them "Plane Janes," for better things were coming. Today, Spectres come in two flavors—Pave Prontos and Pave Spectres! Prontos are AC-130A models with two 7.62-mm, two 20-mm, and two 40-mm cannons, a television sensor, a super AAD-7 infrared sensor, Black Crow, laser target designator, and radar tracking sensor. Pave Spectres are AC-130E models with two 7.62-mm Miniguns, two 20-mm Vulcans, one 40-mm cannon, and a 105-mm howitzer in a trainable mount.

The fire-control computer, the brains of the weapon system, is operated by the table navigator. The orbit altitude, ordnance time to fall, ballistic wind, airspeed, and sensor inputs are inserted. Look angles are compared and resolved against theoretical values, whereby target lead angles are computed. This data is transmitted to the pilot's gunsight and attitude direction indicator (ADI), where the pilot coordinates bank angle to fly the ADI needles into the geometry circle. Once the ADI target and vertical bars on the instrument are centered (like an instrument landing system indicator), the pilot goes into the gunsight and superimposes two reticles. When he gets the pippers in coincidence, lights will go out, and if he has the trigger button depressed, the fire-control computer will fire the weapons he has selected.

It's not all quite as simple as that, but at Hurlburt Field, Fla., at the 415th Special Operations Training Squadron, we train AC-130 pilots and complete gunship crews to fly the gunship missions in eleven flights. Mighty fine crews, who could fly the trails the following week if they are called upon to do so!

A BIRD FOR ALL REASONS

For those who flew the missions in Spectre, there's a special place in my heart. To say it was exciting is the understatement of the year. Fabulous is the word.

Her mission was armed recce and support of friendly ground forces. She performed them both exceedingly well. Spectres were directed to areas called visual recce sectors and worked from dusk till dawn. When one Spectre left, another would take its place, working the lines of communications for enemy trucks, watercraft, and truck parks and storage areas. Sensors picked up the targets, which were attacked and destroyed or damaged. The whole bit was recorded on a bomb-damage assessment videotape recorder—words and pictures. You had to watch your language! Sometimes in the excitement as the triple-A comes up, you might utter a "no-no" and it all would be recorded for posterity.

Aside from truck hunting and TICs (troops in contact) missions, old Spec would fly convoy escort, cap a search and rescue, gather intelligence and record it, and fly perimeter defense for some remote, friendly outpost. She would drop flares, or use a two-kilowatt illuminator light, or send in her escort, who carried lots of goodies including laser-guided bombs to water old Gomer's eyes. Lethal? You might say so! And her ability to stay over the target for hours is unequaled in the history of airpower.

Painted black and flying with no lights, with a blacked-out cockpit, she was in a science-fiction world all her own. It was just you, your crew, your escort, and the enemy who hosed you all night with 37-, 57-, and sometimes 85-mm triple-A. Old Gomer was pretty much a three-level down there with his shooting, but nevertheless your stomach was always tight until that first clip of 37 came up.

The Spectre's effectiveness can be gauged by the vast array of enemy countermeasures taken against her. Literally thousands of enemy triple-A weapons were there to try to shoot her down, along with SAM missiles, guided and unguided rockets, and the like. But the gunship, working at night, is a very elusive target, difficult to see from the ground, and accurate to within feet of the target. She can be hit, and was, and the glasses at the bar are raised to the crews that didn't come back. Those who flew her will attest to the fact that she can take quite a beating and survive. In all the years she flew the trails, her losses were light, considering the time she spent over the target. The number of missions flown runs into the thousands.

SPECTRE'S HEART—THE CREW

The AC-130 crew is a strange, dedicated lot—fourteen in all, consisting of two pilots; a table navigator; a flight engineer, operating a blacked-out cockpit and standing up behind the pilot, calling the bank angle when the pilot has his head in the gunsight, shooting; three navigator sensor operators; and a fire-control officer—all located in an enclosed room called "the booth."

They are also in their own world of sensor displays and their own complex language. One sensor operator is also the Electronic Warfare Officer, who operates the electronic countermeasures on board, in addition to the Black Crow.

AC-130 SPECTRE

Five airborne weapon mechanics —called gunners—load, repair, and keep the weapons humming in flight as they walk around all night with a flashlight on red stuck in their mouths so they can see what they're doing. One gunner acts as right scanner, to call any enemy threat from the right side of the aircraft.

Last, but not least, we have the illuminator operator—the IO. A nutty-gutty sort of guy whose primary job is to hang out of the open ramp and call enemy triple-A. He's connected to the aircraft by a cable, and it's not uncommon to hear him call the pilot for "permission to come aboard" after some sharp maneuver.

They sound like a real bunch of clowns, all talking on three separate interphone systems, all coordinating their actions, and all making it work. If the computer is the brains of the gunship, the crew, with their coordination and feeling of mutual respect, is its heart. No one man can make a successful mission, and no one man can slough off. It's a team effort.

Coordination can get so close that it's almost like fourteen guys are married to each other. Sometimes you don't even have to say it; before you give an order or ask a question, it's done, like they're clairvoyant. Such teamwork can only be born aboard a gunship in combat. It's a wonderful thing to experience. Clowns they may appear to be! Individualistic, proud, talented, crazy at times, and fun-loving they are.

WORKING WITH THE F-4S

To fly a typical trail mission in SEA required an escort. The F-4 crews who escorted us were outstanding. We normally took off at dusk, aligned the sensors, and then headed toward Laos. If required, we would wet boresight on a ground marker flare to ensure that we had a good weapon system. This became known as a "tweak," because what we were doing was tweaking out all the known variables of wind, ordnance time to fall, gun lag, and computer idiosyncrasies so as to pull the shots into a group on target. Such a tweak normally required three or four orbits, and the expenditure of ten to twelve rounds of 40-mm. Sometimes we would tweak on the first target.

While we were tweaking, GCI would direct our escort to our position. We could hear him talking, and pretty soon he would come up on the strike frequency and call us. Copilot would give him our altitude, the altimeter setting, and a target briefing. The target briefing would include high terrain north, east, south, and west so he would know how low he could fly. The copilot would also tell him that he was cleared in on any gun which came up, so long as he had Spectre in sight, but to call going in and off the target.

The escorts normally orbited above us and kept us in sight by watching our canned beacon and formation lights (across the top of the wing). Sometimes they would lose us and call for a "hold down" on UHF so they could direction-find us. The copilot communicated continually with the escort and the table navigator for new target briefings to help the escort stay with us.

It would get a little hairy when we got close to another visual recce sector and some other Spectre or Stinger gunship was working equally close to the border of his sector. The escorts could get up tight about this, and reasonably so, since their orbits would begin to overlap and they were a "midair" waiting to happen. We tried not to let this occur. We knew who would be working the adjacent sectors and communicated accordingly.

There was always a lot of stuff flying around up there and even with Moonbeam (airborne command and control) responsible for keeping track of it all, everybody still kept his eyes open and helped each other.

Moonbeam flew above it all and cleared aircraft in and out, recorded battle-damage assessment, relayed targets, and communicated with the battle staff at Seventh Air Force who were running the night air war.

The escort idea was great, and it really worked when Spectre started to carry the laser target designator. The escorts kept the triple-A down and helped create a permissive environment for her. When the guns came up, they went in and laid CBU, finned nape, or hard bombs on them.

They tell the story of one night when an escort went in, had an inadvertent release, and dropped two cans of nape at once. The cans clanked together at about 4,000 feet, and it rained napalm all over the place. The guns didn't come up the rest of the night. Gomer thought we had a new secret weapon!

After the missions, the escorts and their GIBs (guys in back) would get together informally to discuss the mission. This was the best part of it all—the comradeship and fast friendships made and held to this day. Escorting a Spectre was no piece of cake. It took guts and know-how.

POTENTIAL UNLIMITED

That, in a nutshell, is the story of how the AC-130 Spectre was created, how she was packed with sophisticated electronic gear that could see in the dark and hit a target from miles away, and what she did in Southeast Asia.

Those black boxes made her an intelligence source never before equaled. Teamed with her array of armament, they helped her become the undisputed champion of the truck killers—a strike weapon that could stay on target longer than any other airborne weapon system.

The potential of the AC-130 may never be fully realized. In an unconventional warfare role, she has literally unlimited possibilities that boggle the imagination. Fantastic is the word.

I'm proud to have been a part of it. But most of all, I'm proud to have known and worked with those great Spectre crews. I'll never forget them. ■

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LGDM, the Air Force's Laser-Guided Dispenser Munition, is the latest proof of Goodyear's capability to develop advanced tactical weapon systems.

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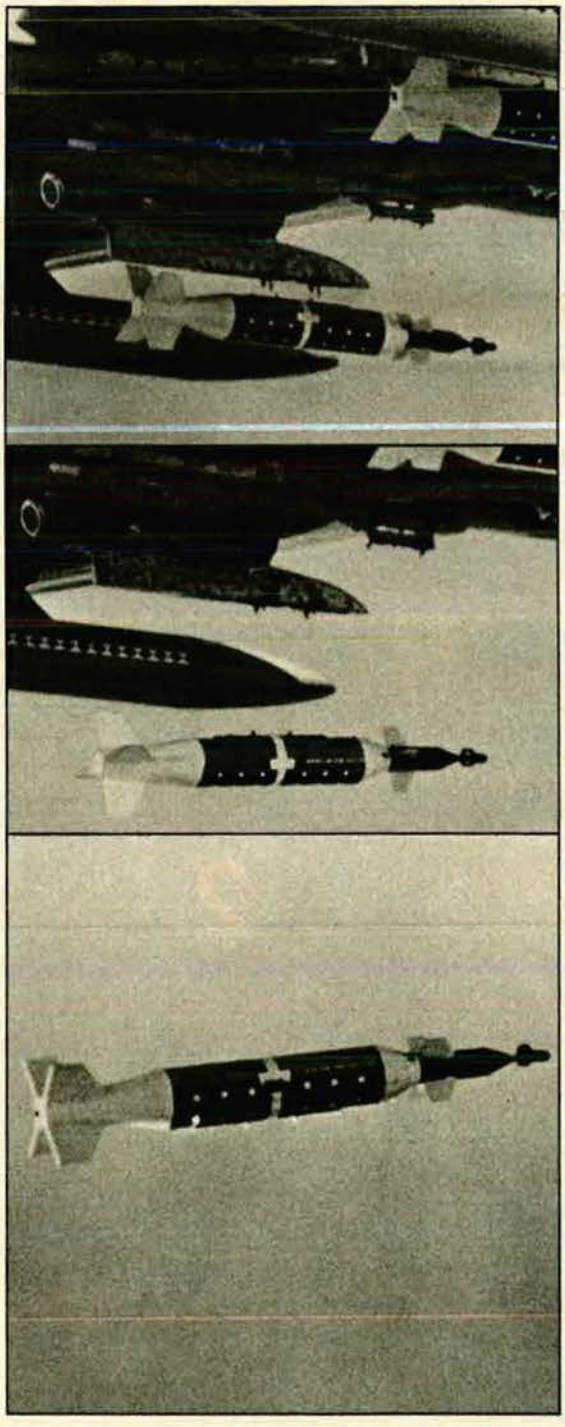

Another current project is an air-to-ground munition with terminal homing to defeat hard-structure targets. In a realistic test just one of these devices demolished a giant reinforced concrete simulated bridge pier.

A wide spectrum of hard targets can be defeated with far fewer sorties when this munition is used. It's a prime candidate for further development.

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Goodyear's goal.
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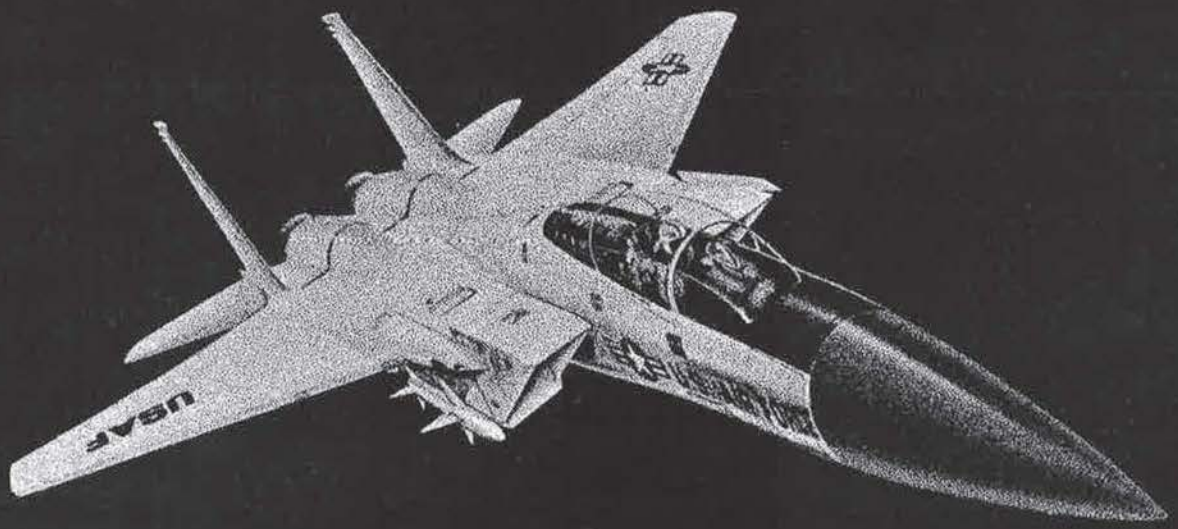
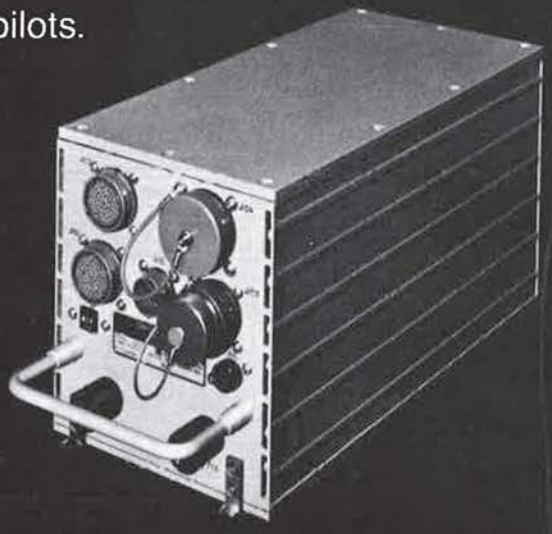
Four reasons why the F-15



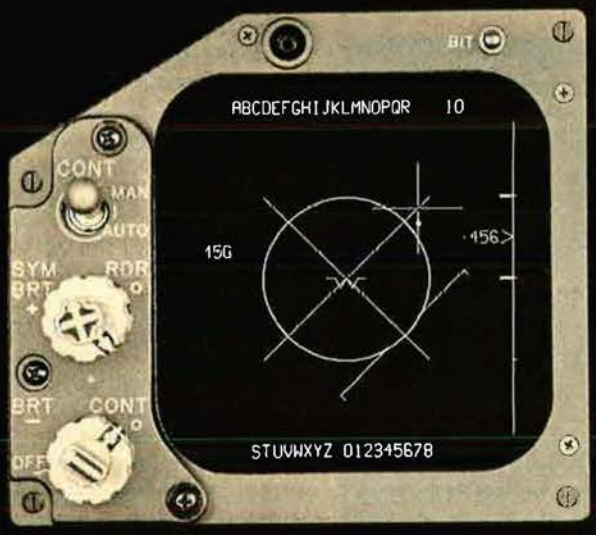
1. Airframe by McDonnell Douglas, builder of more than 4,200 F-4 Phantoms, the great fighter for the U.S. Air Force, Navy and Marines – and the leading nations of the Free World. Just as the F-4 set a new standard of performance where it counts, so the new F-15 Eagle, incorporating quantum advances in technology and materials, will establish itself as the new air superiority fighter from America.

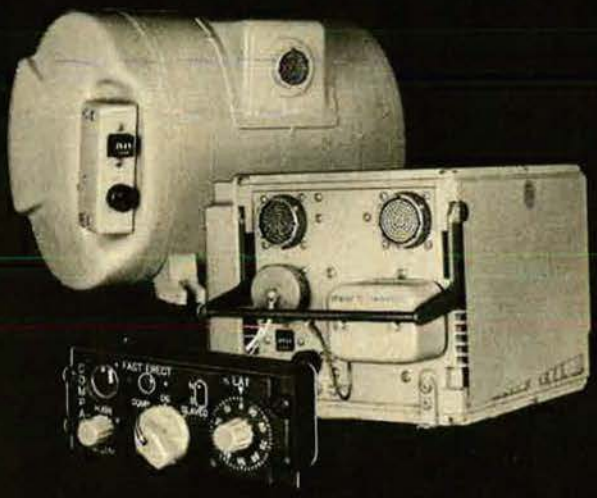
2. There's Sperry's solid-state digital air data computer. With our highly accurate vibrating diaphragm sensor, it will rapidly compute airspeed, altitude, Mach number, vertical speed and other air data parameters for F-15 pilots.



s a fighter pilot's fighter.

4. Add to that Sperry's attitude and heading reference set. Our AHRS will provide the F-15 pilot reliable all-attitude and heading information as a backup to the fighter's inertial system. Complementing this system on the ground is the Sperry plug-in compass calibrator to greatly reduce maintenance crews' compass swing time.





3. Fighter pilots will be amazed at the clarity and sharpness of the Sperry vertical situation display presentation in the F-15. Our experience in developing cathode ray tube type instruments has enabled us to produce a display unequalled on the avionics market.

The F-15. Sperry's there with the latest avionics to help make it truly a fighter pilot's fighter. Sperry Flight Systems, Phoenix, Arizona 85036.

SPERRY

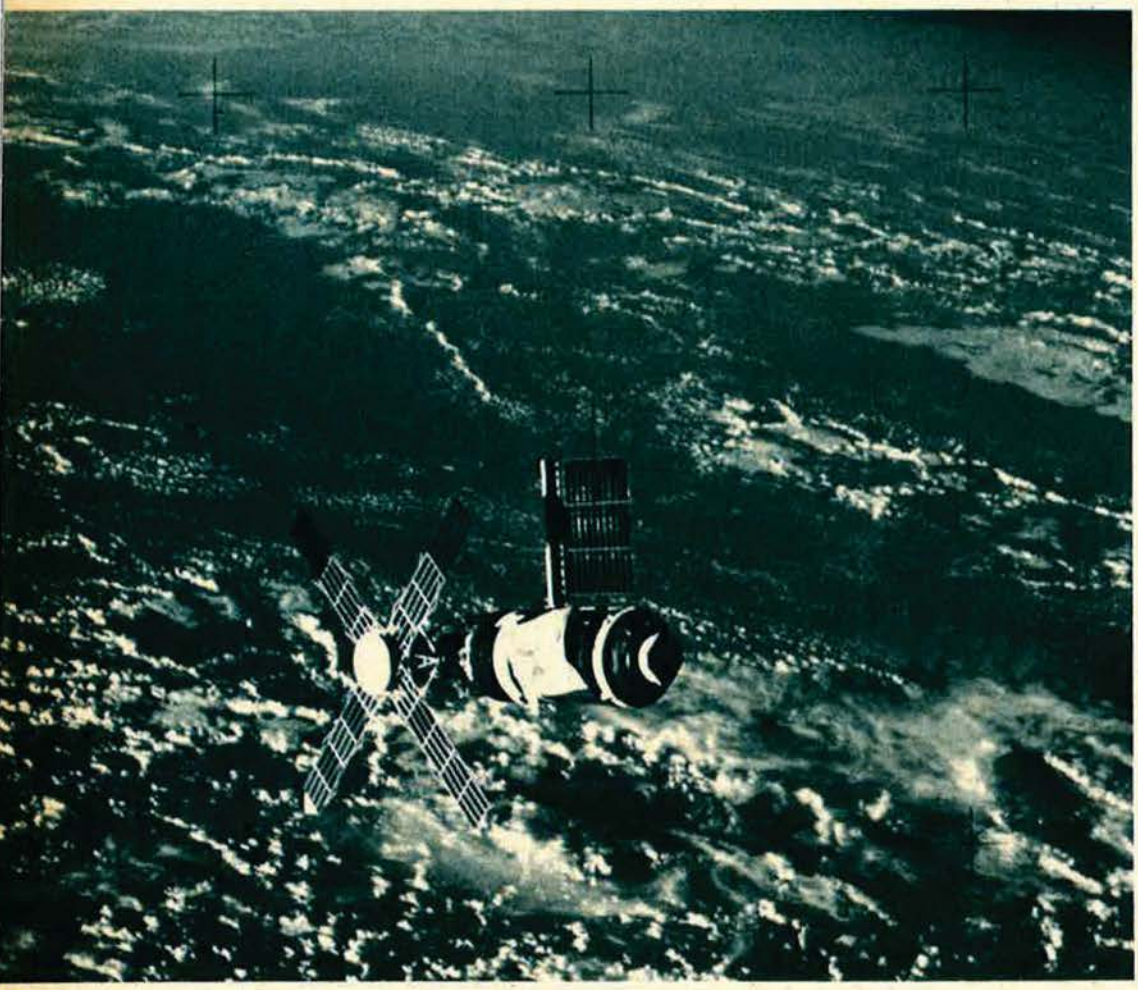
SKYLAB

About a minute after the launch of the Skylab Workshop on May 14, 1973, its 800-pound micrometeoroid shield ripped away, one solar panel was lost, and the other jammed in a stowed position. The entire Skylab mission was threatened because of high temperatures in the Workshop and greatly reduced electrical power. During ten hectic days after the launch, NASA, the Skylab crew, and the aerospace industry invented equipment and procedures to make the Workshop habitable and to release the jammed solar panel. In the most remarkable achievement in the history of space operations, Pete Conrad, Dr. Joe Kerwin, and Paul Weitz—the Skylab crew—salvaged virtually the entire operation. Here are excerpts from Dale Myers' June 25 address to the National Space Club, telling about the historic feat and answering a question that has persisted for a decade . . .

WHY MAN IN SPACE?

By Dale E. Myers

ASSOCIATE ADMINISTRATOR FOR MANNED SPACE FLIGHT, NASA



This view of the Skylab space station cluster in earth orbit was taken from the Command/Service Module during the final "fly-around" inspection. Note the deployed parasol solar shield that was erected to replace the original micrometeoroid shield. Clouds over water form the backdrop.

Skylab is in full working order, and can carry out almost all planned scientific investigations. Out of a total of 270 investigations initially planned in the program, we have lost only six on the first mission. . . .

I don't think I need tell you how "iffy" the whole Skylab "salvage" operation was, or how much it depended upon human brains, skill, and the ability to improvise in the face of unexpected situations. Man's capabilities in space were dramatically illustrated in this recovery mission that included four major activities:

(1) The visual inspection fly-around and report of damage to the Orbital Workshop.

(2) The manual attempt to dislodge the jammed solar-array panel system.

(3) Deployment of the thermal-shield parasol.

(4) EVA [Extravehicular Activities] from the airlock to release the solar panels and successful efforts to deploy them.

None of these efforts would have been possible to undertake without human capabilities being ready and available. Two of the activities were crucial in saving the Workshop. . . .

Perhaps the single action of the astronauts that was particularly pleasing to the investigators occurred on June 15. At that time, a moderately strong flare occurred on the sun. This was detected by the automatic instruments, and the astronaut on duty immediately redirected the ATM [Apollo Telescope Mount] toward its location and switched it to a higher observing frequency. . . .

It is my understanding that we recorded the rise phase of the flare in this particular observation, and that this is the first time such an observation has been made from space.

To me, this occurrence illustrates better than any other event that man working in combination with automated systems can achieve results that are far beyond the capability of

either to achieve independently. . . .

I think the whole Skylab performance is a reaffirmation of the American ability to meet challenges and conquer them in the face of considerable odds. It ought to be a comfort to those people who had begun to look upon that particular ability as a myth, or as something that might have been true among Americans in the past, but not in the present. . . .

Now I recognize, of course, that our first Skylab mission successes don't settle the issue of manned vs. unmanned spaceflight. But I would like to point out that if those who believe this is a real issue aren't quick, the differences will become so blurred they won't be able to untangle them to make a case. The Shuttle will make the whole matter academic. The Shuttle will merge the capabilities of manned and automated space activities in one vehicle where now they usually complement one another in separate vehicles.

One need not be blessed with extraordinary vision to see this. The issue of manned vs. unmanned was dubious from the start. What is really the question is whether we want to develop the *full* potentials of spaceflight or only a *part* of them. Because if you eliminate man from the loop, you significantly reduce our options to explore and use space. There is no adequate substitute for man as a general sensor, calculator, evaluator, and manipulator now or in the foreseeable future. . . .

That man is essential in exploring space is not just a peculiar NASA notion. Some time ago, Soviet Academician Blagonravov wrote on man in space:

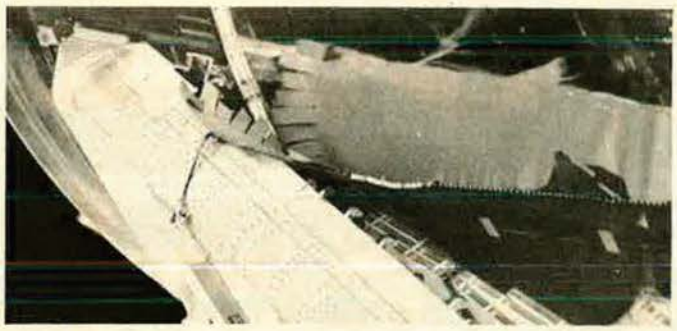
"Even the most 'clever' modern automatic device," he said, "cannot investigate something which is not known to man in principle." Then he added: "It is only man who can effectively investigate the unknown."

After the Shuttle flies and is in operation, I think we shall hear the last of manned spaceflight criticism. It will become perfectly apparent that there is a requirement for both forms of space activities. It will become obvious because we shall all see more clearly the special contributions each can make to opening up this great new frontier. Skylab is contributing heavily to that understanding.

So, to sum up, if this nation is to make the most of opportunities it has in spaceflight, then we must use *both* kinds of capabilities open to us. . . .

I trust . . . NASA [will not] be forced into . . . the idea [that] you can explore and utilize space cheaper and better by dehumanizing it—by *not* utilizing the most reliable, easily programmed computer, the most highly sophisticated, multiple degree-of-freedom manipulator, and the most versatile set of sensors ever developed—Man. ■

"Standing on his head," Charles Conrad, Jr., receives an oral physical examination from scientist/astronaut Joseph P. Kerwin. Note floating piece of paper on the right.



Close-up view of the partially deployed Orbital Workshop solar-array system.

Astronaut Paul J. Weitz mans Apollo Telescope Mount's control and display panel.

Conrad (rear) and Kerwin work to repair the damaged solar-array system.

At presstime, the second Skylab mission—planned as a fifty-nine-day sojourn in earth orbit—was well under way. The astronaut team—Navy Capt. Alan L. Bean, Marine Corps Maj. Jack R. Lousma, and scientist/astronaut Dr. Owen K. Garriott—launched and docked on July 28 and then dealt with the problems of life in space. If the mission proceeds as planned, the three will travel a total of twenty-six million miles and double the record time for space stays.

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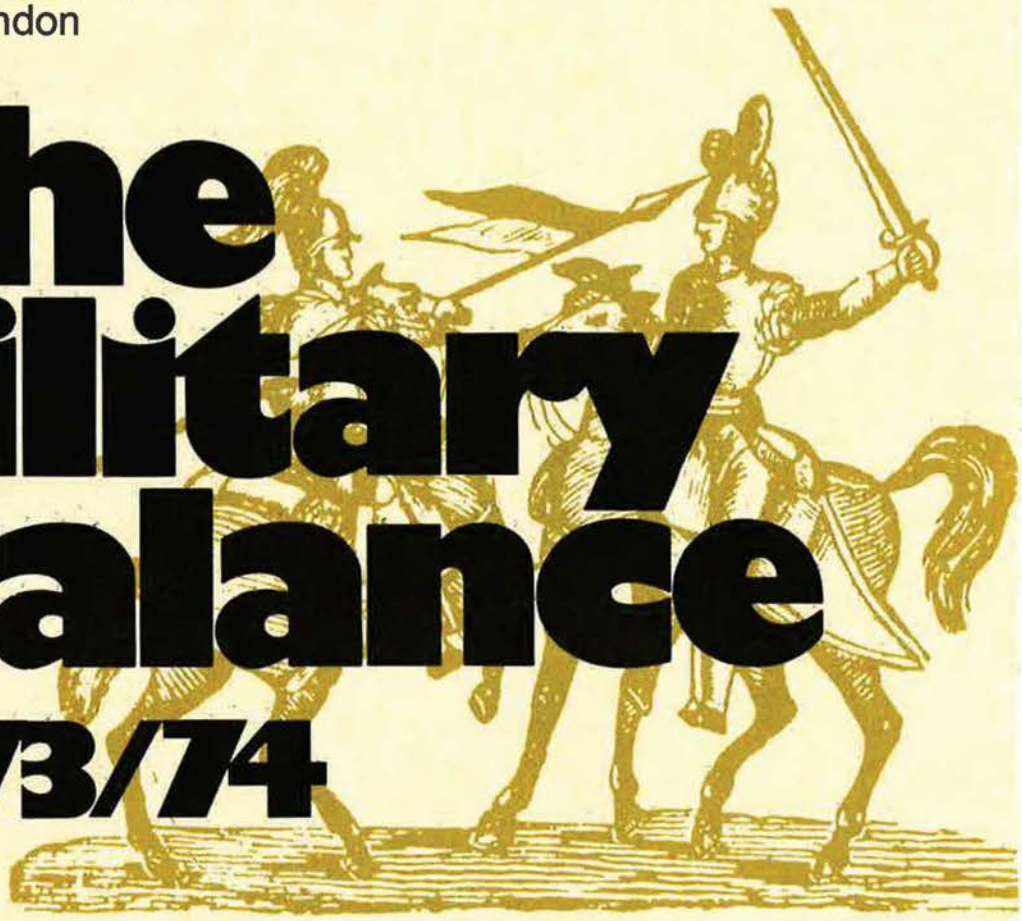

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AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

SOVIET ENGINE TECHNOLOGY

In the past, sales of Soviet commercial aircraft abroad have suffered because of inadequate engine reliability and high overhaul rates. A top authority in the Soviet engine field, Sergei Mihailovich Shlachenkov, the Superintendent of the Central Aeroengine Research Institute, told this writer during a recent visit to the Soviet Union that "we are now at the point where our unscheduled removal rate and in-flight shutdown rate is better than that of the best foreign engines."

The engine life of the YAK-40, he said, is now about 30,000 hours. The in-flight shutdown rate of that engine, the A-25, he said, averages one per 20,000 hours; in the case of the older A-20 engine, which powers the IL-18, that figure is 10,000 hours. Recent improvements in engine reliability are the result of an intensive fifteen-year campaign.

Soviet engine-development policy appears similar to that of US manufacturers and relies on "next-generation" engine programs to move technology forward on a continuous basis. Lead times apparently parallel those in the US, and average between four and five years, according to Mr. Shlachenkov.

In two lengthy discussions, the Soviet propulsion expert made these points:

- Soviet designers have produced an experimental engine in the 55,000-pound class, which appears to be similar to the latest high bypass ratio engines designed in the United States. Full-scale development of the large Soviet engine will depend on future requirements.
- Advanced, operational Soviet jet engines operate at turbine inlet temperatures in the 1,800 to 2,700 degree Fahrenheit range and use titanium, steel, and aluminum disks and blades. Such advanced technologies as diffusion bonding (the intermingling of molecules from different materials), perforation cooling of the turbine blades through laser-drilled, minute holes, and high bypass ratios are said to be in use. These new engines show marked improvements in thrust-to-weight ratios, with specific fuel consumption (SFC) improvements in the range of fifteen to twenty percent.
- Soviet designers are confident that their present rate of progress will culminate within this decade in the development of stoichiometric engines, which operate in the 3,600-degree inlet temperature range and provide maximal efficiency in terms of fuel consumption, weight, and thrust. Increasing thrust margins can be expected to eliminate afterburners in high-performance aircraft, in the view of Soviet engine experts.
- Soviet designers are experimenting with engines using bypass ratios in the 8–10:1 range, as well as variable geometry. The latter feature is, however, admittedly "technically challenging." Future Soviet V/STOL engines can be expected to feature bypass ratios of up to 15:1.
- Soviet designers have been successful in the development of two-cycle engines. An alternate engine for the Soviet SST, developed by the Koliesov Design Bureau, is of this type.
- Soviet engine design bureaus have not been successful in using advanced composites, such as boron, in the hot sections of experimental engines. The advanced composite components did not stand up to the heavy loading and wound up "looking like a shaving brush."
- Soviet designers are conducting experiments and theoretical research on air vehicles using liquid hydrogen-fueled scramjets (supersonic ramjets) meant to operate in the hypersonic regime (Mach 5 to Mach 7). It is not known how soon vehicles of this type may become operational.

—BY EDGAR ULSAMER

(Mr. Ulsamer's report on Soviet aerospace technology will continue in the October '73 issue.)

—Novosti Press Agency

Soviet Minister of Aviation Industry P. V. Dementjev (standing, wearing glasses) during a detailed briefing of visiting US aerospace writers (seated at left side of conference table). The aircraft model in the back of the room is a Soviet IL-86 superjet. Seated between Minister Dementjev and the IL-86 is the Superintendent of the Central Aeroengine Research Institute, S. M. Shlachenkov.

Airman's Bookshelf

An Ambassador's Analysis

Witness to History 1929–1969, by Charles E. Bohlen. W. W. Norton, New York, N. Y., 1973. 562 pages. $12.50.

After recent talks with West German Chancellor Willy Brandt, Soviet Communist party leader Leonid I. Brezhnev went on West German television. It was necessary, he said, "to step over the past" to an era of peace and trust. It took great effort to overcome the cold war, he observed, which "is now giving place to relations of peace, mutual respect, and cooperation."

One wonders what Charles E. Bohlen made of that. This former American diplomat—Ambassador to the Soviet Union, interpreter for F.D.R. at Yalta—concludes his memoirs of forty years in the US Foreign Service with a profoundly pessimistic view of future Soviet-American relations: "It is my gloomy conclusion that the United States faces decades of uneasy relations with the Soviet Union. The fault . . . lies with both countries, but primarily with the Soviet Union." Mr. Bohlen thinks there is only dim hope that "the Soviet Union will begin to act like a country instead of a cause."

Mr. Bohlen's opinion deserves respect. In 1934, he went to Moscow with William C. Bullitt, the first American Ambassador to the Soviet Union. Thus, Russia became the "central factor" in his diplomatic career and, except for tours as Ambassador to the Philippines and France, Soviet affairs remained his first interest and passion. Bohlen became an outstanding authority on Russia, often mentioned with the brilliant, brooding George F. Kennan.

Like Kennan, he knew the Soviets well enough to realize the end of World War II would not bring "an era of good feeling." In February 1945, at Yalta, Mr. Bohlen advised and interpreted for President Franklin D. Roosevelt. Though obviously ill at Yalta, Roosevelt retained a measure of effectiveness and still believed he could improvise solutions. Harry Hopkins, his chief adviser, was seriously ill at Yalta "and too ready to grant concessions."

In retrospect, Mr. Bohlen thinks F.D.R. did as well as he could for Poland. The President's most serious mistake was approving the agreement for the Soviet Union's entry into the war against Japan. "Because Americans were napping," writes Mr. Bohlen, the Kurile Islands were handed to Russia as part of this agreement.

With hindsight, the Soviet participation in the Pacific war was unnecessary. Japan was already in a state of collapse. Also, the Yalta agreement was made without the knowledge or approval of the Chinese, though the pact affected China's vital interests. Returning from Yalta, Mr. Bohlen recalls that F.D.R. denounced the American Senate as "a bunch of incompetent obstructionists." The only way to get anything done was to bypass the Senate.

After Yalta, Roosevelt was exhausted, his hands continually shook, his concentration and energy ebbed. In April 1945, he died. Stalin, notes Mr. Bohlen, was genuinely upset. The Soviet dictator held a higher regard for F.D.R. than for Churchill. Mr. Bohlen concludes that Roosevelt was "a world figure of monumental proportions." In foreign affairs, he did "only moderately well," his imprecision being a serious fault.

President Truman, observes Mr. Bohlen, learned fast. After the Potsdam Conference in the summer of 1945, little could be done to prevent the cold war. The breakup of the wartime coalition and the onset of the cold war could not have been stopped "once Stalin set his course."

Mr. Bohlen provides sharp appraisals of major Soviet officials. He ranks Stalin "high on the list of the world's monsters." The Russian leader was amoral and did not understand Western thought. Stalin was a shrewd and skillful negotiator and "a master of evasive tactics with no great regard for facts."

Foreign Minister V. M. Molotov's persistent stubbornness made him effective. He always slept with a loaded revolver by his head. Lenin called him the "Iron Behind." The American diplomat had a grudging admiration for Molotov—a "solid, square character. . . . Emotion seldom altered the impassiveness of his pasty white face."

It is difficult to convey this book's scope in a brief review. *Witness to History* is an important book, laced with inside background to crucial events. It is not without humor and sensitivity. Mr. Bohlen displays in his book, as in his distinguished career, a fine and perceptive mind given to sharp insights. His judgments of people and conclusions about events can—and undoubtedly will—be challenged.

He delivers a rare unqualified tribute to Gen. George C. Marshall, whom he served when Marshall became Secretary of State. Mr. Bohlen emphasizes Marshall's magnificent integrity and power of command. He gave the State Department purpose and direction. His character permeated it. Marshall always assumed that public officials were animated by the national interest. He was a man of honor who refused one million dollars for three magazine articles "because he would have to say unkind things about people against whom he held no animosity."

Thus, with fondness and respect, Mr. Bohlen says of Marshall: "It is he whom I remember with greatest admiration."

—Reviewed by Herman S. Wolk, Office of Air Force History.

End of the Cold War?

Retreat From Victory, by Drew Middleton. Hawthorn Books, New York, N. Y., 1973. 250 pages with index. $7.95.

At a time when most Americans are advocating "no more Vietnams," Drew Middleton, military correspondent for the New York *Times,* reminds us that the "no-win" policy in "Korea did not save us from further expenditure of blood and treasure in Asia," so how can we

expect that the same attitude toward Vietnam will have any different results. In fact, we must reverse this trend in our thinking or suffer the consequence.

In his short survey of American foreign and military policy from the 1920s through the early 1970s, Mr. Middleton raises critical questions about America's future world role based upon an analysis of American policies in the twentieth century. He sounds the clarion call to arms by condemning the mistakes that both civilian and military leaders have made in pursuing objectives divorced from each others' sphere. He believes that the isolationist strain in America underlies many of our international policies in this century, and that is the primary reason why Americans lean "towards pacificism, the reduction of arms budgets, and the rejection of military advice."

During World War II, while Americans accepted responsibilities and sacrifices to avert a danger, the policies pursued by Roosevelt and General Eisenhower, then Supreme Allied Commander in Europe, allowed a new aggressor to take the place of Hitler and fascism. Because they separated military from political considerations, we failed to drive on to Berlin and thereby determine postwar events.

Similarly, Americans failed to provide MacArthur with the necessary military and political support to carry out his offensive against China, and, if necessary, Russia, during the Korean War, which would have altered the subsequent history of Asia.

Americans, he reminds us, must recognize that we are the primary potential enemy of the Soviet Union, that the cold war is not over, and the Soviets have not entered into a new era of cooperation. To believe otherwise would be to repeat mistakes we have already committed in this century, which would invite "a disaster we will then deserve."

Mr. Middleton's panacea for the challenges that Americans fail to perceive revolves around the title of his concluding chapter, *i.e.*, "Arms and Resolution or Indifference and Decay." Unfortunately, Mr. Middleton's simple black and white alternative leaves little room for a changing international relationship that most people feel has occurred. While he can argue that neither China nor Russia would have entered the Vietnam conflict if Americans had ousted the Communist regime in Hanoi in 1964, utilized unrestricted airpower in 1965, or widened the war in 1967, he offers no evidence to support his claim. In fact, his entire account lacks documentation.

Nevertheless, his work is timely, and it contains a message that all Americans, civilians as well as military, should take into serious consideration. Most historians, however, will find his account too simplistically and emotionally stated.

—Reviewed by Capt. John E. Merchant, Department of History, US Air Force Academy.

Skyborne Sleuth

Cornered at Six, by Thomas Patrick McMahon and Maj. Brian Patrick McMahon, USAF. Simon and Schuster, New York, N. Y., 1972. 254 pages. $6.95.

This father and son writing team has collaborated on a mystery story that involves an Air Force pilot turned amateur sleuth. When chief mechanic Willie Joe Kirk is accused of murdering an airline stewardess, Maj. John Bradley is ordered by his boss, Maj. Gen. Samuel Houston Stanton, to "get Willie Joe out and stashed away." Bradley soon comes to the conclusion that "Stiletto" Sam will back him in his effort to help Willie Joe only so far as nothing intervenes to jeopardize General Stanton's shot at a third star. Bradley, in analyzing the evidence in the case, also comes to believe in the accused man's innocence. The "six o'clock" of the title refers to a fighter pilot's blind spot—the point in the case when Bradley is forced to gamble, with his career as the stake.

Thomas Patrick McMahon has written such other mysteries as *Jink* and *The Issue of the Bishop's Blood.* His son, Major McMahon, is a fighter pilot and a USAF career officer. —*W.P.S.*

New Books in Brief

Meatballs and Dead Birds, by James P. Gallagher. Mr. Gallagher was an AAF communications officer whose unit was one of the first based in Japan after World War II ended. A prize-winning amateur photographer, Mr. Gallagher took advantage of his assignment and snapped pictures of as many Japanese military aircraft as he could find in the Tokyo-Yokohama area with the hope of, someday, making up a scrapbook. This book is the result, and it bristles with unusual photos accompanied by a breezy, informative text. Jon-Jay Publishers, P. O. Box 62, Perry Hall, Md. 21128, 1972. 121 pages. $12.95.

The New Tigers: The Making of a Modern Fighter Pilot (updated and revised edition), by Herbert Molloy Mason, Jr. An experienced pilot and former aviation editor, Mr. Mason tells the story of the New Tigers of the 1970s—the highly motivated, highly trained young Americans who man the thundering aircraft of the Tactical Air Command. This is the story of how a man begins to learn to be a fighter jock and of his life as a flyer—inside the classroom, inside the cockpit, and inside his mind. Incorporated into the present text are several technical advances and changes in ATC's and TAC's efforts to turn out the world's finest pilots. David McKay, New York, N. Y., 1973. 253 pages with index. $7.95.

Nuclear Weapons and the Atlantic Alliance, by Wynfred Joshua. Dr. Joshua points out that "the problem for the West appears to center on the need to restore confidence and cohesion . . . in order to insure West European resilience against Soviet political coercion." The monograph focuses on various facets of this problem: the continuing Soviet challenge in Europe, the internal problems of the Western Alliance, and the strategic alternatives available to the allies in the evolving environment of contemporary world politics. The author also gives special attention to the role of tactical nuclear weapons in the defense of Western Europe and to the place of national nuclear forces. National Strategy Information Center, 130 East 67th St., New York, N. Y. 10021, 1973. 60 pages with bibliography. $1.00 paperback.

Three recent releases in Ballantine's Illustrated History of the Violent Century Series are: *Bloody Ulster,* by A. J. Barker; *Lawrence,* by Douglas Orgill; and *MacArthur in Japan*, by Sydney L. Mayer. Ballantine Books, New York, N. Y., 1973. Each volume 160 pages. $1.00.

—BY CATHERINE BRATZ

CARETAKER OF THE AIR FORCE LEGEND

Playing the role of tourist, AIR FORCE Magazine recently revisited a favorite attraction—the Air Force Museum, now housed in spanking new quarters at Wright-Patterson AFB. Although still in a state of transition, the Museum has earned a reputation as a professionally run institution, its staff highly esteemed in museum circles. Inevitably, Museum activities have broadened beyond its primary mission of preserving for posterity a record of aerospace achievements . . .

THE AIR FORCE MUSEUM: 'Pro' Status for USAF's 'Attic'

By William P. Schlitz
ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

THE word "attic," for most of us, suggests a dark, dusty place under the eaves, where forgotten old junk is stored.

This description in no way fits today's Air Force Museum, known in years past as the "Air Force's Attic." The Museum, which moved into its gleaming new quarters at Wright-Patterson AFB, Ohio, in midsummer 1971, is rapidly gaining recognition as the finest museum of its kind in the world.

In the not-too-distant future, the Museum is likely to become an important center for aeronautical/military research. It has, in fact, already provided source material for several noteworthy aviation projects. (One aerospace company executive, impressed with the Museum's depth, recently sent three of his top engineers to the Museum to "look for new applications of old ideas.")

In any event, the Museum's entertainment and educational popularity with the general public is undisputed. Thousands of people—individuals, families, youth groups—visit each week, and their overall numbers have been growing phenomenally through the Museum's recent past. The projected estimate for 1973 stands at just under one million. (This is otherwise remarkable, in that the population center closest at hand—Dayton—is not generally a tourist magnet, as is, say Washington, D. C., or San Francisco.)

Yet, for all its success in recent years, the Museum is still in an embryonic state as far as its potential offerings to its public are concerned. The Museum's hangar/storage warehouses at Wright-Pat are crowded with the basic materials that form the core of its work: aircraft wrecks, airmen's uniforms from bygone days, engines, instruments, weaponry, memorabilia dating back to the early days of flight. "The work of restoration and refurbishing goes slowly," says Museum Curator Royal D. Frey, a former fighter pilot who was shot down and imprisoned in Europe during World War II.

Herculean Task

A truly herculean task lies in keeping track of the artifacts, along with the ongoing process of sorting, cataloging, and preserving them for the future. The shorthanded Museum staff, directed by USAF Col. Bernie S. Bass, regards this mass of material as a vein of high-grade ore from which the riches of historical substance are continuously being extracted.

The Air Force Museum's "flight line," with new hangar-like building in the background.

Beyond its role as custodian of this backlog of historical wealth, the Museum's philosophy is as much to "look ahead" to history as to concern itself with the past. Within reason, the Museum has the option

of placing a "hold" on Air Force aircraft and other items of interest currently in the inventory. For example, one aircraft on which there is a "hold" is now serving with the Air Force Reserve. The plane is a C-123 Provider nicknamed "Patches"—for the aluminum quiltwork done on it following the many hits it took in combat during the Vietnam War.

"Needless to say," comments Curator Frey, "we have to get our bid in several years in advance if we want something of specific historical importance. We have found this pays off. Some of the acquisitions we're now exhibiting were first ordered years ago."

Not that the Museum ignores current events in favor of past and future. An exhibit that attracts considerable visitor attention these days is the display of articles contributed by POWs back from Southeast Asia. Along with prison garb issued by their captors are a German-language text handpenned by a POW and the crutches used by USAF Capt. Keith H. Lewis to hobble home from captivity. Other items of particular poignancy are a POW's sketch of his "dream house," drawn during the endless hours of captivity, and a specimen of the meager six-line letter POWs and their kin were allowed to exchange.

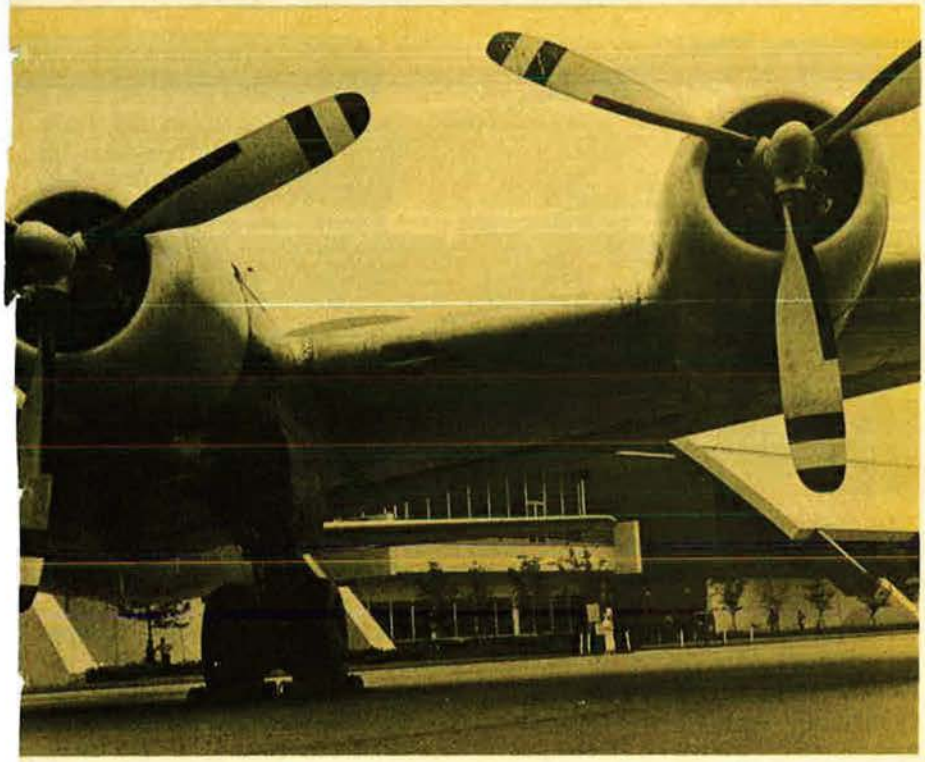
Another exhibit recently established contains the personal mementos of the black airmen who served in World War II, believed to be the only such collection in existence on public view. Among the clothing, photographs, and other related items depicting the early years of blacks in flying units is the leather flying cap worn by Lt. Lloyd Hathcock during combat and while he was a POW at Stalag Luft III in Germany. Lieutenant Hathcock was a member of the famed all-black 332d Fighter Group.

Also featured in the display is the "sign-in" book used from 1943 to 1946 at Tuskegee Field in Alabama, where black airmen received flight training. (Nearly 1,000 blacks graduated from pilot training, and about 450 went overseas. These accounted for 111 enemy planes in aerial combat and more destroyed on the ground.)

"As others hear of our effort in recognizing the contribution of black airmen in Air Force history, we hope they will donate additional items," says Mr. Frey. "Eventually, these will be placed in the chronological order of our overall floor plan," he says. The Museum already has paid tribute to Eugene Bullard of Columbus, Ga., who flew combat for the French Air Service over the Western Front in World War I.

Adjacent to the current display are framed biographical material and photos of present-day black Air Force leaders, who gave valuable advice in the creation of the exhibit highlighting black pilots in World War II.

The props of President Truman's Independence *frame the Museum's "core" area, which divides the "big" and "small" bays. Core area contains administrative offices, snack bar, theater.*



Easy Movement

The Air Force Museum's huge hangar-shaped home is both functionally and esthetically appropriate to its role. The absence of interior supports allows easy movement in arranging aircraft and displays. The subdued and artfully directed lighting creates an almost churchlike atmosphere within the Museum's two main exhibit areas. Visitors often find themselves speaking in whispers.

The Air Force Museum Foundation, which masterminded fund-raising and construction of the new **Museum facility, originally had its sights set on a gigantic wedge-shaped arch to house the Museum.**

SSgt. Martin L. Beck (right) and Sgt. Ronald Strecker look over POW display.

Personal mementos and photos symbolizing the contributions of blacks to US airpower are prominently displayed in the Museum's "core" area.

Chief Model-Maker Joe Fallo examines a flying boat from the Museum's Kettering collection.

When soaring costs made this plan impractical, the Foundation settled on the present—and entirely adequate—design. Ground breaking took place in mid-1970, and the building was completed in August 1971. All was made possible by some $6 million donated by private individuals, industry, foundations, and Air Force people.

Previously, the Museum had occupied a World War II vintage building at Wright-Pat, long outgrown and outdated. The Foundation came to the rescue and, with the full cooperation of the Air Force, launched its successful fund-raising venture (*see "The Air Force Museum—Caretaker of a Legend,"* AIR FORCE *Magazine, March '69 issue*).

"It was the Air Force Museum Foundation's drive for funds to provide a new home for the Museum that really created widespread awareness of our existence," says Curator Frey. "Until then, I'd talked to Air Force people who had never heard of the Museum. Since, of course, we have been getting bids from people in the US and all over offering all sorts of items for our collection."

(This writer, during his visit to the Museum, turned over to Museum officials rare copies of "POW WOW," dated April 8 and 12, 1945, thoughtfully donated by Col. John Andrews, USAF (Ret.), of Fairfax, Va. POW WOW was a *verboten* newspaper printed at Stalag Luft I the last fifteen months of World War II and distributed secretly to prisoners [*see "POW WOW," an article in the July '72 issue*]).

Corollary Activities

With the Museum's mounting public recognition and prestige, staff members have found themselves drawn into activities that are corollary to the Museum's primary function as an educational facility devoted to preserving for posterity a record of aerospace and Air Force achievements.

As a guest of the Royal Netherlands Air Force, Curator Frey recently took a helicopter tour of the Zuider Zee, site of the retrieval of many aircraft shot down in World War II. *(See his letter in June '73 "Airmail" column and RNAF Lt. Col. A. P. de Jong's article, "Strange Harvest from the Zuider Zee," July '73 issue.)*

Among other items Colonel de Jong has promised the Museum are parts from an aircraft wreck identified as the B-26 flown by Lt. Col. Robert M. Stillman that crashed near Rozenburg, Holland, on the tragic mission of May 17, 1943, during which the heavy loss of US aircraft almost brought about the termination of medium bombardment in Europe. (Wounded, Colo-

Photos clockwise, beginning right: Bright as a newly minted dime, this restored C-39 was a forerunner to the C-47 "Gooney" of World War II and Vietnam fame; North American's F-82B "Twin Mustang" (with B-36 behind); a World War I Spad, originally built by the French; restoration of President Eisenhower's Columbine *is a job for experts.*

nel Stillman was captured and imprisoned. At the conclusion of his career, he retired from the Air Force with the rank of major general.)

The Museum, in league with Air Force historians at Maxwell AFB, Ala., is helping the Dutch with the problem of possible unexploded ordnance in aircraft being recovered. Records indicate whether an identified aircraft was en route to its target or returning from a mission when it was shot down. If the latter, it presumably had already dropped its load of bombs. This information would then mean minimized hazards for the recovery team and for farmers tilling the reclaimed land in the future.

Thus, the Museum staff is becoming expert at unraveling thirty-year-old mysteries.

On April 15, 1944, for example, Dutch fishermen pulled a downed American flyer from the waters of the Zuider Zee. They had no choice but to turn him over to waiting German occupation troops, but not before the man had given them his name and a photograph. Colonel de Jong, responding to a recent request from the Dutch family as to the American's fate, asked for Museum help, and Royal Frey traced the airman—now Lt. Col. Walter Koral, USAF (Ret.)—to his home in Florida.

Loans to Others

Another adjunct to the Museum's primary mission is its responsibility for the loan of USAF aircraft to other museums and exhibits around the US. (Requests to borrow aircraft have come from as far away as Germany and South Korea, Museum officials say.)

In this spirit of cooperation, the Museum has traded displays of planes and other items with the prestigious Smithsonian Institution in Washington, D. C. Though there is no official connection between the two, it is a tribute to the staffs of both the Air Force Museum and Smithsonian's National Air and Space Museum that this working relationship exists. One upcoming Air Force Museum exhibit, courtesy of NASA, will be a lunar rock sample.

A tour of the Museum's interior begins in the "small" bay, which, in chronological fashion, depicts the story of flight from its beginnings.

One crowd-pleaser there is a mini-theater that presents a nine-and-a-

half-minute film sequence that shows visiting youngsters and oldsters alike what flying combat was like for those American daredevils on the Western Front in World War I.

Royal Frey, with the help of Air Force film technicians, put the segment together from celluloid footage of the era culled from the National Archives.

Dividing the "big" and "small" bays of the hangar-like new building is a core area containing the main entrance and exit, administrative offices, a snack bar, a 500-seat theater, and the Air Force Museum Foundation gift shop, profits from which are used to finance Museum projects. Money derived from Museum concessions, such as the gift shop, which is handling a growing volume of mail-order business, are used to fund Museum activities. Retired USAF Lt. Col. Fred Wolf oversees the concessions.

Another fund-raiser is the annual open golf tournament. Sponsored by AFA/Aeronautical Systems Division, it produced $3,500 in 1973 for "special projects," such as financing a proper showcase to house the moon rock.

Each weekend, and when possible every day during the summer months when visitor traffic is heaviest, free movies of an appropriate nature are shown in the Museum's sparkling gem of a theater. At other times, it is used for official USAF functions.

Big Birds

The Museum's big bay holds the larger aircraft in the collection (in all, about eighty planes of different types are on view throughout the interior). The massive B-36 with its spread of 230 feet from wingtip to wingtip is barely accommodated within the arch of the building's ceiling. It overshadows other aircraft clustered near it. A World War II B-17 and B-25 stand silently nearby.

Within the big bay is also a B-29 fuselage that permits a walk-through tour by visitors.

All aircraft and interspersed exhibits will eventually be linked chronologically to suggest the passage of time from the Wright brothers to the space age. Museum officials anticipate that this transitional phase in the Museum's development will take another two years.

The aircraft within the Museum and the some forty planes flanking the exterior "flight line" are more than simply representative types. The B-52B in the foreground of the opening-page photograph, for example, is distinguished as the first Stratofortress to circle the globe nonstop. The B-70 adjacent to the big bay in the background is one of only two such aircraft to be built. The other was destroyed in a mid-air collision. Beyond the B-70 is a Douglas VC-118B Liftmaster named *Independence*—President Truman's presidential transport.

Other historical aircraft are currently being reconstructed or renovated in the Museum shops under the direction of Charles Gebhardt, who has traveled near and far in search of aircraft specimens for the Museum's growing collection. Soon to be ready to join their comrades on display are a P-39, an O-38 biwing two-seater, and an aircraft of special consideration: President Eisenhower's *Columbine*, built by Lockheed. The wreckage of a Japanese Zero, obtained from Australia, waits to be rebuilt from scratch. The Wright-Pat base maintenance team lends a hand in refurbishing aircraft, leaving the Museum experts to the complex work of detailed reconstruction. (*See box for a list of additional aircraft the Museum would like to add to its inventory.*)

Besides aircraft maintenance, Wright-Pat personnel assist the Museum in other ways. For example, base officers' wives act as volunteer tour guides, shepherding small groups of students and other visitors.

But, whatever the contribution, Museum officials are grateful to all who have assured the success of this major repository of Air Force history. ■

AIR FORCE MUSEUM'S "MOST-WANTED" LIST

Here is a list of the aircraft the AF Museum would like to have in its collection. If a reader of AIR FORCE Magazine knows where any of these planes may be found—in whatever condition—he may contact the Curator of the Air Force Museum, Wright-Patterson AFB, Ohio 45433.

WORLD WAR I PERIOD

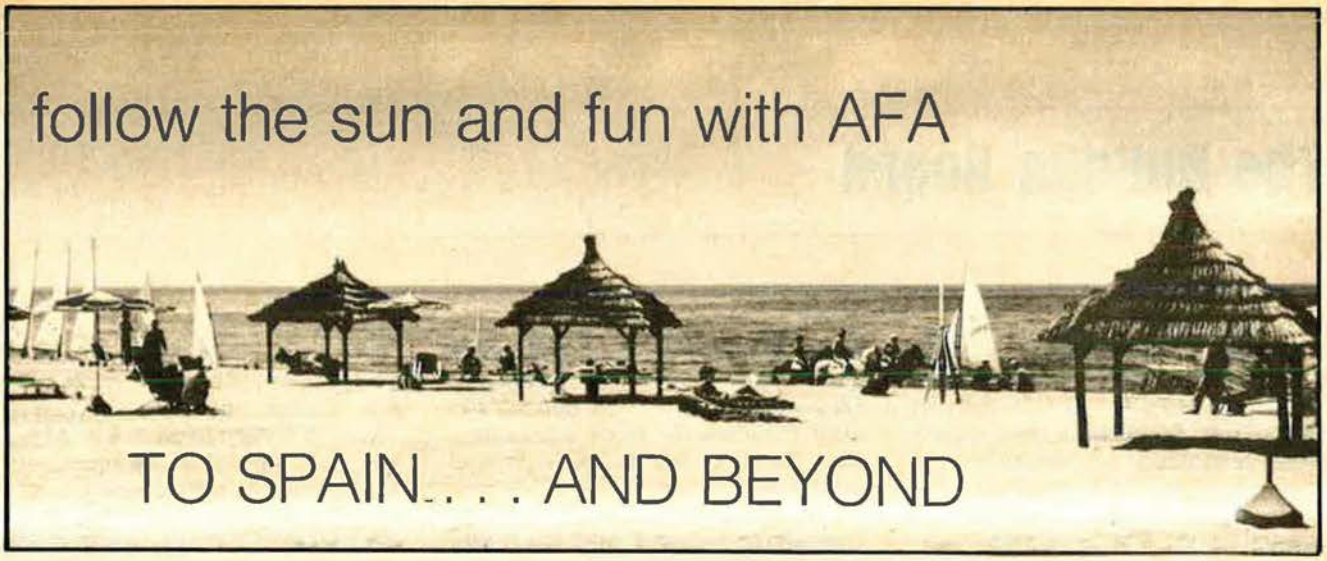
Any WW I aircraft, US or foreign

1919–41 PERIOD

Curtiss A-8 or A-12
Northrop A-17
Curtiss AT-5
Curtiss B-2
Keystone B-3, B-4, B-5, or B-6
Boeing B-9
Douglas BT-2
North American BT-9
Atlantic C-2
Ford C-3 or C-4
Fairchild F-1
Kellett YG-1
Pitcairn YG-2
Stinson L-5
Curtiss O-1
Douglas O-2
Curtiss O-11
Thomas-Morse O-19
Douglas O-25
Douglas O-43
North American O-47
Loening OA-1
Curtiss P-1 or P-2
Berliner-Joyce P-16
Boeing P-26
Curtiss P-37
Consolidated PB-2
Consolidated PT-12
Curtiss PW-8
Boeing PW-9

WORLD WAR II PERIOD

Douglas A-24
Lockheed A-28 or A-29
Vultee A-31 or A-36
Curtiss AT-9
Beech AT-10
Fairchild C-61
Consolidated OA-10
Republic P-43
North American P-51A
Northrop P-79
Messerschmitt ME-109 or ME-110
Messerschmitt ME-163
Heinkel HE-162
de Havilland Mosquito



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July 30-August 14, 1974

The Air Force Association has made arrangements with a U.S. chartered airline, a number of hotels, and an experienced travel agency for an unusual vacation trip, exclusively for AFAers and their families, with these features:

First Week

THE COSTA del SOL OF SOUTHERN SPAIN

- Special arrangements at the Atalaya Park Hotel, a palatial American-owned beach resort on the Mediterranean near scenic Marbella and swinging Torremolinos
- Modern air-conditioned rooms, each with a view of both mountains and sea
- AFA hospitality desk for personalized service
- One-day side trips available to Tangiers, Morocco . . . Madrid and Seville only one-hour flights away
- A gala AFA Reunion Fiesta on the night of August 6 at no extra cost

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AFRICA • ITALY • PORTUGAL • GREECE • THE HOLY LAND

or

- A week on your own
- Another week at the Atalaya Park
- More of Spain (several tours available)

DELUXE ACCOMMODATIONS AT MINIMUM COST

(At 1973, pre-dollar devaluation rates, with all taxes and service included)

- **Basic Tour (first week)—including hotel room (double occupancy), American breakfast and deluxe dinner daily, free swimming, tennis and golf, all transfers, and including round trip air fare (per person): from Los Angeles/Dallas ($522.15) and from Chicago/Washington ($437.15).**
- Optional Tours (second week)—if not "on your own," another week at the Atalaya Park with same arrangements ($157.65) or the option of eleven different trips including transportation and transfers, deluxe hotel accommodations and at least two meals per day—at prices ranging from a trip to Portugal at $340.00 to an East African safari at $818.45.
- Deadline for selecting second-week tours: January 1, 1974.

FOUR DEPARTURE POINTS

Los Angeles, Chicago, Dallas, and Washington, D.C.

FIRST CLASS TRAVEL

To Spain and return in two World Airways Super DC-8s, each equipped with only 219 seats for added comfort and with special services aboard

EASY PAYMENT PLAN

- Down payment to insure reservation: $100.00 by November 15, 1973.
- Balance for Los Angeles/Dallas departures: $184.76 by January 15, 1974, and $237.39 by March 15, 1974.
- Balance for Chicago/Washington departures: $137.15 by January 15, 1974, and $200.00 by March 15, 1974.
- For second week optional tours: payment in full by April 15, 1974.

No refunds can be made on cancellations postmarked after March 15, 1974.

RESERVATIONS LIMITED

Only 438 people can be accommodated on the trip. Reservations will be honored on a first-come, first-served basis.

For Detailed Information (and brochures) write:
AFA Overseas Reunion Trip, Air Force Association
1750 Pennsylvania Ave., N.W., Washington, D.C. 20006

The Bulletin Board

The Air Force Association, at its National Convention in the fall of 1972, adopted a formidable body of resolutions. Some were new; others were readopted as resolutions of long standing. AFA strongly supports these resolutions and constantly works with legislators, government agencies, and other service-oriented organizations in their pursuit. Following is a report as of late July on the status of the issues involved.

For recent action by the Armed Services Committees of the House and Senate, and the House decision on the Authorization Bill, see "Airpower in the News," p. 16.

POLICY RESOLUTIONS

B-1 ADVANCED BOMBER: $473.8 million for prototype development pending in FY '74 budget. Funding still to be approved by Congress.

F-15 ADVANCED FIGHTER: $229.5 million for continued R&D and $801.9 million for procurement pending in FY '74 budget. Severe cutback in procurement funding expected. Funding still to be approved by Congress.

A-10 AIRCRAFT: $112.8 million for continued R&D and $30 million for procurement pending in FY '74 budget. Heavy cuts can be expected. Funding still to be approved by Congress.

AIR WAR IN VIETNAM: AFA commended President Nixon for his wise and courageous stand, which achieved the principal US objectives in Vietnam, and supports him in continuing efforts to bring lasting and honorable peace to Southeast Asia and throughout the world.

THE DRAFT AND THE ALL-VOLUNTEER FORCE: The authority to induct expired on June 30 of this year. AFA continues to view with apprehension the absence of this authority.

AMNESTY: AFA still believes that each case should eventually be examined and adjudicated on an individual basis according to presently existing laws and regulations.

IMPROVED MINUTEMEN: AFA supports continued R&D upgrading of the entire force to Minuteman III level. $99.7 million for continued R&D pending in FY '74 budget and $667.7 million for force modernization. Funding still to be approved by Congress.

ADVANCED TECHNOLOGY FOR BALLISTIC MISSILE AND MILITARY SPACE SYSTEMS: AFA continues to support the development and deployment of spaceborne communications, warning, surveillance, and command control systems as well as the Advanced Ballistic Reentry System (ABRES) program. In the case of the latter, $95 million is pending in the FY '74 budget for continued research and development.

SPACE SHUTTLE: AFA supports R&D and production of a reusable space shuttle system. $475 million pending in FY '74 budget. Funding still to be approved by Congress.

ADVANCED WARNING AND CONTROL SYSTEM: $177.8 million for continued R&D and $11.7 million for procurement pending in FY '74 budget. Funding still to be approved by Congress.

IMPROVED TACTICAL CONVENTIONAL CAPABILITY: AFA continues to support expansion of the Tactical Conventional Capability as a principal requirement resulting from the strategic détente. Retention of the B-52Ds in the active inventory and development of all currently sought tactical systems have become prerequisites.

ADVANCED AIRBORNE COMMAND POST: $37 million for R&D and $33.3 million for procurement pending in FY '74 budget. Funding still to be approved by Congress.

DEFENSE R&D PROGRAM: AFA continues to support a vigorous and dynamic defense R&D program. $8.557 million pending in FY '74 budget. Some cuts to be expected. Funding still to be approved by Congress.

GENERAL RESOLUTIONS

AIR FORCE VILLAGE: AFA and its State and Chapter organizations continue to provide active support.

RECOMPUTATION OF RETIRED PAY: Legislation for one-time recomputation on January 1, 1972, pay scales has been introduced. There is $360 million in FY '74 budget for one-shot recomputation. Outlook is not encouraging.

MOVING EXPENSES INCIDENT TO CHANGE OF PERMANENT STATION: Proposed legislation to equalize military and Civil Service movement allowances (overseas moves only) now pending in the Office of Management and Budget.

DEPENDENTS' DENTAL - CARE PROGRAM: Proposed legislation to provide civilian dental-care program similar to medical care under CHAMPUS, with a sliding annual "deductible" clause and with members paying up to fifteen percent of costs for some care, now pending in Office of Management and Budget.

AIRMEN RETENTION PROGRAM: Legislation to provide enlistment and reenlistment bonuses to critical military skills now pending in Congress. Action not expected until fall.

MILITARY DEPENDENCY CRITERIA: A recent Supreme Court decision extends equal dependency benefits to female military members married to civilian spouses. DoD is studying the ramifications of this decision to determine whether or not it also would extend such benefits to female military members married to male military. Meanwhile, three bills have been introduced in Congress which would, if passed, grant such authority.

RESERVE RETIREMENT ON A REDUCED ANNUITY BASIS: Legislation has been introduced. Comprehensive plan also now under active consideration by the Department of Defense. While eventual congressional approval is expected, passage this year is highly improbable.

UNIFORMED SERVICES UNIVERSITY FOR HEALTH SCIENCES: Now provided for by Public Law 92-426, September 21, 1972. Funding still to be requested.

RESERVE MEDICAL OFFICER PROMOTION PROGRAM: Proposed legislation to provide comparable accelerated promotion opportu-

nities for officers of the Medical Services now being actively reviewed by the Department of Defense. Submission of proposed legislation expected.

AIR FORCE MUSEUM: Actively supported by AFA State and Chapter organizations, especially the Wright Memorial Chapter in Dayton, Ohio.

ELIMINATION OF NONRESIDENCY STATUS FOR MILITARY PERSONNEL: AFA continues to urge state legislatures to allow transient military students the same status as residents at state colleges. Several states have now adopted this principle.

SUPPORT OF MIA/POW CHILDREN: Actively done by AFA leaders in the Association's State and Chapter organizations.

AFJROTC SUPPORT: Public law does not permit the introduction of flight experience nor the waiver of liability for JRROTC cadets. Air Force is studying ways by which JRROTC cadets would be protected under the Civil Air Patrol system for accidents, etc.

SUPPORT OF CIVIL AIR PATROL: AFA, with advice and guidance from its newly formed Civil Air Patrol Council, is exploring all ways and means by which effective support can be given.

AMENDMENTS TO DUAL COMPENSATION ACT: Legislation to remove inequities has been introduced. It is also supported by the Department of Defense and the Civil Service Commission. Passage unlikely this year.

FIELD-GRADE OFFICER AUTHORIZATIONS: Provided for under Public Law 92-561, October 25, 1972.

EQUALIZATION OF SURVIVOR BENEFITS: Provided for under Public Law 92-425, September 21, 1972.

TRAILER MOVES AND DISLOCATION ALLOWANCES FOR MILITARY PERSONNEL: While nothing has been done with respect to trailer moves, per se, proposed legislation is pending that would provide for reimbursement of many incurred expenditures and for a dislocation allowance where dependent travel is performed and orders are subsequently changed.

OUTSTANDING AIRMEN RECOGNITION: Following a searching and thorough review of this proposal, Air Force decided not to upgrade the ribbon. However, as an indirect result of this study, the decision was made to award the ribbon to all Command nominees, instead of only the twelve finalists, thus broadening the impact of the Outstanding Airmen Program.

ENLISTED REPRESENTATION OF AIR FORCE AND SOCIETY BOARD: While Air Force agrees, the Society's Board of Trustees have still not taken such action.

NATIONAL GUARD TECHNICIAN REQUIREMENT: Many bills have again been introduced in Congress to eliminate the fifty-five percent restriction and give full credit for service performed by National Guard Technicians prior to 1968. Chances of passage appear to be remote.

RESERVE FORCES PARTICIPATION BY PRIOR-SERVICE PERSONNEL: While many prior-service personnel are participating in the Reserve components, there is no provision for an individual to accept a special Reserve status for a specified period, following his release from active duty, in order that he may later decide about active Reserve participation. Such authorization is not expected.

MEDICAL SCHOOL SCHOLARSHIPS: Provided for under Public Law 92-426, September 21, 1972.

AIR FORCE ACADEMY PRE-MED STUDENTS: With the passage of Public Law authorizing the Uniformed Services University for Health Sciences, key congressional leaders are opposed to increasing the authorization of pre-med students at the Air Force Academy.

REASSIGNMENT OF CIVIL SERVICE PERSONNEL: No action has been taken to reassign employees who are eligible for retirement, with their consent, to a less demanding lower grade position.

CLARIFICATION OF THE HATCH ACT: The US Supreme Court has ruled that the provisions of the Hatch Act are constitutionally sound.

SUPPORT OF THE COMMUNITY COLLEGE OF THE AIR FORCE: AFA has provided active support. Its Executive Director is a member of the College's Advisory Committee. The Community College has been named the 1973 recipient of AFA's Hoyt S. Vandenberg Award for Education.

MEDICAL SUPPORT FOR RETIRED MILITARY MEMBERS AND DEPENDENTS: With an ever-increasing physician and hospital bed shortage, little if any improvement in this area has occurred—nor is such aid expected to occur.

WOMEN'S AIR FORCE SERVICE PILOT FEDERAL SERVICE CREDIT: No action has been taken to credit former WASPs, who now have Air Reserve commissions, with federal service for that time served during World War II.

TUITION ASSISTANCE FOR CHILDREN OF POW/MIAS: Thirty-six states now have statutes that offer substantive aid.

MEDICAL SPECIAL PAY AND BONUS: Provided for in legislation now under consideration by the Congress. Action is expected in the fall of this year.

EXTENSION OF CIVILIAN HEALTH AND MEDICAL PROGRAM OF THE UNIFORMED SERVICES (CHAMPUS) BENEFITS: Congress has passed legislation establishing a program permitting wives and children of veterans who died from service-connected causes, and dependents of veterans with total and permanent service-connected disability to come under a CHAMPUS-like health-care program; no action has been concluded to broaden benefits under the current program now available to active-duty and retired personnel.

PROVIDE SPECIAL PAY FOR JUDGE ADVOCATES: Originally provided for in the Revised Special Pay Legislation submitted to the Congress by the Department of Defense. Such a provision has since been removed.

EMPLOYER SUPPORT OF THE NATIONAL GUARD AND RESERVE: AFA is very active in this area. AFA's Chairman of the Board, several of its Officers and Directors, and its Assistant Executive Director serve on the Advisory Council to the Committee for Employer Support of the Guard and Reserve. AFA conducted the first public seminar on this issue.

INCENTIVES FOR MEMBERS OF THE NATIONAL GUARD AND RESERVE FORCES: The Revised Special Pay Legislation now being considered by the Congress provides for enlistment and reenlistment bonuses. Proposed legislation to provide for some form of educational assistance is now being developed by DoD. Servicemen's Group Life Insurance expected to soon be approved by Congress. Base Exchange privileges have been increased.

CIVIL SERVICE EMPLOYEES IN THE NATIONAL GUARD AND RESERVE FORCES: All federal agen-

cies are now being asked to cooperate to a greater extent in providing a more liberal authorization for their employees to actively participate in Guard and Reserve programs, in accordance with existing directives.

EARLIER RETIREMENT FOR CIVILIAN EMPLOYEES: While a special law permitted many employees to retire early on a reduced annuity basis on June 30, legislation to change eligibility for optional retirement, based on a combination of age and service totaling eighty years, has yet to receive congressional approval.

CORRECTION OF CONSTRUCTIVE SERVICE INEQUITY: A provision whereby constructive service granted to Reserve physicians and dentists will not be considered service for the purpose of calculating mandatory retirement dates, thereby permitting such people to provide professional health services for an extended period of time, was approved by the Secretary of the Air Force and is now undergoing interservice consideration under the auspices of the Secretary of Defense.

ACHIEVING A VIABLE MEDICAL SERVICE: While the Air Force now commissions certain qualified medical service personnel with direct assignment to the Ready Reserve, it still does not permit medical and dental students to fulfill their incurred obligation by serving in the Ready Reserve rather than on active duty, nor does it permit temporary promotions of physicians and dentists in the Ready Reserve.

FLYING TRAINING FOR AFJROTC CADETS: AFA State and Chapter organizations have been urged to encourage maximum use of local civilian flying facilities for the AFJROTC Cadets.

ATTENDANCE OF AFJROTC CADETS AT CAP SUMMER ENCAMPMENTS: Proposed legislation now under study. The problem still exists with regard to the waivering of liability in case of accident. It is hoped that action can be taken to cover this in the same manner as is now done with CAP Cadets.

SICKLE CELL ANEMIA RESEARCH: AFA has urged the American Medical Association, through its President, to seek the establishment of a national foundation for research toward the development of treatment and elimination of the disease. Legislation now authorizes a VA program of screening, counseling, and treatment.

REENLISTMENT LEAVE OPTION: This proposal has received extensive study. No positive action has been taken, however. AFA will continue to press for a favorable DoD ruling.

MASTER LIST OF AUTHORIZED GRADES AND LOCATIONS FOR TOP TWO ENLISTED GRADES: While Air Force is sympathetic to the basic thrust of this proposal, the complexity of administering such a system on a worldwide basis makes it impractical for consideration at the present time. It is possible that, within the next few years, more sophisticated computer capability will allow implementation.

INCREASED UNACCOMPANIED BAGGAGE FOR E-4 UNDER FOUR: This proposal touches upon one aspect of a much broader area of entitlement authorizations currently being studied. If budgetary approval is obtained, changes to the current entitlement structure may well occur in Fiscal Year 1974.

—Wide World Photos

Taking advantage of USAF's new attitude toward recruiting married women, these two young California couples recently enlisted in Los Angeles. Here, taking the oath, are, left, Ed and Kathy Santillanes and, right, Susan and Michael Shrieves. At basic at Lackland AFB, Tex., they'll be temporarily separated by sex, but hope their subsequent Air Force careers will include a lot of togetherness.

AFA Councils Meet

On June 1–3, at Colorado Springs, Colo., AFA's Junior Officer Advisory, Airmen Advisory, and Military Manpower Councils met. The Councils concentrated on recommendations aimed at preparing resolutions for AFA's upcoming National Convention, September 16–20.

The Councils also took a long look at the proposed DoD Nondisability Retirement Plan and at the necessity for broadening the base of AFA membership to include more enlisted and junior officer members.

The agenda for the Councils was:

- "Legislation Resolutions Update"—John O. Gray, Assistant Executive Director, AFA.
- "Recruiting and the All-Volunteer Force"—Brig. Gen. Conrad S. Allman, Commander, USAF Recruiting Service/ATC.
- "Air Force Accounting and Finance Command Briefing"—Maj. Jimmy C. Hicks, Directorate of Data Automation Operations Division.
- "JUMPS"—Col. H. B. Fredrics, Director of Military Pay Operations.
- "AFA Membership"—Richmond M. Keeney, Membership Director, AFA.

These Councils are among AFA's more active advisory groups and have contributed, over the years, to many Convention resolutions affecting the particular constituencies they represent.

SBP Reminder to Retirees

The Department of Defense has reminded military retirees that September 20, 1973, is the deadline for a retiree to elect to participate in the new Survivor Benefit Plan (SBP).

Under the plan, a retiree can elect to purchase an annuity for his widow or children by means of a relatively small deduction from his retired pay.

Officials said the deadline for military personnel who have retired before September 21, 1972, to elect to participate in the plan is midnight September 20, 1973. Under existing law, the deadline cannot be extended.

Each military department has mailed detailed information concerning the plan to qualified persons. Retirees who have not received such information should contact the department from which they receive their retired pay. ■

Ed Gates . . . Speaking of People

Non-Regulars Face Crucial Career Screening

DoD clearly is in earnest about creating a commissioned force in which nearly all members beyond their eleventh year of service hold Regular status. Legislation is required to bring this about, so it is not going to happen tomorrow.

But in a year, maybe two, it very well could fly. Non-Regular career officers should consider the possible impact of the program on themselves. Extra effort toward earning top OERs may be in order.

USAF non-Regulars in the eleven- through seventeen-year groups would be affected immediately on implementation of the legislation. They will be screened first, and some—it is not yet clear how many—are not going to make Regular. The early indication from the Pentagon, however, is that the large majority will make it.

Next in line are non-Regular officers in the present eight- to ten-year groups. As they are considered for Regular on reaching the eleven-year point, the forecast is different: Large-scale rejections are expected, though again no specific estimates are yet available.

The basic plan, under the forthcoming DOPMS (Defense Officer Personnel Management System), is to establish an all-Regular career officer force. The lone exception will be members who, on implementation of the program, have eighteen years of service. Like such officers today, they are in the so-called "sanctuary" and will be carried to twenty years. This definitely will be the case under DOPMS, a Pentagon authority said.

The more advanced year groups contain the fewest number of officers coming up for Regular consideration under DOPMS. The current fourteen- and sixteen-year groups, for example, hold only 275 and 200 non-Regulars, respectively. In each of the ten- through twelve-year groups, however, there are 1,100 to 1,200 such officers, according to new USAF statistics.

Most selected for Regular commissions will serve up to the terminal points proposed in DOPMS—thirty years for colonels and twenty-six for lieutenant colonels. A few would retire earlier under the legislation's forced retirement section.

To revamp the officer force under DOPMS, the services are first looking for congressional approval of the new proposals to change the nondisability retirement system. That package (*see August '73 issue, p. 60*) contains new separation benefits which "are essential if DOPMS is going to work," the Pentagon authority said.

Let's suppose they are adopted, that you are a major in the fifteen-year group, and are turned down for Regular. You must separate.

If you departed under present rules, you would receive $15,000 in readjustment pay. You could enlist, of course, to serve out your twenty years, though you would have to repay three-fourths of the $15,000 before you could receive retired pay. This officer-to-EM route has been a painful one for many involuntarily separated officers (*see below*).

Leaving by the involuntary route under the pending legislation, however, would be an entirely different ball game. You would receive:

1. A monthly retirement starting at age sixty, computed at two and one-half percent of your final year's basic pay times years served. Fifteen years of service would translate into thirty-seven and one-half percent. It comes out to an annual pension of $5,905 based on today's pay rates for a major (but it would be higher because future cost-of-living raises would be included).
2. An immediate readjustment payment, equal to five percent of your basic pay times years of service. For fifteen years' service, you would receive a lump-sum payment of seventy-five percent of a year's basic pay, or $11,810 (seventy-five percent of $15,746.40).

And there's an option; in lieu of the age-sixty retirement, you could elect a double readjustment payment, amounting to $23,620 (at today's rates).

Are these provisions sufficiently attractive to induce ousted officers to accept them and forego enlistment? Pentagon authorities are not sure, but hope so.

This is an important personal matter numerous non-Regular officers must face up to in the next couple of years. To be cut loose after going more than halfway toward retirement has demoralized many USAF officers over the years. The Air Force has permitted them to enlist, "to serve out their time" and retire as officers. During the notorious RIFs of the 1950s, many enlistees got E-7 status.

In more recent years, E-4 has been the normal enlistment grade. The trauma and financial woes heaped on a man and his family, where he elects to stay on in such an altered status, can be severe. Some ex-officers have served out their enlisted time in a highly depressed state of mind, creating problems for their commanders and the service. Career airmen also have taken a dim view of former officers competing for NCO promotions.

The advent of DOPMS and the proposed involuntary separation benefits in the near future would appear to doom, or drastically curtail, the practice of offering enlistment to ousted officers.

Hq. USAF still permits it: "There has been no decision made to eliminate the practice," authorities told AIR FORCE Magazine. The firm indication, however, is that if sufficient severance benefits are provided, the problem probably will disappear of itself, as members decline to enlist. If not, such enlistments surely would be strongly discouraged. (The Army, because of its horrendous surplus officer problem—it currently is forcing out 5,000 non-Regular captains and majors—has drastically curtailed such enlistments.)

Another pertinent point is whether readjustment pay recipients under the pending legislation would have to repay it before drawing retired pay. "This question hasn't been addressed," an authority said, though he noted that requiring full repay would be another step toward discouraging enlistment. ■

AIR FORCE ASSOCIATION

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Two Great New Plans! Choose Either One . . . AND Get Big, Strong Coverage

The Standard Plan ($66,000 Maximum)

The High-Option Plan ($100,000 Maximum)

Insured's Age	Coverage	Extra Accidental Death Benefit*	Monthly Cost	Optional Family Coverage Spouse	Each Child**	Monthly Cost Family Coverage
20-24	$ 66,000	$12,500	$10.00	$6,000	$2,000	$2.50
25-29	60,000	12,500	10.00	6,000	2,000	2.50
30-34	50,000	12,500	10.00	6,000	2,000	2.50
35-39	40,000	12,500	10.00	6,000	2,000	2.50
40-44	25,000	12,500	10.00	5,250	2,000	2.50
45-49	15,000	12,500	10.00	4,050	2,000	2.50
50-59	10,000	12,500	10.00	3,000	2,000	2.50
60-64	7,500	12,500	10.00	2,250	2,000	2.50
65-69	4,000	12,500	10.00	1,200	2,000	2.50
70-75	2,500	12,500	10.00	750	2,000	2.50
20-24	$100,000	$12,500	15.00	$6,000	$2,000	$2.50
25-29	90,000	12,500	15.00	6,000	2,000	2.50
30-34	75,000	12,500	15.00	6,000	2,000	2.50
35-39	60,000	12,500	15.00	6,000	2,000	2.50
40-44	37,500	12,500	15.00	5,250	2,000	2.50
45-49	22,500	12,500	15.00	4,050	2,000	2.50
50-59	15,000	12,500	15.00	3,000	2,000	2.50
60-64	11,250	12,500	15.00	2,250	2,000	2.50
65-69	6,000	12,500	15.00	1,200	2,000	2.50
70-75	3,750	12,500	15.00	750	2,000	2.50

* In the event of an accidental death occurring within 13 weeks of the accident, the AFA plan pays a lump sum benefit of $12,500 *in addition to* the benefit, except as noted under AVIATION DEATH BENEFIT, above.

** Each child is covered in this amount between the ages of six months and 21 years. Children under six months are provided with $250 protection once they are 15 days old and discharged from the hospital.

AVIATION DEATH BENEFIT: A total sum of $22,500 under the High-Option Plan or $15,000 under the Standard Plan is paid for death which is caused by an aviation accident *in which the insured is serving as pilot or crew member of the aircraft involved.* Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage.

CHECK THE ADVANTAGES OF THESE AFA PROGRAMS

Wide eligibility! If you're on active duty with the U.S. Armed Forces [regardless of rank], a member of the Ready Reserve or National Guard [under age 60], a Service Academy or college or university ROTC Cadet, you're eligible to apply for this coverage [see exceptions].

Keep your coverage at the low, group rate to age 75, if you wish.

Full conversion privilege. At age 75 [or at any time, on termination of AFA membership] the amount of insurance shown for your age group at the time of conversion may be converted to a permanent plan of insurance, *regardless of your health at that time.*

Disability waiver of premium, if you become totally disabled for at least nine months, prior to age 60.

Convenient premium payment plans. Pay direct to AFA or by monthly government allotment.

Reduction of cost by dividends. Net cost of insurance to AFA insured persons has been reduced by payment of dividends in eight of the last eleven years. However, dividends cannot, of course, be guaranteed.

Administered by insurance professionals on your Association's staff, for excellent service and low operating cost.

EXCEPTIONS:

Group Life insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane shall not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: [1] From injuries intentionally self-inflicted while sane or insane, or [2] From injuries sustained while committing a felony, or [3] Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or [4] During any period a member's coverage is being continued under the waiver of premium provision, or [5] From an aviation accident, military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minneapolis as trustee of the Air Force Association Group Insurance Trust. However, because of certain limitations on group insurance coverage in those states, nonactive-duty members who reside in Ohio, Texas, Florida, and New Jersey are not eligible for AFA group life insurance coverage.

EFFECTIVE DATE OF YOUR COVERAGE

All certificates are dated and take effect on the last day of the month in which your application for coverage is approved. Coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the Insurance Regulations of the State of Minnesota.

Yes, now the Air Force Association offers members of the United States Air Force their choice of two great new life insurance plans, both designed to meet the special requirements of Air Force personnel.

Planned for You

Both plans have been specifically designed to fill your particular needs. This is full-time, worldwide protection. There are no war clauses—no hazardous-duty restrictions, or geographical limitations on AFA life insurance protection. At AFA, our policy is to provide the broadest possible protection to our members, including those in combat zones.

Low Group Rates

And, as a member of AFA, you are able to secure this outstanding protection at low group rates. What's more, there's no increase in premiums for flying personnel. In fact, in most cases, flying personnel are entitled to full death benefits. Only when death is caused by an aircraft accident in which the insured was serving as pilot or crew member does the special Aviation Death Benefit take effect.

Higher Benefits for Young Families

The higher benefits for younger members make both plans particularly outstanding buys for the young family. The young family breadwinner can make a substantial addition to his life insurance estate at a time when his family is growing up—when his financial obligation to his family is at its greatest!

CHOOSE EITHER OF THESE GREAT PLANS! MAIL THIS APPLICATION TO AFA TODAY!

BREAKS THE BENEFIT BARRIER!

APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE

United of Omaha

Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office: Omaha, Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth Mo. Day Yr.	Height Weight	Social Security Number

Please indicate category of eligibility and branch of service.

- ☐ Extended Active Duty
- ☐ Ready Reserve or National Guard
- ☐ Air Force Academy
- ☐ ROTC Cadet _____ Name of college or university
- ☐ Air Force
- ☐ Other _____ (Branch of service)
- ☐ _____ Academy

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

This insurance is available only to AFA members

- ☐ I enclose $10 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine).
- ☐ I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN			STANDARD PLAN	
Members Only	Members and Dependents	Mode of Payment	Members Only	Members and Dependents
☐ $ 15.00	☐ $ 17.50	**Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.	☐ $ 10.00	☐ $ 12.50
☐ $ 45.00	☐ $ 52.50	**Quarterly.** I enclose amount checked.	☐ $ 30.00	☐ $ 37.50
☐ $ 90.00	☐ $105.00	**Semiannually.** I enclose amount checked.	☐ $ 60.00	☐ $ 75.00
☐ $180.00	☐ $210.00	**Annually.** I enclose amount checked.	☐ $120.00	☐ $150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth Mo. Day Yr.	Height Weight

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes ☐ No ☐

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

_____

_____

_____

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid. I understand United reserves the right to request additional evidence of insurability in the form of a medical statement by any attending physician or an examination by a physician selected by United.

Date _____, 19 ____ _____
Member's Signature

9/73
Form 3676GL App

Application must be accompanied by check or money order. Send remittance to: Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006

"THE GALS WERE THERE!"

Gloria Steinem take note: With ladies in attendance at AFA's Fourteenth Annual Dinner honoring the Air Force Academy's Outstanding Squadron, yet another once-exclusively male bastion has fallen (and the surrender was unconditional)...

The cadets of the "Tiger Tenth" Squadron assemble for introduction to the more than 600 dinner guests.

Standing by the Air Force Association's trophy for the Outstanding Squadron of the Air Force Academy are, from left to right, Cadet Lt. Col. Bernard B. Callaway, Winter Term Commander of the Tenth; Lt. Gen. Albert P. Clark, Academy Superintendent; Maj. Gen. Jeanne M. Holm, principal speaker at the dinner; Joe Higgins, master of ceremonies; Cadet Lt. Col. Johnnie H. Wauchop, the Tenth's Spring Commander; the Fall Commander, Cadet Lt. Col. John H. Wagoner; and Joe L. Shosid, AFA's Chairman of the Board.

Retired Air Marshal C. Roy Slemon, left, and Lt. Gen. Thomas S. Moorman, former Academy Superintendent, enjoy the evening's festivities with AFA's Dottie Flanagan.

Academy grad and former POW, Maj. John Fer, presented a memorable message.

Safety Sheriff Joe Higgins presents a "Higgins' Huggers" club card and tells two cadets and their dates, "Y'all drive careful, heah!"

With AFA's National President, Martin M. Ostrow, being absent because of illness, Board Chairman Joe L. Shosid delivered the President's remarks and presented the Outstanding Squadron Trophy.

By popular request, AFA's Fourteenth Annual Dinner honoring the Outstanding Squadron of the Air Force Academy was "co-social." For the first time in the fourteen-year history of this popular event, the cadets were there with their girl friends. Also present among the more than 600 guests were the mothers of many of the first classmen, and the ladies of military, civic, and industry leaders, plus the women on the staff and faculty of the Academy. The changeover from the normal stag event was a huge success and was accepted with resounding applause.

Principal remarks at the dinner were given by Maj. Gen. Jeanne M. Holm of the Air Force, the highest ranking woman in the armed forces. Safety Sheriff Joe Higgins was master of ceremonies. ■

This Is AFA

The Air Force Association is an independent, nonprofit, airpower organization with no personal, political, or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.

Objectives

*The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind.

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Newport News, Va. 22601
(703) 596-6358
Central East Region
Maryland, Delaware,
District of Columbia,
Virginia, West Virginia,
Kentucky

Bob Stevens'

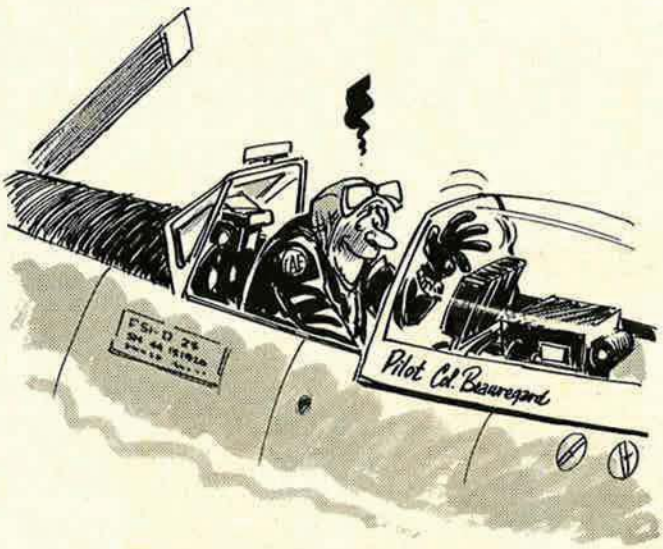
"There I was..."

THESE ARE EXCERPTS OF "ORDERS" GIVEN TO CONFEDERATE AIR FORCE CREWS FOR A FLIGHT FROM REBEL FIELD, HARLINGEN, TEXAS TO WRIGHT-PAT. OUR THANKS TO "COL. THROCKMORTON T. BEAUREGARD, CAF" FOR THIS AVIATION CLASSIC.

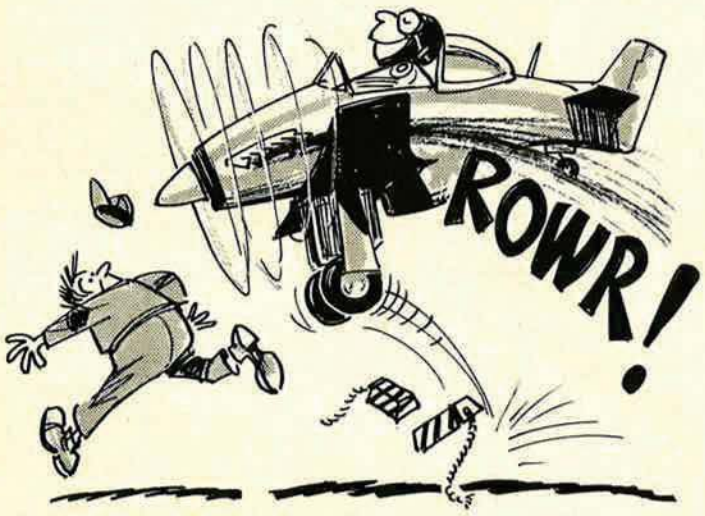
"Any aircraft with operational compass may serve as flight leader. (Charts published prior to 1936 are not considered reliable and should not be used.) . . . Compass heading 10° to 60° mag. approx. Your route will take you over six states; Okla. is the green one; Missouri is brown; Ill. is yellow; Ind. is red, and Ohio is the tan one on your Texaco map. Care must be used at intersection of US 66 and US 40 east of St. Louis--stay on US 40."

Preflight--

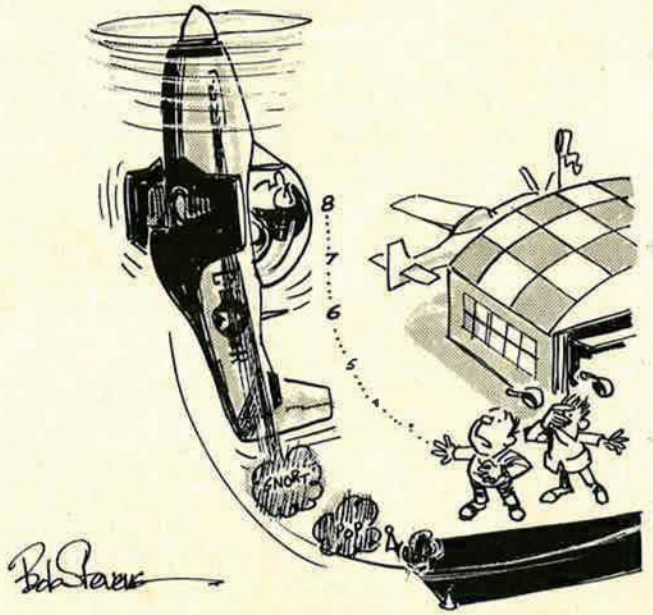
"Next, check stick and throttle positions. If the stick is in your left hand and the throttle is in your right hand, you are in the cockpit backwards. Don't panic! Smile at the crew chief, wave to bystanders and slowly rotate your body 180°."



"When signal is given to taxi, advance the throttle smoothly, hit the 'highblower' switch and jump smoothly over the chocks. Retard the throttle to military power and try to avoid further use of highblower while taxiing as this irritates ground personnel."



"After leaving the ground, pull the nose up smartly, close your eyes and count 10. If contact with the ground has not occurred by that time, continue the mission as briefed. (Note: You may open your eyes for the remainder of the flight if you wish--however, this is optional.)"



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It has a versatile mix of air-to-air armament combined with performance and staying power to engage and beat any adversary. It has the acquisition systems needed to find and sort out targets. It has the maneuverability and acceleration to gain the advantage in the air battle arena. It has the warning systems needed to evade enemy defenses.

Test flights are proving that the F-15 can acquire, identify, engage, and defeat any type of enemy aircraft, in any weather—not only in the projected combat environment of the theorist but in the real world where the fighter pilot must do his job.

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