

FEBRUARY 1971 / \$1

# AIR FORCE

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MAGAZINE

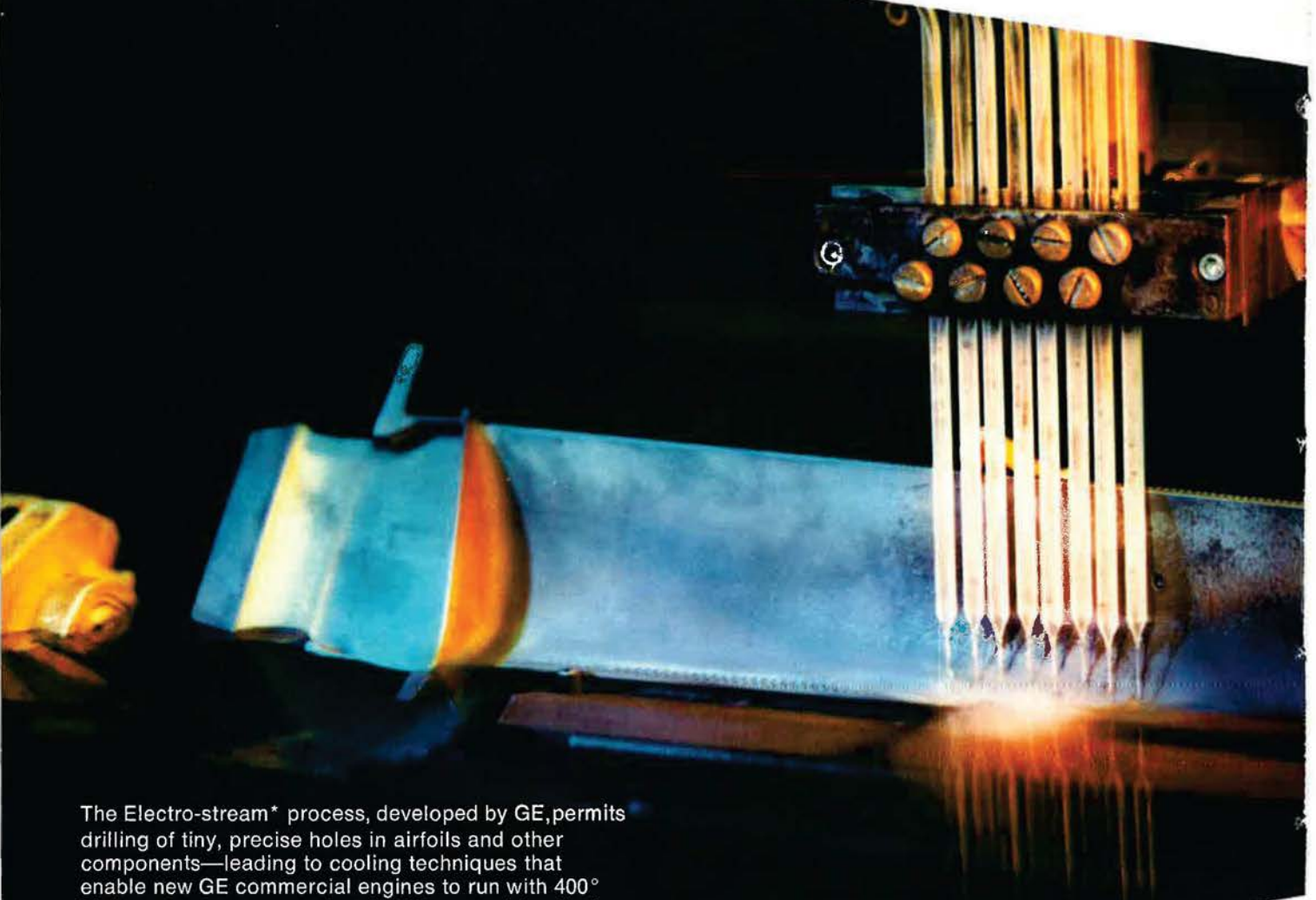


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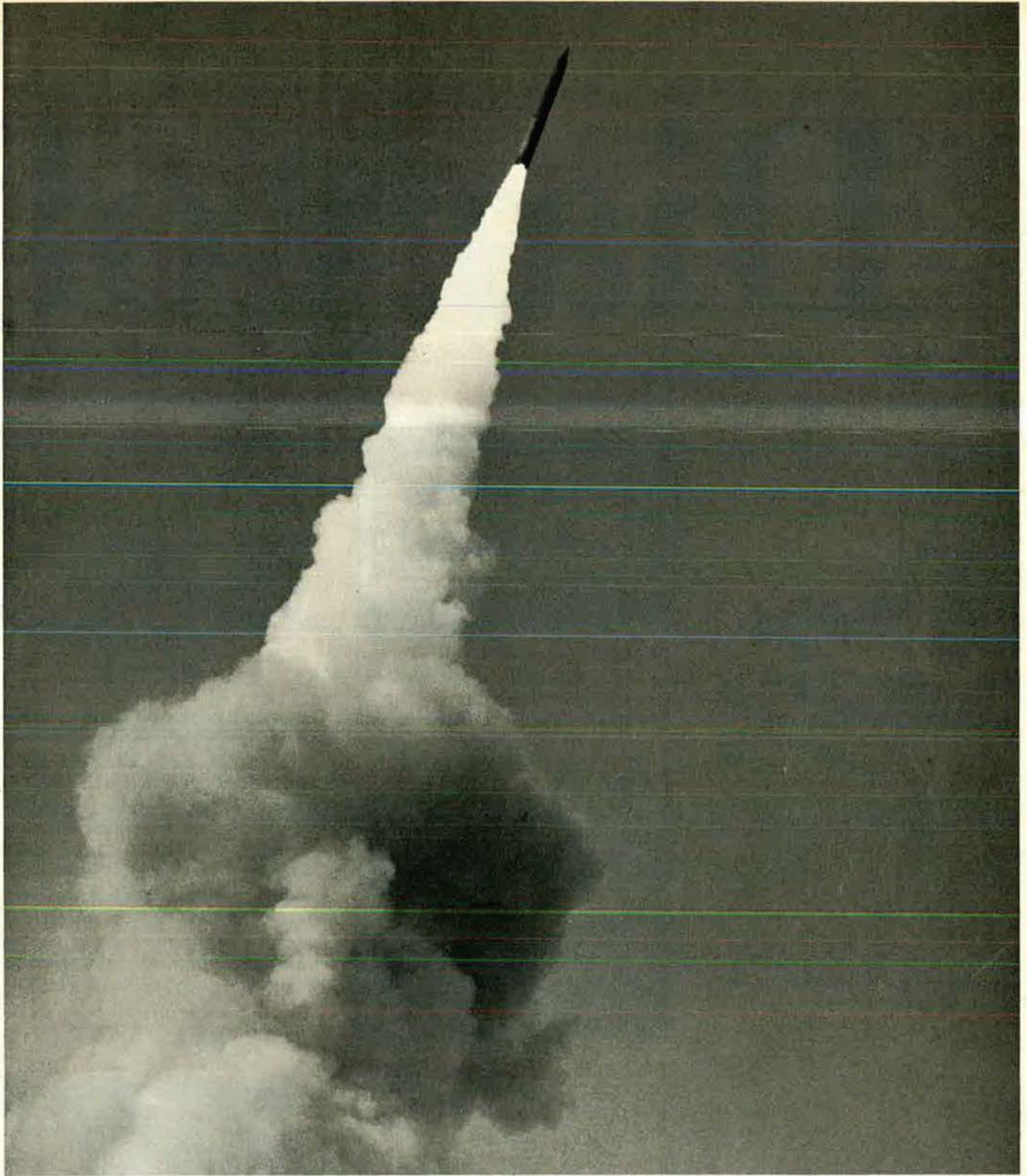
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the Air Force Association  
on the occasion of  
its 25th anniversary



# Diary of

Congratulations to the Air Force Association on its 25th Anniversary as the U.S.A.F.'s best friend, from Lockheed, who's been building the tools of the trade ever since the AFA was born back in 1946.

## 1946



THE P-80 SHOOTING STAR. This first operational U.S. jet was in production as the war ended. Its designation was changed to F-80 in 1947. Then, in November of 1950, in the skies over northwest Korea, an Air Force F-80 Shooting Star earned a place in the annals of aerial warfare by emerging victorious from the world's first all-jet air battle.

## 1948



THE T-33 JET TRAINER. To this day still operational, the T-Bird has been an aerial schoolhouse for an entire generation of U.S. airmen and the airmen of many allied countries.

## 1950



THE RC-121 SUPER CONSTELLATION WARNING STAR. A descendant of the C-69 Constellation Transport of World War II and cousin to the Air Force C-121 Super Constellation Transport, the RC-121 served as a

radar picket in this country's original early warning network. RC-121s are still serving today's Air Defense Command.

## 1956



THE C-130 HERCULES. From initial delivery to the present day, the tactical airlifter has been a mainstay of the modern tactical Air Force. The versatile C-130s have functioned as cargo and personnel carriers, as in-flight refueling tankers, and as air-sea rescue and recovery aircraft. The short-field capability of the end-loading Herky Birds has proven to be logistically invaluable in Vietnam.

## 1956



THE F-104 STARFIGHTER. When the wraps came off the F-104, the Air Force had the world's first Mach 2 fighter—an aircraft twice as fast as any previous U.S. combat aircraft. A



# defense

one point the F-104 held four world's speed and altitude records. Lockheed designers foresaw that the only ultimate limitation on the Starfighter's speed was the thermal barrier.

## 1962



THE C-141 STARLIFTER. Lockheed's response to Air Force needs for a long-range, high-speed strategic airlifter, the C-141 currently specializes in conveying high-priority war materials to our troops in Southeast Asia. After disgorging their vital cargo in Vietnam, the sleek StarLifters of the Military Airlift Command are quickly converted to flying hospitals to rush seriously wounded personnel back to the States.

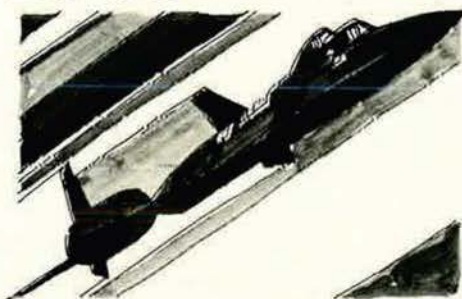
## 1963



THE YF-12A. Designed to withstand the temperatures generated by air friction in tri-sonic flight, this incredible experimental fighter glows with heat

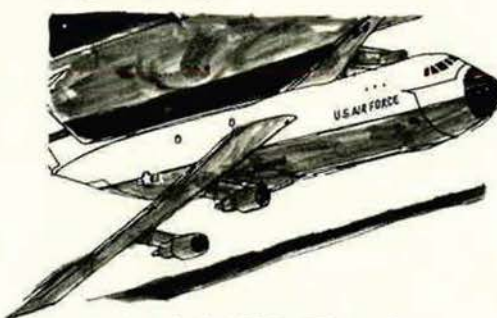
as it approaches top speed. In a single day, an Air Force YF-12A set nine separate performance records. It proved capable of sustaining altitudes in excess of 80,000 feet and speeds in excess of 2,000 miles per hour.

## 1965



THE SR-71. The world's first operational Mach 3 aircraft, SR-71s are in service with the Strategic Air Command of the U.S. Air Force.

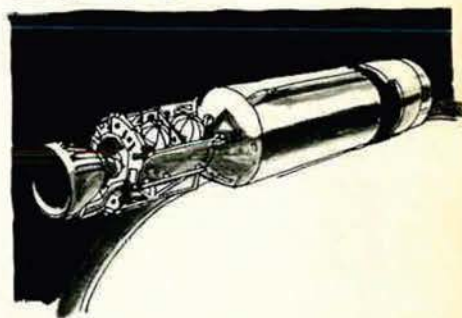
## 1968



THE C-5 GALAXY. When the mammoth C-5 lifted off on its maiden flight, it signaled a new era in Air Force airlift capability. Almost as long as a football field, this unprecedented levi-

athan will shoulder payloads of 110 tons at cruising speeds exceeding 500 miles per hour. Answering the Air Force's need for a totally new type of strategic logistical system, Lockheed's C-5 Galaxy is the latest product of a working partnership which has spanned almost three decades.

## 1970



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The Vought A-7 is the new world standard for tactical support aircraft.



**VOUGHT**  
AERONAUTICS



# AIR FORCE

MAGAZINE

Published by the Air Force Association

FEBRUARY 1971

VOLUME 54, NUMBER 2

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### THIS MONTH'S COVER . . .

This silver medal, shown front and back, was struck to mark AFA's Twenty-fifth Anniversary and will be given to past and present AFA Presidents and Board Chairmen and to the present and former Air Force Secretaries and Chiefs of Staff at an anniversary banquet in Washington, D.C., this month.



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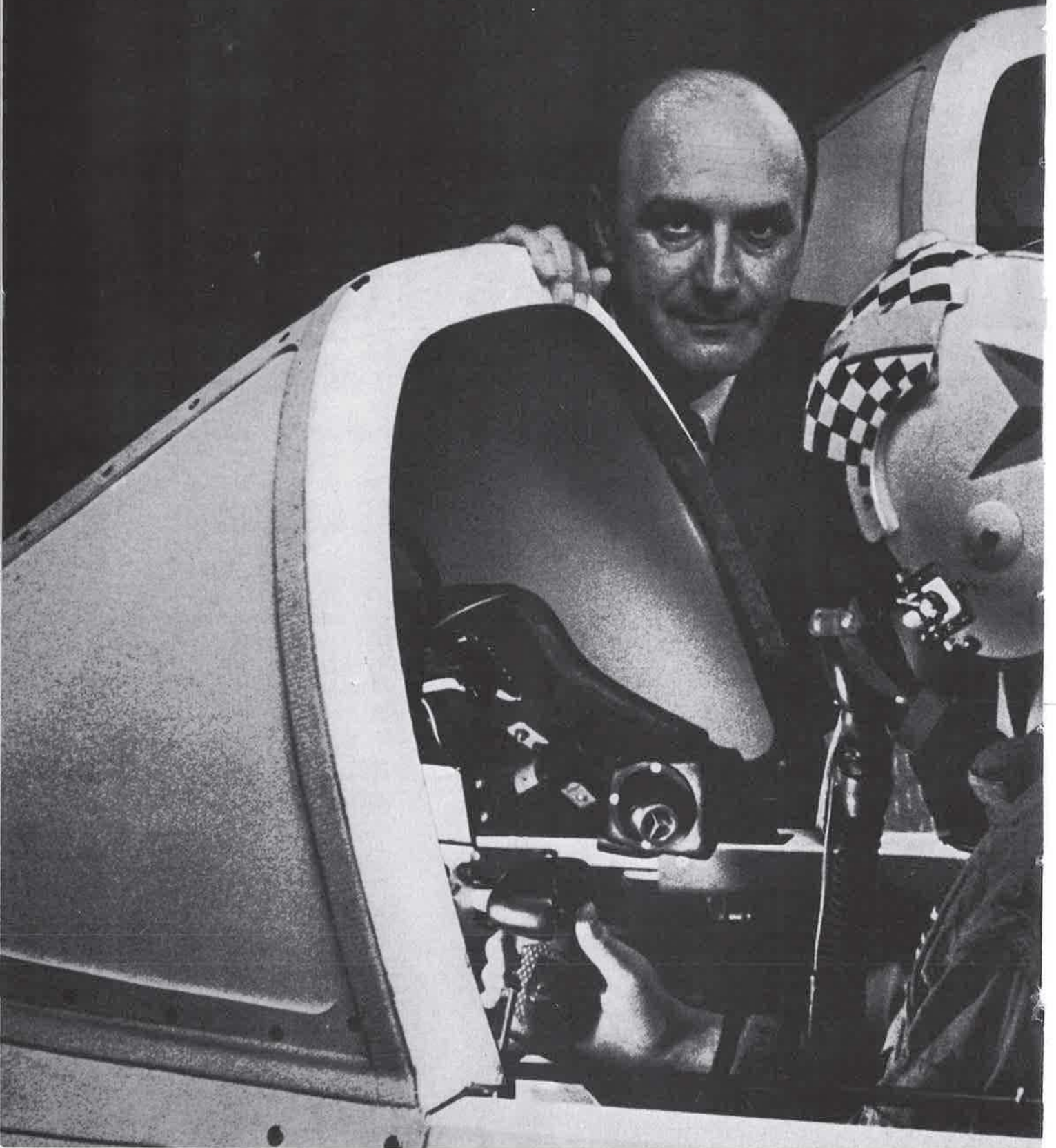
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message is obsolete, the tape isn't. Just erase it and use it over... and over... and over.

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# Tape a memo, Miss Jones.



Sony Corporation of America, Video Products  
Dept. AF, 47-47 Van Dam St., Long Island City, New York 11101

Please send me without obligation a copy of "Video Tape Applications in Military and Government."

Name \_\_\_\_\_

Title \_\_\_\_\_

Organization \_\_\_\_\_

Phone (Area Code: \_\_\_\_\_ ) \_\_\_\_\_

Address \_\_\_\_\_

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**SONY**®



## Air Defense

*Gentlemen:* Again I was very impressed with another of John Frisbee's articles. This one, in the December 1970 issue, is entitled, "Air Defense: Weakest Link in the Deterrent Chain."

It is an accurate account of our US defenses. I was very pleased to see that your staff views the deterrent equation (offense plus defense equals deterrence) as a viable concept for our national survival. . . .

LT. COL. ARTHUR F. McCONNELL, JR.  
Ent AFB, Colo.

## "Telling Is Important, But—"

*Gentlemen:* In the December '70 issue of AIR FORCE Magazine, Gen. Bruce K. Holloway, Commander in Chief, Strategic Air Command, wrote "The Telling Is as Important as the Doing."

General Holloway observes a need to work harder to present positive information to the public—to tell the Air Force story in ways that will capture (or recapture) public support.

Some may take exception to what the General sees as within the scope and subject matter area of Air Force "telling," but few will deny that the Air Force and its sister services are having serious image problems.

There is a great deal of talk about "image," which is an *in* word today. It is significant that image, by definition, means representation and not the real thing. The military image is a montage of what the services say they are, what they really are, and what the public believes they are. . . .

It would be satisfying to the professional military if unfavorable publicity about the services could be labeled as merely the product of money-hungry writers catering to public paranoia. Unfortunately, this is not the case. Even the most outlandish fictional character or incident has a real-life counterpart in the service.

The relatively closed society of the military, coupled with the fact that the military, in taking care of its own, has been reluctant to wash its dirty linen in public, brings it into conflict with the public's increasingly proprietary interest in the military. Many things have worked to increase public sensitivity to events in the military. Vietnam, the draft, military spending, student unrest, and the very tenor of the times combine to focus attention on the military. The resulting dichotomy lends substance to the Colonel

Blimps, Sergeant Bilkos, General Dreedles (*Catch-22*), and the rest of the mixed bag of fictional characters who both reflect and help shape the public's image of the military.

Omnivorous in appetite, the media, forced to maintain viewer/reader interest, enlarges on the macabre and unsavory incidents of military life.

Certainly the "telling" that General Holloway suggests is important, but beyond that the Air Force must take steps to offset established public bias. Vigorous and effective action is needed to root out malefactors and foolish practices that lend credence to unsavory fictional characters and situations, the shadows of which dim the credibility of every statement made by or in favor of the military.

Isolated by their stars and staffs, many top military leaders are not fully sensitive to the considerable gap that frequently exists between what the services claim they are (or would like to be) and what they really are. Too often, lip service is confused with fact.

As an antidote to its current unfavorable public image, the Air Force should fully enforce existing standards of integrity, efficiency, honesty, and dedication. Fools and villains must be eliminated, not just kicked upstairs or shunted to another assignment to await retirement. Outmoded, never needed, and degrading rules and regulations that demean and frustrate the individual must be eliminated. Beyond that, the Air Force must be in the mainstream of American life. Yearning for the "good old days" of Kelly-Randolph, WW II, or Korea is not only pointless; it is self-defeating.

Telling the Air Force story in terms of mission and requirements for that mission may not be nearly as important as the story behind the story; that is, the story of Air Force people and Air Force life. The quality of those people and the quality of that life speaks much louder than any press release or briefing.

The challenge, it seems, is not only to tell it like it is, but to make it like it says it is.

COL. GEORGE R. SMITH,  
USAF (RET.)  
Fresno, Calif.

## Charlie Lowers the Boom

*Gentlemen:* In the great scheme of things, I tend to rank those who write nitpicking letters to magazine editors

slightly below someone who would set fire to a building to warm his hands. Your use (page 46, December '70 issue, "I'm Below Bingo! Get Me a Tank!", by Capt. William W. Heimbach, Jr.) of a photograph of a TAC KC-97L boom operator servicing an F-4 over Europe in an article covering SAC KC-135 operations in SEA, however, has forced me to join these ranks as that just might be my head silhouetted against the boom-pod window.

The following identification checklist may prove useful to your proofreaders in preventing a recurrence of this unforgivable error:

1. The KC-97 has a very large boom-pod window with two triangular side windows. The KC-135 has a much smaller single window.

2. The covering over the rudder pulleys protrudes sharply into the slipstream on the KC-97 boom and is smoothly streamlined on the KC-135 boom.

3. In close-up shots, it will be noted that the cover over the KC-135 boom is flush riveted; not so on the KC-97.

4. If the boom operator's head is visible, a profusion of age-induced grey hairs will identify him as an Air Guard, therefore KC-97, crew member.

Someday the Air Guard tanker force may be equipped with the KC-135. When that great day comes, would you please return the then-unneeded checklist? I now consider myself qualified to start fires and may need it for kindling.

CHARLES FITZGERALD  
Milwaukee, Wis.

• Reader Fitzgerald could start his fire with the red face of our caption writer, a former fighter pilot (WW II-type), whose name is being withheld to protect the guilty.—THE EDITORS.

## More on Molesworth

*Gentlemen:* Lt. Col. Harold A. Susskind's article entitled "World War II Revisited—Memories of Molesworth," November '70 issue, was an interesting and sentimental memoir of a famous air base, and brought back memories to several of our assigned officers.

We would like to add one thing. The Air Force Aeronautical Chart and Information Center's Detachment 2 still calls Molesworth Air Base "home." In fact, our detachment is housed in the hangar shown in the



## Airmail

picture appearing on page 48. We hope the detachment can carry on the fine tradition and memories established at Molesworth during the past historic years.

CAPT. HALLIE E. ROBERTSON  
Chief, Office of Information  
Hq. ACIC  
St. Louis, Mo.

*Gentlemen:* In connection with my visit to England and Molesworth, I had the wonderful pleasure of visiting with and swapping old war stories with the Lyons—Ben and his wife Bebe Daniels.

Ben was an important link to the past history of Hell's Angels. He had starred in the Howard Hughes film, "Hell's Angels," and it was from this movie that one of the original planes of the group, a B-17F, had gotten its name. The name was later adopted by the 303d Bomber Group.

Ben had been an officer on the staff of Gen. Ira C. Eaker, Commander, Eighth Air Force, when I arrived in England. He also accompanied the General to Caserta, Italy, when Eaker took over command of the Mediterranean Allied Air Forces.

Bebe, a well-known actress, was also a war correspondent for a radio network. As such, she was at Molesworth the day *The Duchess* returned from the raid on Vegesack with the dead bombardier on board—Lt. Jack Mathis. She was one of the first women correspondents to land in France after the invasion. She is the holder of the Medal of Freedom, one of the highest civilian awards given by the US government.

Ben and Bebe asked me to pass on their warm regards to their many friends in the USAF. Please consider this letter my way of doing it.

LT. COL. HAROLD A. SUSSKIND  
Naples, Italy

### Unhappy Reader

*Gentlemen:* Why does your magazine have to be so lousy? I am thoroughly disgusted with your lack of love for the USA and your adoption of the policy of motherly love for our good world friends.

I would appreciate it if you would publish an international issue for your world firsters and a real, genuine American issue for those of us who are of, by, and for the USA.

It took me many years to learn about the USA, and I ache all over after one of your monthly treatments.

Just a broken-down old sergeant from the 599th Air Engineering Squadron 383d Air Service Command.

SGT. WALTER PYTLOWANY,  
USAF (RET.)  
Hicksville, N.Y.

• *It would be helpful if Reader Pytlowany would be more specific about what he doesn't like. Meanwhile, we don't intend to resign from the world anymore than we think the United States should.*—THE EDITORS.

### "Indianapolis 500" of the Air

*Gentlemen:* A P-51 Tournament and World War II Airshow will be held May 29 through May 31, 1971, at Alton, Ill., Civic Memorial Airport, northeast of St. Louis, Mo. The Memorial Day weekend event will also highlight the first reunion of all pilots who flew P-51 Mustangs on combat missions in World War II.

Included in the racing events is a women's stock pylon racing contest. A large and far-ranging exhibition of fighters and bombers of World War II vintage, modern jet fighters, and aerial aerobatics will also be presented.

The three-day event is sponsored by Leo D. (Baron) Volkmer of Dallas, Tex., and Voltmerluft International. The program is designed to be the "Indianapolis 500" of air racing in terms of spectator appeal and in offering somewhat unique competition for P-51 pilots, for their enjoyment and reward.

The reunion—called the "Mustang Scramble"—will bring together the men who flew the P-51 in combat during WW II and the people who presently own or fly the Mustang. They'll have a lot of time for reminiscing, swapping stories, seeing the Mustang in action again, and just plain having great fun.

Information about the P-51 and women's racing events and the Mustang pilot reunion may be obtained by writing to:

VOLTMERLUFT INTERNATIONAL  
Box 383  
Addison, Tex. 75001

## UNIT REUNIONS

### Mustang Scramble

The first reunion of all pilots who flew P-51 Mustangs on combat missions during WW II will be held May 29-31, 1971, at St. Louis, Mo. (see letter above). For further information write

Voltmerluft International  
Box 383  
Addison, Tex. 75001

### 8th Tac Fighter Wing

The annual reunion of the 8th Tactical

Fighter Wing will be held February 26-27, 1971, at the Sheraton-Park Hotel, Washington, D.C. For further information contact

Lt. Col. J. D. Covington  
4315 Majestic Lane  
Fairfax, Va. 22030

Phone: (202) OXford 50903, 50905

### 31st Fighter Group

Being a former member of the 31st Fighter Group, 307th Fighter Squadron, during WW II from April 1943 to May 1944, I'd like to know if the group has an annual reunion. If so, where and when?

Ron Brown  
The Ron Brown Company  
2005 N. Navarro, P.O. Drawer B  
Victoria, Tex. 77901

### 44th Bomb Group (H)

To mark the 30th anniversary of the founding of the 44th Bomb Group (H), a reunion is being planned for July 16-17, 1971, at Williamsburg, Va. The reunion will be in conjunction with the 2d Air Division Association Convention. Former members should contact

William G. Robertie  
P.O. Drawer B  
Ipswich, Mass. 01938

Phone: (617) 356-5470

or

John D. Hammer  
4621 Bay to Bay Blvd.  
Tampa, Fla. 33609

Phone: (813) 835-0231

### 90th Bomb Group (H)

Am interested in forming a biannual reunion of the "Best Damn Bomb Group in the World," the "Jolly Rogers," old 90th Bomb Group (H), World War II. We had a small group gathering last summer and would like to expand, especially the 321st Squadron of the 90th. Would appreciate help with names and addresses, literature, etc.

Loyde H. Adams  
1208 New Hampshire  
Lincoln, Neb. 68508

### 92d Bombardment Group

In anticipation of a reunion, all former personnel of the 92d Bombardment Group and the 1st Combat Crew Replacement Center, 8th Bomber Command, stationed at Bovingdon, England, during WW II, should communicate with

Col. John R. Mitchell, USAF (Ret.)  
2525 Ocean Blvd., F-4

Corona del Mar, Calif. 92625  
Phone: (714) 673-2605

### 379th Bomb Group (H)

The first reunion of the 379th Bomb Group (H) of WW II will be held at the Antlers Plaza Hotel, Colorado Springs, Colo., in early July 1971. Ex-members who have not yet received initial mail concerning the reunion should send names and addresses to

Ed Millson  
341 Raquel Lane

Los Altos, Calif. 94022  
Phone: (415) 941-1029



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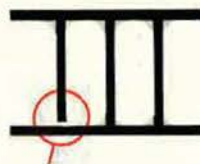
The conventional brazed or adhesive bonded honeycombs—with their unfortunate way of delaminating—were the best available a decade ago. Not today. For top efficiency today, you should use Stresskin. And if high temperature is a factor . . . well, you *must* use Stresskin. Here's why:

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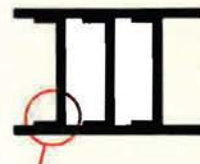
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# **Stresskin**





# Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

## Great Name, Great Blame

WASHINGTON, D.C., JAN. 11

In another ten days, and well before this magazine is distributed to its readers, the 92d Congress will be with us, digging around in the rubble left by the 91st Congress. There is a long list of unfinished business, much of it guaranteed to create a good bit of heat on Capitol Hill in the coming months. At the moment, there is nothing on stage except Sen. William Proxmire (D-Wis.), who is conducting his annual midwinter recess hearings. He knows it is a good time to get headlines, while his peers are out of town.

In this interval, there is a good deal of focus on the Defense Department. For one thing, it was not until December 29 that Congress cleared the Fiscal 1971 Defense Appropriations Bill, and speculation already is common that the Fiscal 1972 defense budget request will be about \$75.5 billion. This means that the Nixon Administration, which managed to cut Pentagon spending for a while, cannot

continue doing so in the face of fiscal and military realities. It is expected that the budget will go to the Hill about January 27.

In the interim, there have been a couple of developments that should give heart to the men in uniform who have been punished in the past few years for sins not of their own doing. The most important is the final report of the Permanent Subcommittee on Investigations of the Senate Committee on Government Operations, on its study of the TFX or F-111 fighter-bomber program. The report is ninety-three pages long and sets forth the results of an investigation that has lasted eight years. In it, Senator John L. McClellan (D-Ala.), the subcommittee chairman, calls the F-111 project a "fiscal blunder of the greatest magnitude." The fault was in management, the report makes clear. And the management at fault was not military management, but that of the Robert S. McNamara administration. It is pointed out, repeatedly, that, left to their own devices and well-established methods of source selection and pro-

urement, the Navy and Air Force would not have made the decisions of which Mr. McClellan is so critical.

If there is any doubt about it, the report washes that away with a concluding paragraph:

"It would be foolhardy," the subcommittee says, "to assume that such errors as are exemplified in the TFX program could not be repeated. A major lesson of the TFX case is that the Congress must not hesitate, in the exercise of its oversight function, to examine major procurement procedures, decisions, and programs, particularly whenever there is obvious deviation from established practices." The deviations, of course, were from the regular procedures of the Air Force and Navy.

The management blunders, not attributable to the military services or the contractor, are blamed on "poor decisions at the highest levels of the Department of Defense, which compounded error upon error as the TFX program stumbled along year after year." Five of them are detailed:

1. The original decision by Mr. McNamara to start the TFX program, made on September 1, 1961, was wrong. The decision, the report says, overruled recommendations of the Air Force and Navy, whose studies showed that a multimission airplane project was technically infeasible in view of the mission requirements. The order to go ahead was given by Mr. McNamara "without any attempt to resolve the fundamental incompatibility in design requirements between a carrier-based air-superiority fighter and a land-based supersonic ground-attack fighter-bomber. The program was doomed to failure right from the beginning."

2. The decision, made by the civilian Secretaries, in November of 1962, to choose the second-best TFX proposal at the higher price was wrong. This is where Mr. McNamara, supported by his deputy and the Secretaries of the Air Force and Navy, overruled the recommendations of the Source Selection Board, composed of men in uniform. The report says, "The tenacious defense of the contract award when the decision was ques-



*Senate Subcommittee Chairman John L. McClellan holds only a portion of the printed testimony collected in his eight-year investigation of the McNamara administration's handling of the TFX-F-111 aircraft program.*

—Wide World Photos



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## Airpower in the News

tioned and the insistence upon the worth of their unprofessional stated judgments on such technical issues as commonality, titanium, thrust reversers, et cetera, had the effect of locking the Secretaries into an inflexible policy on design changes during research and development."

3. The failure to heed warnings in 1964 of technical difficulties, and to allow redesign of the Navy's F-111B, was wrong. The subcommittee says hundreds of millions of dollars were wasted, and implies that our defense posture was hurt, because the Pentagon's top civilian managers would have been forced to admit the error of the multimission decision and the failure of the commonality concept, as the military services had contended in the first place.

4. The order to start Project Icarus in August of 1966, and to place personal management of the TFX in the Secretary of Defense's office was a poor management decision. Project Icarus, in which Mr. McNamara took charge of the program, the report says, "resulted in interference with the services' management of the [TFX] without resulting in any substantive improvement to the designs." It was not until after eight Icarus meetings, the report says, that the Navy and Air Force program managers were invited to attend the meetings at which critical decisions were made.

5. The decision to continue the production line on the F-111A in April-May 1967 was wrong. Here, the subcommittee says the line should have been stopped until design problems were solved and fixes tested. The problems had been reported to the Project Icarus meetings and discussed. The result is that the Air Force, which has an adequate version of the air-

craft, could have been provided with a better one, the F-111F, which finally emerged.

The report says these major errors by the top Defense Department bosses "occurred at critical points . . . where sound judgment in accepting the advice and counsel of the professionals and experts whose job it was to procure aircraft . . . would have resulted in vastly different results. . . ."

The McClellan conclusions emphasize how the TFX affair "has affected public confidence in our defense establishment." The primary cause of the fiasco, the report says, was mismanagement:

"The management blunders were made at the highest echelons of the government. Top presidential appointees in the Department of Defense during the McNamara era overrode expert advice to impose personal judgments on complex matters beyond their expertise. These same officials then made extraordinary efforts to conceal the results of their efforts in the TFX case. These efforts included deliberate attempts to deceive the Congress, the press, and the American people. Understandably, this sorry record has done nothing to enhance public confidence in the integrity and competence of the people who are charged with preserving the national security."

The report then endorses the effort of the present administration in the Pentagon to decentralize the management system "so that technical aspects of weapons development programs would be managed where they should be—by the individual services. . . ."

Mr. McClellan's report stirred little interest on Capitol Hill, where it did not surprise critics of the McNamara regime and was greeted with silence by others who had been mesmerized in that period. The *Washington Post*, which still believes men in uniform are a threat to their civilian controllers, simply finds it "impossible to believe that Mr. McNamara was the bumbling, lackadaisical incompetent this committee report brands him to be."

The newspaper contends the Secretary lost the fight over the TFX to the military and Mr. McClellan.

David Brinkley, a reporter for the National Broadcasting Co., performed something of a journalistic ruse the day the report was released. He managed to tell his listeners about the conclusions without mentioning Mr. McNamara's name.

While the TFX affair appears to be all over, not as much can be said for another inheritance of the McNamara years. Chairman John Stennis (D-Miss.) of the Senate Armed Services Committee has announced he will hold hearings early in the new Congress on the problem of the financial plight of the Lockheed Aircraft Corp. The Fiscal 1971 Procurement Authorization Act provides that contingency funds for the C-5A airplane cannot be obligated until the Armed Services Committees of both houses have seen a plan for their expenditure.

About ten days ago, Deputy Defense Secretary David Packard sent Mr. Stennis a letter in which he suggested two alternatives. The first would be to continue paying Lockheed for its various programs, of which the C-5A is only one, and let the courts resolve differences between the contractor and the customer. The second approach, preferred by Mr. Packard, would impose a fixed loss of \$200 million on Lockheed.

The company, with an imposing display of courage, has rejected the Packard choice and announced it prefers to go to court. Daniel J. Haughton, Lockheed chairman, emphasizes that the core of the dispute is the Total Package Procurement (TPP) form of contracting that originated in the McNamara regime. It was used for the first time on the C-5A, and already has been discarded by the new administration. Mr. Haughton is quoted as saying TPP "is conceded universally to be unworkable . . . but the fact remains that our company and its shareholders have been left with its consequences."

He could have added that if the aerospace industry were as monolithic



*USAF version of the F-111 now is operational. Navy version was scrapped on orders from Congress in search for lighter aircraft for use from carrier decks.*



## Airpower in the News

and powerful as its critics contend, the bitter C-5A competition, in which Lockheed was involved with Douglas and Boeing, would have ended with all three companies rejecting Mr. McNamara's TPP contract terms. The Air Force has purchased transports many times before and it will buy them again, but it was not the Air Force's uniformed procurement officials who came up with this device.

### The Last Round

The Fiscal 1971 Defense Appropriations Bill that was cleared December 29 included a few changes from the version reported in this space last month. There were two conferences of the Senate and House, on December 15 and 29. This unusual demand for a second report grew out of early House insistence on language that would permit the entry of US combat troops into Laos, Thailand, or Cambodia when this supported the safe and orderly withdrawal from Vietnam or assisted the release of US prisoners of war. The language was deleted after Senate liberals refused for two weeks to allow a vote, arguing that it nullified a clause in the foreign aid authorization bill that prohibits the entry of US troops into Cambodia. As the debate wound up, there is a prohibition on US troops in Laos and Thailand, exactly like the one in the Fiscal 1970 bill.

The Fiscal 1971 appropriation for defense was fixed at \$66.6 billion. The breakdown by services: Army, \$19.6 billion; Navy, \$20.4 billion; USAF, \$21.4 billion; Defense agencies, \$2 billion; and retired personnel, \$3.2 billion. The Air Force will get \$3.2 billion for aircraft procurement. There will be \$18 million for the International Freedom Fighter intended for export to our allies, which is a compromise figure. The House had favored \$30 million and the Senate nothing.

The conferees also approved \$99 million, which had been voted by the Senate, to modify bombers to take the SRAM missile. The House had approved only \$71.3 million. For the F-111 aircraft, the conferees agreed to \$31 million for spare parts for new aircraft and \$399.4 million for additional spares. The figures had been urged by the Senate.

For USAF missile procurement, the compromise figure is \$1.4 billion.

Funds for a test launch of a Minuteman missile across the US were deleted.

### Eyes on the Middle East

A call or letter to the office of Sen. Henry M. Jackson, Room 137, Old Senate Office Building, Washington, D.C. 20510, will bring a copy of his report, released late in December, on "The Middle East and American Security Policy." It is required reading for anyone with a sincere interest in this hazardous situation who needs support for his natural skepticism about Russian intentions.

"If there were no Arab-Israeli conflict," the report states, "the Soviets would invent one. The flagrant exploitation of the tragic conflict between Arabs and Jews ranks high among the cynical designs of Russia's postwar policy." The Russians, the report says, give top priority to the reopening of the Suez Canal.

Mr. Jackson says the Egyptians and Russians violated the terms of last August's cease-fire by constructing a new air defense network. He puts most of the responsibility on the Russians and is critical of the United States for failing to corroborate the violations as soon as they were reported by Israel.

"In my judgment," he says, "we should have immediately insisted through diplomatic channels that the illicitly emplaced Soviet missiles be removed prior to, and as a condition of, substantive negotiations. Our failure to do so has encouraged the Soviets in the belief that they have much to gain, and little to lose, by overt duplicity. In my view, the So-



Senator Henry M. Jackson of Washington, who has recently visited the Middle East to study Israel's security problem, is convinced Russia is determined to keep tension at a high level near Suez Canal.

viets clearly gambled that the US response, if any, would be weak and ineffective. That they should have engaged in this deliberate deception is serious enough; that we should have proved their estimate of our response correct is more serious still."

The Senator warns that if hostilities resume, the Israeli Air Force will "pay a high price in lives and aircraft in attempting to destroy the SAM defense system." For this reason, he favors making sure they have the aircraft necessary to meet the threat. He says the nation can provide for its own defense, despite the fact that the military balance has shifted.

Mr. Jackson returned from a recent trip to the Middle East convinced that Russia wants to maintain a high level of tension between Israel and the Arab states. He is critical of the "Rogers Formula," which calls for Israel's withdrawal from occupied territory except for "insubstantial alterations." He fears this will encourage the Arabs to adopt a rigid position. Instead of the Rogers Formula, the Senator favors one that recognizes Israel's need for a defensible border.

### The Wayward Press (cont.)

In the *New Republic* of December 26 there is a heated editorial charging that "military-industrial interests manage to get most of what they want, with or without explicit legislative assent." There are examples cited which, of course, do not include such projects as Dyna-Soar, the Manned Orbiting Laboratory (MOL), the B-70 bomber, the Skybolt air-launched ballistic missile, the all-nuclear Navy task force, any operational V/STOL airplane, the F-12 advanced interceptor, and many other canceled projects.

What the editors of the *New Republic* do cite is the Supersonic Transport (SST), adeptly avoiding the fact that this airplane is not a military proposal and is included in the proposed budget for the Department of Transportation, not for the Department of Defense.

Further, they quote an erroneous newspaper report that says the Defense Department, without consulting Congress, has directed the Air Force to begin "hardening" 500 Minuteman missile silos. Both the Air Force and the contractor deny this. USAF has no money available for the hardening program and has authorized nothing more than a feasibility study to find out how the job can be done, if it proves necessary.

Somehow, the *New Republic* editors manage to get most of what they want, with or without explicit factual support. ■



# Letter from Europe

By Stefan Geisenheyner

AIR FORCE MAGAZINE EDITOR FOR EUROPE

## Area Weapons

The worst fear of the Germans who defend the western side of the Iron Curtain is that their forces may not be strong enough to stop an all-out conventional attack. This would force the West to early use of nuclear weapons and would provoke a nuclear response by the East.

A nuclear war on German soil would inevitably destroy Germany. It must, therefore, be the primary goal of the defenders to keep any war at a conventional level for as long as possible, or at least until enough allied reinforcements arrive to contain the attack by conventional means.

The point where nuclear weapons would have to be used is defined in NATO jargon as the "nuclear threshold." It is a major consideration in NATO's flexible-response war planning. Every move that promises to raise the threshold from its present low level—dictated by the comparatively weak conventional forces available to the organization—is encouraged.

It is obviously difficult to develop a new type of conventional system that surpasses in effectiveness the presently available arsenal of defensive weapons. For several years, specialists in modern weaponry were convinced that only the delivery methods of the already very effective conventional weapons could be improved, by better accuracy, but that the effectiveness of the weapons themselves could not be bettered.

This conviction creates a serious problem. Modern technology can produce bombs, rockets, or similar devices of tremendous destructive power; it can develop, construct, and mass-produce weapon-delivery systems that are highly accurate.

The problem is found in the price of such systems. A typical example is the Mark II nav-attack system developed for the F-111 and FB-111. So far, this is an unsurpassed device for pinpoint weapon delivery. The USAF would like to see its complete F-111 fleet equipped with the Mk II, but the price of \$3 million per copy is out of reach. Thus, only a small part of the fleet will eventually have the system.

A relatively small nation like Ger-

many cannot dream of equipping its future fighter-bombers with such costly and sophisticated nav-attack systems. The Panavia-200, Europe's multirole combat aircraft (MRCA) slated as the mainstay of the Luftwaffe in the late seventies and the eighties, has a firm price tag of \$5 million each, and that includes weapon-delivery systems.

This price, low as far as modern weapon systems go, eliminates the introduction of any sophisticated nav-attack device comparable to the US Mk II system.

Achieving higher weapons effec-

in addition to giving NATO's defensive forces excellent screening and protection against direct enemy tank attacks.

Unveiled were two types of sophisticated land mines and one very advanced cluster-bomb device. All three can be air-dropped, delivered by unguided rockets from the ground, or by conventional artillery shells. In short, these weapons can be dispersed in large quantities over a target area by several means. They are designed to be spread widely and at random; hence their name—area weapons.

Everyone has heard of Pandora's box, which, when opened, released all

*Practice firing is this 155-mm Armored SP M 109. The artillery battalions of German Army brigades are equipped with this weapon, which can fire Pandora, Medusa, or Dragon Seed mines and bomblets loaded in shell casings.*



tiveness by precise delivery is, therefore, blocked for Germany and the Europeans. This leaves open only one possible approach to more effective results with conventional weaponry—to use it in quantity. With the limited air and other forces available in Germany, that means small weapons size coupled with high effectiveness. This goal seems to have been achieved during the past two years.

In the fall of 1970, the Luftwaffe and the German Army made public three novel weapons which, up to that date, had been top secret. They are so-called area weapons. These devices promise to raise the nuclear threshold

kinds of misfortune. The first weapon is very aptly named after that Greek mythological figure. Pandora is an antitank mine about the size of a fist. An armored unit that found itself in a Pandora-infested area would, most certainly, be largely immobilized. After extensive tests involving large tank units, weapon specialists concluded that at least ninety percent of the force would be disabled. Even the most modern mine-clearing methods could not extricate the tanks intact from the region. Because of their small size, the mines are difficult to find and, once armed, cannot be cleared by conventional means.



## Letter from Europe

New tactical methods of using these weapons are still under test. Pandora could be used to bar wide stretches of land, employed to encircle enemy troops, or air-dropped in the enemy hinterland to spread confusion and disrupt traffic. One of the most desirable features of this novel weapon is that it can be easily and cheaply replaced by new airdrops or rocket barrages in case the enemy succeeded in clearing passages through an infested area. In many cases that would not even be desirable because the enemy's forces, funneling through the cleared channels, would offer predictable and well-localized targets for air strikes.

The Pandora-loaded warhead of a rocket or artillery shell scatters the small mines over a relatively large area. The mine will not injure the occupants of armored vehicles, but when rolled over will destroy a vehicle's tracks and rip off its bogey or driving wheels. Wheeled vehicles or personnel on foot will not detonate the device. These properties are considered to be particularly advantageous in the initial stages of a conflict when negotiations are still possible. With the elimination of the attacking tank force's mobility, a lasting effect is achieved, but the enemy's small manpower losses should not provoke him to drastic retaliatory measures.

History suggests that such hopes may be delusive, but they offer a chance, however small, of preventing a local conflict from growing into a major confrontation. It is, however, a simple matter to manufacture Pandoras that are sensitive to anything that moves, including trucks and personnel. In a real emergency, a variety of different pressure-sensitized mines could be employed, making clearing operations very hazardous. In any event, the immobilized but still intact enemy tanks could be destroyed at leisure by air strikes or artillery.

This philosophy of marginal destructiveness does not apply to the second type of land mine, dubbed Medusa after the vicious snake-haired lady of Greek mythology. The delivery methods of Medusa are about the same as those developed for Pandora. The mine's charge is, however, deadly for tanks and crews. The weapon is a magnetic, hollow-charge device capable of penetrating an armored vehicle's bottom plates.

The mine is larger than Pandora and is, therefore, preferably air-

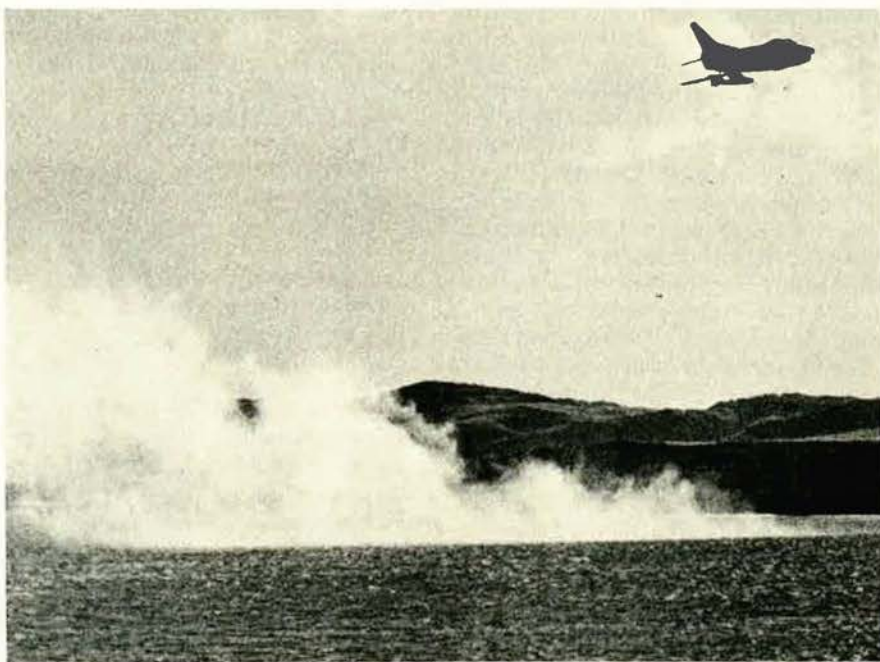
dropped, to remain dormant until activated by the target. It can also be shot in bundles of five from the standard German Army rocket launchers. For air-dropping, hundreds of Medusa mines can be carried in dispensers attached to the wing pylons of fighter-bomber aircraft. Every type of aircraft in the Luftwaffe inventory today can be used for this task.

Medusa is not operational yet, but should become available this year. Pandora and Medusa promise to revolutionize tank warfare. Some experts have concluded that any type of tracked or wheeled activity in mine-contaminated areas must come to a standstill, ending this kind of mobile warfare as it was developed in World War II. They predict that the time has arrived to work exclusively with air-assault schemes involving VTOL

flying at low level, the bomblets are ejected at a selected rate, or in a steady stream over concentrated targets. Two types of bomblets—antipersonnel and armor-piercing hollow-charge—are available.

The three weapons—Pandora, Medusa, and Dragon Seed—are complementary and are employed best in a mix. They can be emplaced over short ranges with ballistic means such as artillery or rockets, but, for truly effective applications, a strong tactical fighter force covered by interceptor elements is deemed necessary as carrier.

This is accepted theory in Germany, and the Panavia-200 supersonic swing-wing STOL fighter bomber is specifically being adapted to lay near-impregnable land-mine carpets over the enemy's approach routes. Pandora and



Here a German Air Force Fiat G91 is seen air-dropping Dragon Seed cluster-type bomblets. The new weapons developed for German forces might revolutionize non-nuclear modern warfare, to blunt the thrust of tank units.

and helicopter-borne forces, since the new weapons will prevent moving on the ground.

The third new weapon in the German arsenal is called Dragon Seed. It is a refined and advanced development of the cluster bomb. Dragon Seed has been adapted for use with unguided barrage rockets and can be dispensed from aircraft. The weapon is basically well known, but the scattering system is novel.

The bomblets are loaded into containers attached to the wings of fighter-bombers. From these, Dragon Seed is expelled by ram air collected through an opening in the container tip. While

Medusa would stop the tanks and other vehicles, while low-flying aircraft dispensing Dragon Seed would make mine-clearing operations a very hazardous undertaking for unprotected personnel. A defense against the new weapons with presently known countermeasures would be very difficult, if not impossible.

The weapons should help raise the nuclear threshold because even the application of A-weapons would not make the contaminated areas passable or prevent a renewed contamination. Pandora, Medusa, and Dragon Seed illustrate the exploitation of all possibilities left for the defense of Ger-



many after its decision to restrict itself to conventional weapons.

### Rolls-Royce Viper Turbojet

The Viper turbojet engine concept is now more than twenty years old. Originally, the engine was destined to power target drones and, consequently, was developed as short-life, full-throttle, expendable equipment.

However, the basic concept proved so successful that it was decided to construct a new version—the Viper 100—destined to power a trainer and later business aircraft. In the last twenty years, five basic versions of the Viper were built, each incorporating the latest developments in technology. In all versions, the Viper engines gained a reputation for reliability, efficiency, and flexibility. Of the Viper 500 series alone, more than 700 engines are in worldwide use.

The latest version is the Viper 600. Whereas the first Viper 100 produced a maximum thrust of 1,640 pounds, the new Viper will generate up to 4,000 pounds of thrust with only a marginal increase in size. The development program of the 600 began in early 1969, and the first flight—with the new engine in a Hawker Siddeley HS 125—was in August 1970.

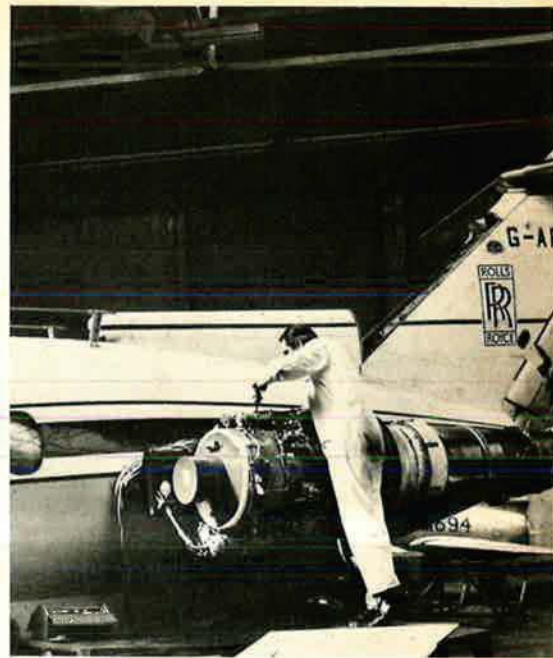
The Viper 600 will be produced by Rolls-Royce in cooperation with Fiat of Italy. Rolls-Royce maintains management responsibility for the project as a whole. Fiat will manufacture all components rearward of the compressor casing with the exception of the turbine discs and blades. Fiat also holds design responsibility for the complete exhaust assembly.

The main differences between the Viper 600 and its immediate predecessor, the 500, have been introduced in the hot section of the engine. The well-proved basic layout was adapted to the latest advances in combustion and turbine design. The 600 was fitted with a new smoke-free combustion chamber and a two-stage turbine, which drives a compressor section remodeled to produce a higher pressure ratio and greater air-mass flow. By these changes, an increase of ten percent takeoff thrust could be achieved and the specific fuel consumption could be lowered by nine percent.

Like the earlier versions of the engine, the Viper 600 is moderately power-rated to achieve long service life and reliable operation. Since its inception, the Viper has enjoyed a reputation for ruggedness, reliability, ease of handling, and resistance to foreign-object damage.

As a result of the experience gained with the previous Vipers, the recommended time between overhauls (TBO) of the new engine will be set at 1,600 hours, without major servicing between. This is an exceptionally good TBO rate, as the average military engine offers a TBO of 300 to 400 hours.

All good attributes of the Viper series are derived from a basic simplicity of design. The compressor has large blades of wide chord, the majority made of steel, which minimizes the effects of erosion and the ingestion of foreign objects. There are no variable stator blades, and the use of a compressor blowoff valve allows the use of a simple fuel system and excellent handling at low engine speeds.



Latest version of the Viper engine is the new 600 Series, a joint project by Rolls-Royce's Bristol Engine Division and its partner in the venture, Fiat of Italy.

Despite the basically very old engine design, the Viper 600 is a modern engine produced for reliable operation even under adverse conditions and rough handling. The Viper 600 has been chosen to power the Hawker Siddeley HS125/600 business jet, which will be marketed in the US under the designation BH (Beech-Hawker) 600. The aircraft is the latest version of the also Viper-powered DH 125, of which more than 220 have been sold to date. ■

### WHEN A WORD WAS WORTH 1,000 PICTURES

Curt LeMay is not widely recognized as a humorist. But those of us who worked closely with Curt know that he has a marvelous—often humorous—ability to capsulize a situation in a word or phrase. One of his characteristic grammatic achievements took place during a meeting at USAF Headquarters in 1964.

Early that year, two Air Force planes in Western Europe had inadvertently strayed across the Iron Curtain. Both had been brought down by Soviet fighters. In the first incident, involving an unarmed T-39, all three crew members were killed. This was a very serious thing that demanded, and got, attention at the highest levels in Washington.

General LeMay, who was then Air Force Chief of Staff, went to Wiesbaden to look into the situation. Gen. Gabe Disosway, the USAF Commander in Chief, arranged a detailed briefing on the incidents, and on measures that had been taken to prevent a recurrence. At the conclusion of the lengthy briefing, Curt rolled his cigar to the corner of his mouth. "If this happens again, Gabe, there's just one thing I suggest you do."

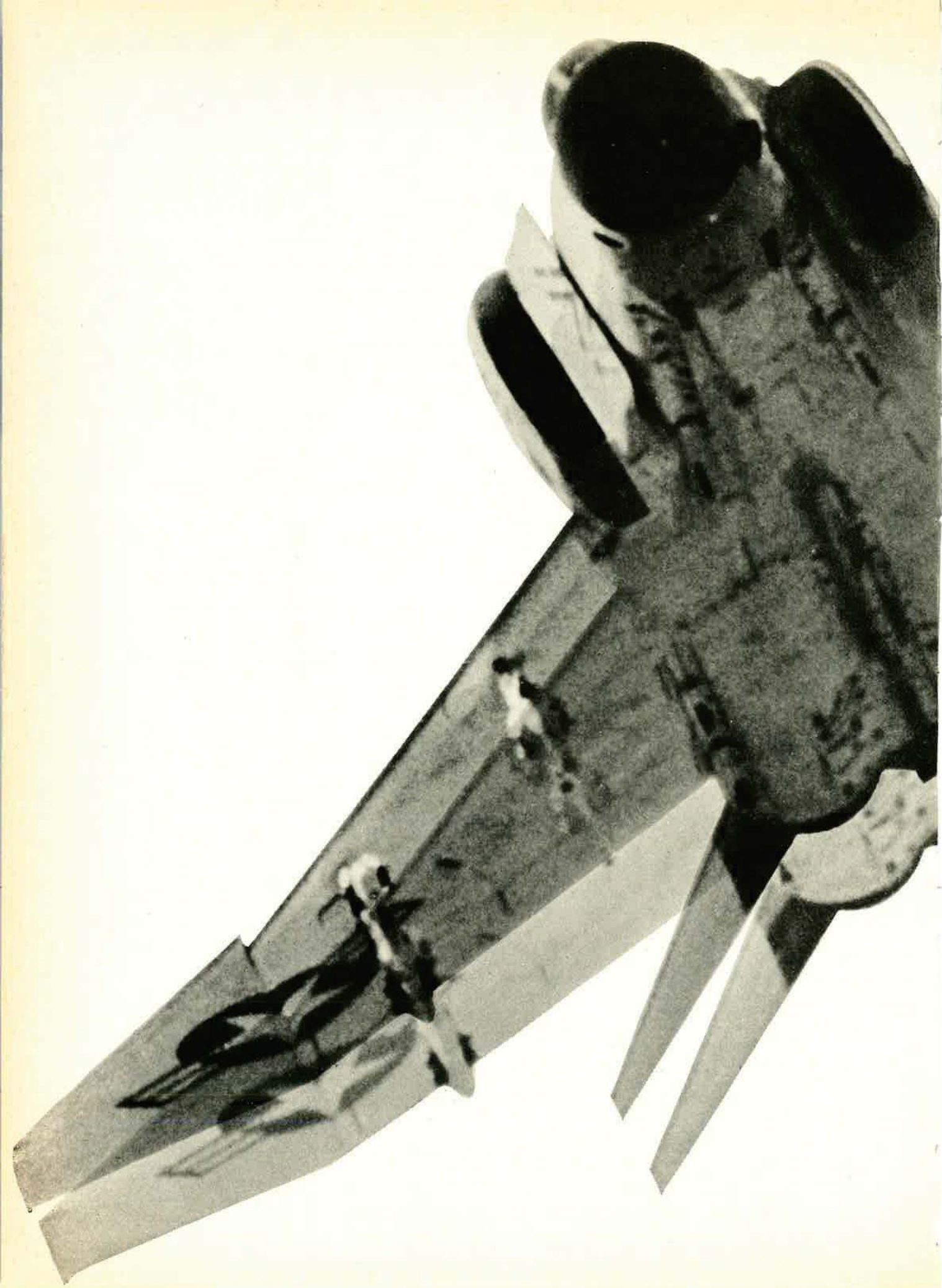
"What's that, Chief?" Gabe asked eagerly.

General LeMay fixed Gabe with his most piercing stare. "Defect," he said. And that closed the meeting.

—FORMER SECRETARY OF THE AIR FORCE EUGENE M. ZUCKERT

(AIR FORCE Magazine will pay \$10 for each anecdote accepted for publication.)







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"The Air Force Association joins the nation in mourning the death of the Hon. L. Mendel Rivers. Congressman Rivers has passed away at a time when the nation's need for a stalwart spokesman for national security was never greater. His deeds and devotion earned him the accolade, 'The greatest friend the men and women in uniform ever had.' His memory lives on to inspire generations yet to come through the example he leaves to all of us of patriotism, devotion to duty, and an understanding of what national honor truly means."

—Statement by George D. Hardy, President, Air Force Association, Monday, December 28, 1970.

## Military Mourns Mendel Rivers

The US armed forces lost one of their most effective supporters on Capitol Hill with the passing, on December 28, 1970, of Rep. L. Mendel Rivers. Mr. Rivers, who represented his home state of South Carolina, had been chairman of the House Armed Services Committee since January 18, 1965. He had served in Congress since 1941. He was sixty-five years old.

Always a champion of a strong defense system and advocate of servicemen of all ranks, he never hesitated to call for stern military action when he thought it was needed. He urged President Truman to use the atomic bomb if the Communists did not retreat in Korea, and he later urged President Kennedy to set up a naval blockade of Cuba, in 1962. He favored declaring "war if necessary" to recover the intelligence ship *Pueblo* and its

crew in 1968. Less than a year ago he still believed the US should fight to win in Southeast Asia. Last May, Mr. Rivers praised the US intervention in Cambodia.

In the 92d Congress the Rivers mantle is scheduled to fall on the equally strong shoulders of Rep. F. Edward Hébert of Louisiana, who will be the next-ranking Democrat on the Armed Services Committee. Also strenuous in his support of a strong national security system, Mr. Hébert says he does not expect to make any changes in the committee operation. "I'll be seeking the same goals that Mendel did," he told the press.

It is generally believed, however, that Mr. Hébert will be a more flexible leader than his predecessor and less arbitrary in his decisions. A former newspaperman, he first came to Congress with Mr. Rivers

in 1941 and has built up a reputation as, in Mr. Rivers' words, "the most experienced and hardest hitting investigator in Congress." He has conducted inquiries into many aspects of defense contracting, the employment of retired officers, the adequacy of our bomber force, weapon system management, and, more recently, the alleged My Lai massacre. In the My Lai report, issued last summer, he accused the Army of "covering up" the incident.

The new chairman is known for his deep concern with Reserve and National Guard affairs, as well as the service academies and the Reserve Officer Training Corps. He fought over these issues when Defense Secretary Robert S. McNamara tried to cut back on the programs, and succeeded in expanding the Junior ROTC effort at a time when the Secretary wanted to abandon it.

Unlike Mr. Rivers, Chairman Hébert will not represent a district with numerous defense activities. He does have headquarters of the 8th Naval District in New Orleans. Not far away is Callender Field, the only air base in the country that is used exclusively for Reserve and National Guard aviation. It is shared by the Navy, Air Force, and Coast Guard Reserves in addition to the Air National Guard.

On a recent television news program, Mr. Hébert was asked whether he expected to rely as heavily as Mr. Rivers on the advice of uniformed military experts from the Pentagon. His reply was that when he has appendicitis he goes to the doctor and when he has a legal problem he summons a lawyer. ■



The late Rep. L. Mendel Rivers took a dim view of double-talk at his committee hearings. Here he is shown during one of them, with his successor, Rep. F. Edward Hébert (on the right). Mr. Hébert, like Mr. Rivers, is a strong supporter of the military, but his style is more humorous, less rigid.

—Wide World Photos





# The Buffalo can hop in and out of 400 yards with 6 tons on its back.

North American Rockwell and de Havilland Aircraft of Canada have a unique cargo plane—the C-8B Buffalo. It's a front line, (STOL) tactical support aircraft.

A proven, off-the-shelf airplane, the C-8B's design and development costs were jointly funded by the U.S. and Canada. In fact, the airplane is designed to U.S. Mil Specs with 95% of the aircraft material of American origin. Every Buffalo sold returns one million dollars to the U.S. economy.

The Buffalo lands on just about any makeshift strip because of its rough-field landing gear and extremely steep approach. It can zero in on a postage stamp, staying within the confines of a small, protected area.

It can deliver to the front lines virtually all the air transportable and palletized equipment now in the field. The cargo bay is not volume limited.

It climbs out in little more than 1,000 feet. (Specifically,

with a payload of 11,750 lbs. on a dry sod field, the Buffalo will clear a 50-ft. obstacle 1,000 ft. from brake release.) This gives the Buffalo greater mobility for military peace keeping missions.

Add to this, that the C-8B Buffalo is already in production and has proved itself in over 15,000 hours of operational use and you've got a flying machine that can lend support to any situation.

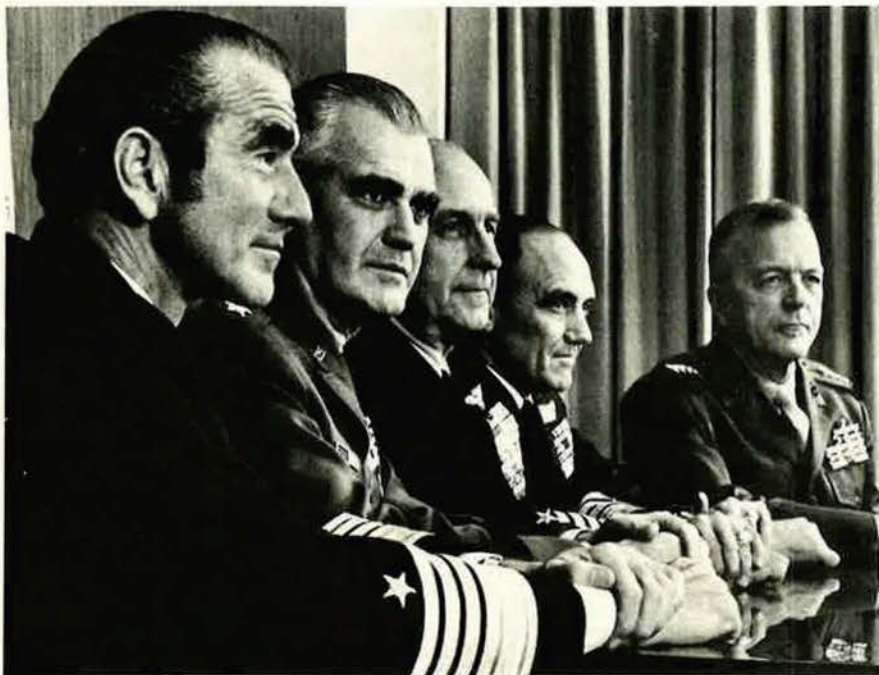
*The only STOL aircraft with MM hrs./HR ft. less than 7 is a Buffalo.*





By William P. Schlitz

NEWS EDITOR, AIR FORCE MAGAZINE



—Wide World Photos

Meeting for the first time in 1971, the members of the Joint Chiefs of Staff face another year of almost certain turbulence in defense affairs. They are, from left, Adm. Elmo R. Zumwalt, Chief of Naval Operations; Gen. William C. Westmoreland, Army Chief of Staff; Adm. Thomas H. Moorer, Chairman, JCS; Gen. John D. Ryan, Air Force Chief of Staff, and Gen. Leonard F. Chapman, Jr., Commandant of the Marine Corps.

WASHINGTON, D.C., JAN. 11  
Secretary of the Air Force Robert C. Seamans, Jr., announced late in December that Fairchild Hiller Corp.'s Republic Division, Farmingdale, N.Y., and Northrop Corp., Hawthorne, Calif., have been selected to compete in prototype development of the A-X close air support aircraft.

The A-X is to be developed in accordance with the "fly-before-you-buy" concept to reduce overall costs through step-by-step progression and hardware flight demonstration. The engine contractors will be selected by the two airframe contractors, subject to the basic performance standards required by the Air Force.

The Fairchild Hiller design employs the advanced-technology TF34 engine of more than 9,000 pounds of thrust, developed by GE, while Northrop plans to employ an Avco Lycoming

engine rated above 5,000 pounds of thrust.

Firm fixed-price contracts of \$41.2 million to Fairchild Hiller and \$28.9 million to Northrop will be awarded. The companies will build two prototype aircraft each during the competitive development phase of about twenty-six months. On the basis of a competitive "fly-off" and evaluation of the contractors' proposals submitted for full-scale development and acquisition, a decision will be made on whether to proceed with production of the A-X.

If approved for production, the A-X will be a rugged, twin-engine, single-place aircraft with short takeoff and landing capabilities and excellent maneuverability. It will carry varied payloads and be capable of long loiter times over target. The first USAF aircraft planned from the start with high

survivability against enemy ground fire as a primary objective, the A-X would be used in close support of troops in the field.

The Air Force issued requests for proposals (RFPs) for the A-X to twelve companies in early May 1970. Six firms submitted proposals in August: Boeing Co.'s Vertol Division; Cessna Aircraft Co.; Fairchild Hiller's Republic Aviation Division; General Dynamics Corp.; Lockheed Aircraft Corp.; and Northrop Corp.

The A-X is managed by the A-X Systems Program Office of the Air Force Systems Command's Aeronautical Systems Division, Wright-Patterson AFB, Ohio.



Lockheed Aircraft Corp. informed Deputy Secretary of Defense David Packard on January 6 that it had elected to "proceed with litigation" in its dispute with the government over the C-5 contract.

In so doing, Lockheed declined a recent offer by the government to set-



—Wide World Photos

Lockheed's Board Chairman, Daniel J. Haughton, has announced rejection of the government's offer to settle the C-5 contract with Lockheed accepting a \$200 million loss. (See accompanying story.)





*Sikorsky's new S-67 high-speed helicopter can be equipped with a variety of weapons: guns, cannon, grenade launchers, rockets, and missiles. The twenty-eight-foot wing provides some of the lift, and wing-mounted speed brakes allow a steeper dive angle. The S-67 also has an airplane-type vertical fin and a controllable horizontal stabilizer. Its streamlined rotor head fairing greatly reduces drag. (For additional details, see page 107.)*

tle the dispute with Lockheed accepting a fixed loss of \$200 million. At a news conference in Washington, D.C., Lockheed's Chairman of the Board Daniel J. Haughton stated that DoD's "compromise settlement is far beyond what we believe is an equitable resolution of the dispute."

According to Mr. Packard's earlier communications to the chairmen of the House Armed Services Committee and the Senate Armed Services Committee, the litigable disagreements cover a "financial range from approximately plus \$25 million recovery by Lockheed against the United States, to about \$480 million liability or loss by Lockheed."

Mr. Haughton explained that, while Lockheed was willing to accept some C-5 contract loss, it could not accept a loss of the magnitude proposed by the government. He declined to say what he considered the maximum loss figure acceptable to Lockheed.

Lockheed's communication to DoD stressed that the C-5 contract represented the government's first attempt at the total-package-procurement concept which "your department has now discarded . . . as an effective procurement method," adding that "unfortunately, Lockheed has been left with the consequences of a procurement system that has proved to be completely unworkable."

Lockheed's statement said: "As finalized in December 1965, the C-5A contract was for an initial quantity of fifty-eight aircraft with options for additional quantities. It was bilaterally amended in January 1969 by Supplemental Agreement No. 235 to exercise the option for fifty-seven production Run B aircraft, making it a contract for 115 aircraft. Supplemental Agreement No. 235 made other changes in the contract, including establishing target and ceiling prices for 115 aircraft. This amendment brought the repricing formula into play. Congress was notified by the DoD of the option exercise.

"In November 1969 the Air Force unilaterally issued Change Order No. 521 in which it said it was placing a 'final order' for twenty-three aircraft of the fifty-seven production Run B aircraft which Supplemental Agreement No. 235 had already ordered by exercise of the option. Change Order No. 521 even purported to unilaterally establish new prices for an eighty-one-aircraft contract.

"In our judgment the Air Force action in issuing Change Order 521 constituted a partial termination of the contract for the convenience of the government. As a unilateral act the Change Order could not reduce the amount of the contract price adjustment to which Lockheed would be

entitled under the repricing clause. We are convinced our case is a sound one based both on legal interpretation of the contract and on considerations of equity. We believe adjudication of the case should ultimately permit Lockheed to substantially recover its costs expended on the program—with even the possibility of a profit for our nearly eight years of major effort."

Mr. Haughton told AIR FORCE Magazine that he considered it "unlikely under any circumstances" that the government would take over the actual production of the C-5, which is expected to continue until delivery of the eighty-first aircraft in March 1973. He said that, while Lockheed had previously examined the possibility of mergers with other companies, no such action is currently contemplated or sought.

Mr. Packard's office announced, upon receipt of the Lockheed communication, that DoD would examine carefully "this very complex and difficult problem" and continue its efforts to resolve the dispute at the minimum cost to the government and as soon as possible. Litigation will be undertaken either before the Armed Forces Board of Contract Appeals or the US Court of Claims.

While Lockheed rejected the fixed-loss proposal by Mr. Packard with regard to the C-5, it accepted settle-



## Aerospace World

ment of similar problems involving the Army's AH-56 Cheyenne helicopter and the Air Force's SRAM missile. Lockheed will continue its negotiations with the government in disputes involving the procurement of naval vessels.



Since early in the space age, there has been speculation about cooperation between the US and USSR in certain space activities.

Sharing knowledge and technology and the joint development of equipment could result in huge savings in time, money, and effort. Other important potentials could be lessened animosity and growing respect between the two great powers. The final impact of such teamwork in terms of world peace could be incalculable.

A small step for mankind in this direction recently was taken when NASA and the Soviet Academy of Sciences formally agreed to work together toward design of compatible orbital docking and rendezvous methods.

The agreement was the result of Moscow conferences between US and Soviet representatives in October, and

was signed by acting NASA Administrator George Low and M. V. Keldysh, head of the Soviet Academy of Sciences.

Another prominent objective of the pact is the mutual planning of space rescue techniques.

The two nations early this year plan to exchange lists of hardware deemed essential for compatibility. After study, the systems requirements will be refined and further discussion undertaken, probably this spring. Following agreement, the two countries will work independently to design the required systems and then consult together to smooth out remaining difficulties.



In mid-December, the Soviet Union failed in its fourth attempt to put an instrumented space vehicle on the surface of Venus. This followed closely on failures by the US in two important space projects (see *January AIR FORCE*, page 15).

The sheer cost of space projects, successful or not, might ultimately dictate a closer relationship in space matters between not only the Soviet Union and the US but also among them and increasingly space-conscious blocs in Europe and elsewhere.

In any event, the Soviet news agency Tass reported that the instrument package dropped by the Russians' spacecraft Venus-7 into the atmosphere of the planet on December 15 transmitted radio signals to earth

during its descent for about half an hour before fading.

The three previous attempts ended in like manner, but after longer transmission periods, suggesting that the planet's tremendously dense and hot atmosphere may be destroying the instrument craft before they reach the surface. Another theory is that clouds in the planet's carbon-dioxide atmosphere may block radio signals, and, if that is the case, much of Russia's Venus probe project may have been futile from the beginning.



Despite the fact that 1970 was the aerospace industry's fourth best sales year in history, the Aerospace Industries Association has compiled a gloomy set of figures for the immediate future.

AIA says, however, that the depression currently afflicting the industry will bottom out in 1971 and ease considerably in 1972.

For now, the picture is not so good. In strictly human terms, employment is continuing to decline and will register another 15.7 percent drop between last March and March 1971. Since a 1968 high, 374,000 people will have lost their jobs in the aerospace industry by March 1971.

From a practical viewpoint, this means the breaking up of scientific and engineering teams responsible for the tremendous technological surge of the last two decades.

AIA's survey has determined that the industry's employed will slide from 1,238,000 in March 1970 to 1,044,000 a year later. Despite these losses, the industry remains the nation's largest manufacturing employer. The employment situation is the result of reduced expenditures for military aircraft and missiles, a cut in military and civilian space programs, and smaller deliveries of transport aircraft.

The sales situation is equally discouraging, with a decline in 1970 to \$24.9 billion from \$26.1 billion in 1969 and the sales record of \$29 billion in 1968. In 1971, a further reduction—to \$23.5 billion—is expected.



The Navy currently is analyzing the crash of its new Grumman F-14 Tomcat fighter during its second test flight.

Until the aircraft's crash late in December, the F-14 program had gone swimmingly. First flight of the aircraft took place December 21, a month ahead of schedule. The second flight was scheduled to last ninety minutes and be the first real test of the plane's performance, including op-



—Wide World Photos

*Apollo-14 Astronauts Alan B. Shepard, Jr., Edgar Dean Mitchell, and Stuart Allen Roosa look over models of the lunar lander and command module as they talk with newsmen at the Houston Manned Spacecraft Center. Shepard and Mitchell will land on the moon. Blastoff for the Apollo-14 mission is scheduled for January 31.*



# The space-shuttle engine. We're almost there.

We've already done the technology development work necessary to build the engine for NASA's space shuttle.



Powerhead (Fuel Turbopump, Pre-Burner and Main Case) for XLR129 reusable rocket engine undergoes static test.

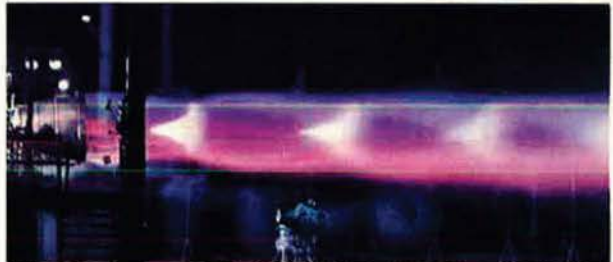
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Test firing of staged combustion thrust chamber for XLR129 reusable rocket engine.

shuttle engine program continues. We started it. We can finish it.

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FROM AN ORIGINAL PAINTING FOR CHANDLER EVANS BY KEITH FERR

## MAIN FUEL CONTROL by Chandler Evans



71002 Main Fuel Control

The MQM-74A, a new advanced target drone, is currently being produced in quantity for the U.S. Navy by the Ventura Division of Northrop Corporation. Capable of speeds to 460 m.p.h. and altitudes up to 38,000 feet, the MQM-74A is powered by a Williams Research Corporation WR24-6 turbojet equipped with a fuel control engineered and precision-produced by Chandler Evans.

This CECO product joins a distinguished line of pumps, main fuel controls, afterburner controls and other aerospace components in an array of important military aircraft as well as many of the latest missiles and commercial aircraft.

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# Aerospace World

eration of its swingwing and its first supersonic flight.

However, about thirty minutes after takeoff the two test pilots aboard—William H. Miller and Robert K. Smyth experienced control difficulties and prepared to land. When descent couldn't be held, the pilots ejected safely, and the aircraft crashed about a mile short of the runway at Grumman's Long Island facility.

The F-14 is being developed to replace the F-4 Phantom, and was scheduled for entry into the operational inventory early in 1973. An improved version with higher-powered engines is planned for delivery in 1974.

Grumman officials expressed confidence that the control problem causing the crash would be solved quickly and would not constitute a major setback in the program.



With mounting acknowledgment of racial unrest at various US military installations at home and abroad, USAF has approved various projects to get at the root causes.

One program meeting marked success is a pioneer black studies course recently initiated at Phan Rang AB, South Vietnam.

The objective of the special course is "To seek a new 'life style' of our



The Navy's new carrier-based air-superiority fighter, the Grumman F-14, lifts off from the company's Long Island facility for its first flight on December 21, 1970. Later in December, on its second flight, test pilots William H. Miller and Robert W. Smyth ran into control difficulties and were forced to bail out. (See accompanying story.)

own making, one that conforms to military regulations and just traditions, while at the same time allowing us to retain our sense of manhood, dignity, and self-respect."

The course, taught by MSgt. Arthur G. Miles, Jr., of Los Angeles, is in two parts that run consecutively over a period of several months. Part One of the course—entitled "American Minority Politics"—is eleven weeks long. Since its beginning, it has nearly doubled its enrollment to sixty-four students.

As a basic text, this segment uses "Black Political Power in America," by Chuck Stone, a black journalist's study of the US's political system, how it relates to the black American, and how it may be influenced by

ethnic, fraternal, economic, and religious interest groups. Sergeant Miles says that a secondary aim is to establish a forum where the rapidly changing American civilian and military social systems can be discussed at the grass-roots level.

Part Two of the course—five weeks—is termed "An Introduction to Blackness." Here the works of Eric Hoffer, Harold Cruse, Nathan Hare, and Malcolm X are utilized to "instill a sense of ethnic pride and reinforce a sense of dignity and self-respect in the individual by examining black military goals and accomplishments."

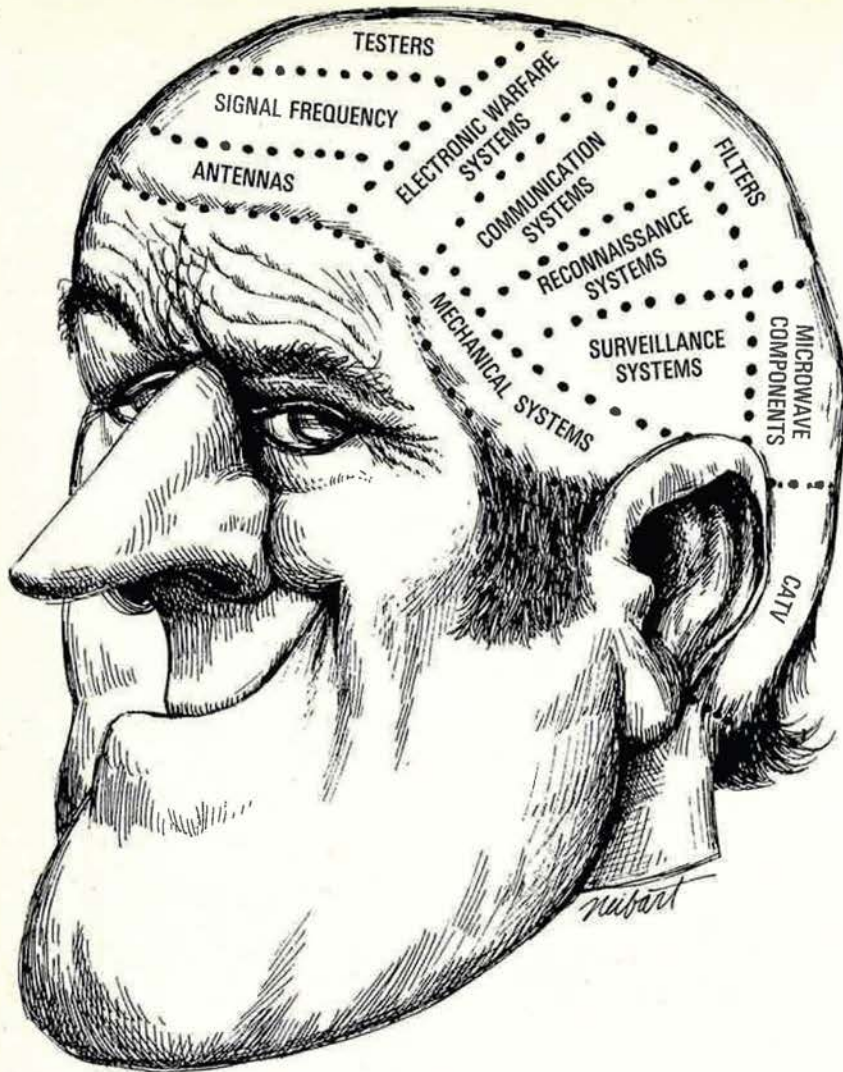


Jeanne M. Holm, Director of the Women in the Air Force, was among

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the seventy-three Air Force colonels recently named for promotion to brigadier general.

She will be the first woman blue-suitier to achieve star rank.

Colonel Holm first entered military service in July 1942, enlisting in the newly established Women's Army Auxiliary Corps. She received her commission in January 1943.

After a brief stint in the civilian world following World War II, Colonel Holm was recalled by the Army during the Berlin Crisis of 1948. In 1949, she transferred to the Air Force and since has had a long and successful career in the areas of plans, programming, and manpower/organization. She became Director of the WAF in November 1965.

Colonel Holm is a woman of many interests. She is a student of ancient history, an accomplished scuba diver, and an avid boater. She is proficient on both water and snow skis. She holds a B.A. from Lewis and Clark College in Oregon and in recent years has studied at the University of Maryland. Among her service awards is the Legion of Merit.

The list of promotions to star rank was the second largest in USAF history, topped only by the previous year's list of seventy-six. Promoted also was Astronaut James A. McDivitt, of Gemini-4 and Apollo-9 fame, who



Jeanne M. Holm, WAF Director since November 1965, has been selected to be the Air Force's first lady brigadier general. She was commissioned in January 1943.





The F-111 is the U.S. Air Force's most advanced combat aircraft, and gives both strategic and tactical commanders a new measure of versatile striking power. It flies high or low, subsonic or supersonic, day or night, in good weather or bad, without escort, to penetrate enemy defenses undetected and hit with just about any weapon in the inventory. The FB-111 strategic bomber, now entering service with the Strategic Air Command, earned top bombing honors in its first entry in SAC's aircraft combat competition. The F-111 deep interdiction fighter-bomber is operational now with the Tactical Air Command, and the first squadron of a 72-aircraft wing has been deployed to Europe in support of NATO forces.

**GENERAL DYNAMICS**



# **SCIENCE/SCOPE**

Radar for the U.S. Air Force's F-15 single-seater air superiority fighter is a lightweight, advanced design of high reliability, optimized for one-man operation. It detects and tracks small, high-speed targets at all altitudes down to treetop level, and provides the central computer with accurate tracking information for effectively launching the F-15's missiles or firing its 20-mm. gun. For close-in dogfighting, the radar automatically acquires the target on the pilot's head-up display. Hughes was chosen to develop the radar by McDonnell Douglas, the F-15 prime contractor.

When Canada's TELESAT satellite communications system goes into operation in mid-1973, it will include two satellites in synchronous orbit and an initial network of 30 to 40 earth stations. Each satellite will provide 12 radio-frequency channels, each of which can carry one color television signal or up to 960 voice channels. Heavy route stations at Victoria, B.C. and Toronto, Ont. will serve major population centers, while smaller television reception stations will serve isolated communities in Canada's Far North.

TELESAT will be the world's first domestic commercial synchronous satellite system. Three satellites are being built by Hughes and two major Canadian associate contractors -- Northern Electric Company, Ltd. and Spar Aerospace Products, Ltd.

The first-round hit capability of the M60A1 tank will be markedly increased by a new solid-state ballistic computer system Hughes is developing for the U.S. Army. It will also enable the tank commander or gunner to instantly select the best type of ammunition for a specific combat condition. The computer will include a self-test capability and provide for automatic fault isolation to minimize field maintenance. Hughes will build six working prototype computer systems under a one-year contract.

Amphibious landings, air and ground beach operations, and other tactical situations will be simulated on a new test bed facility Hughes is developing for the U.S. Marine Corps. The test system utilizes standard off-the-shelf commercial data processing and display equipment, and is regarded as a more flexible, economical way to investigate and evaluate various subsystems than building complete prototypes of them.

The Marine Corps will use test results to determine the extent of automation required for electronic command-and-control systems for the mid-70s and beyond.

A versatile anti-tank combination was demonstrated recently when the U.S. Army's Cheyenne helicopter made the first air launch of a TOW missile with a warhead. The target, a World War II tank, was destroyed. Additional TOW missiles were fired from both hover and high-speed flight, including post-launch maneuvering before TOW impact. Built for the Army by Hughes, TOW is a tube-launched, optically-tracked, wire-controlled missile designed to destroy tanks, armed vehicles, and field fortifications.

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## Aerospace World

at forty-one, will be among the youngest generals in the Air Force.

Also tapped was Col. Frank J. Simokaitis, Executive Assistant to Air Force Secretary Robert A. Seamans, Jr., and Billy J. Ellis, Assistant for General Officer Matters, Hq. USAF.



The Air Force in January activated the 434th Special Operations Wing, Grissom AFB, Ind., to supervise and control the 930th Special Operations Group and 931st Tactical Air Support Group.

The 930th Group is equipped with A-37s and the 931st Group with O-2 forward air controller aircraft. In March, the 931st is scheduled to convert to A-37s. Both units are at Grissom.

The three organizations support Tactical Air Command. When the 930th was recalled to duty in 1968, its 71st Special Operations Squadron was deployed to SEA. The unit received the Air Force Outstanding Unit Award in 1969 for combat service, which included more than 1,500 missions in AC-119 gunships.

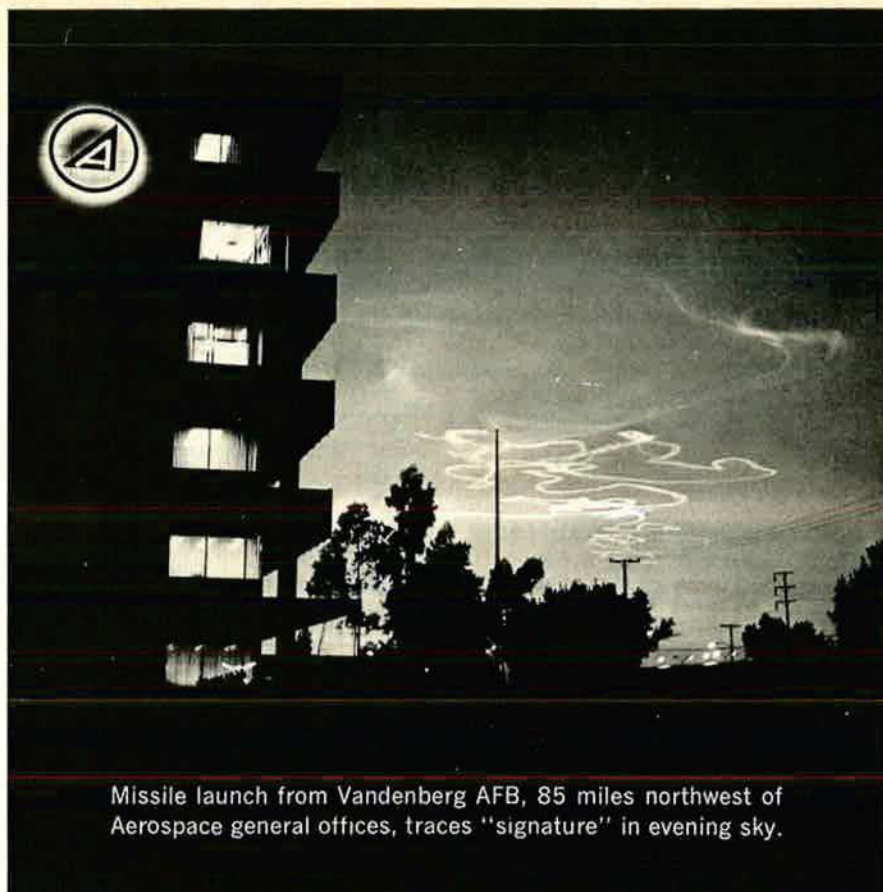
The two groups moved to Grissom in January 1970 from Bakalar AFB, Ind., when that base closed and the 434th Tactical Airlift Wing was deactivated.

The action has not affected employment spaces at Grissom because the change was organizational rather than



—Wide World Photos

Brig. Gen. Daniel "Chappie" James, Deputy Assistant Secretary of Defense (Public Affairs) presents the Distinguished Flying Cross to his son, Lt. Daniel James, III. Lieutenant James was awarded the DFC for outstanding combat achievement in Vietnam on March 26, 1970.



Missile launch from Vandenberg AFB, 85 miles northwest of Aerospace general offices, traces "signature" in evening sky.

Since 1960, working in partnership with the Air Force and Industry, The Aerospace Corporation has sought to achieve the advances in military space and ballistic missile systems so basic to our national security. The dynamics of technology and the dynamics of technical management continue to interact most powerfully. The second decade for Aerospace promises new and exciting challenges with expanding opportunities for national service.

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structural and was accomplished with authorized manpower of the Reserve units at the base.



Artem Mikoyan, 65, who won fame as codesigner of the Soviet Union's MIG aircraft, died recently in Moscow following a long illness.

The designation "MIG" is a combination of "MI" from Mikoyan's surname and the "G" from his partner, Mikhail Gurevich, reputed to be the true engineering genius of the two.

The publicity-conscious Mikoyan was the brother of Anastas Mikoyan, bigwig in the Soviet government under Stalin and Khrushchev.

The most advanced MIG to date—the supersonic MIG-23, designated "Foxbat" by NATO—is reported to be causing considerable concern among Western Europe's military leaders because it is thought to be entering the Soviet Union's central European aircraft inventory in growing numbers.

The MIG-23 is capable of Mach 3, while its opposite number, the F-4



# Aerospace World

Phantom, can do Mach 2.2. The advanced Soviet aircraft is armed with a range of air-to-surface and air-to-air missiles. If known, its maximum range and weapons load have not been made public by the Western powers.

If employed in large numbers, Western leaders fear, the Foxbat may well change the balance of airpower in Europe.



A 1970 graduate of the Air Force Academy was one of thirty-two Americans recently awarded coveted Rhodes Scholarships.

The former cadet, 2d Lt. Alfred M. Wurglitz, is the fourteenth Academy Rhodes Scholarship recipient from the thirteen graduating classes since the Academy's first in 1959.

## SENIOR STAFF CHANGES

M/G Albert J. Bowley, from Dep. Dir., J-5, Joint Staff, JCS, Hq. USAF, to DCS, US Mil. Assist. Cmd., Saigon,

Vietnam, replacing B/G James M. Vande Hey . . . M/G William E. Bryan, Jr., from C/S, TAC, Langley AFB, Va., to Cmdr., 19th AF, TAC, Seymour Johnson AFB, N.C., replacing M/G Joseph G. Wilson . . . B/G Harold E. Collins, from US Defense Representative, Rawalpindi, Pakistan, to IG, Hq. AFSC, Andrews AFB, Md. . . . Mr. Walter P. Conrardy, from Supervisory Materials Engineer, GS-15, to Dir., Materials Support Div., GS-16, AF Materials Laboratory, AFSC, Wright-Patterson AFB, Ohio.

B/G Walter T. Galligan, from Dir., TACC, 7th AF, PACAF, Tan Son Nhut Airfield, Vietnam, to Cmdt. of Cadets, USAF Academy, Colo., replacing B/G Robin Olds . . . Mr. Wilbur L. Hankey, Jr., from Aerospace Engineer, GS-15, Hypersonic Research Laboratory, to Senior Scientist (Fluid Motion), GS-16, Aerospace Research Laboratories, AFSC, Wright-Patterson AFB, Ohio . . . Dr. William H. Heiser, from Senior Project Engineer, Pratt & Whitney Aircraft Co., East Hartford, Conn., to P.L. 313 position of Chief Scientist, AF Aero Propulsion Laboratory, AFSC, Wright-Patterson AFB, Ohio.

M/G John O. Moench, from DCS/Plans, PACAF, Hickam AFB, Hawaii, to Dir., Programs & Plans, Office, Dep.

Assist. Sec. of Def. (Military Assistance & Sales), OASD (ISA) . . . B/G Robin Olds, from Cmdt. of Cadets, USAF Academy, Colo., to Dir., Aerospace Safety, Office of IG, Norton AFB, Calif., replacing retiring B/G Benjamin H. King . . . Mr. Robert H. Scherer, from Vice President and Senior Staff Consultant, Control Data Corp., Minneapolis, Minn., to P.L. 313 position of Dep. for Technical Information Systems, OASAF (R&D), Hq. USAF.

B/G James M. Vande Hey, from DCS, US Mil. Assist. Cmd., Saigon, Vietnam, to Cmdr., Pacific Exchange System, Honolulu, Hawaii . . . Mr. Russell E. Wallace, from Procurement & Production Officer, GS-15, to Dep. Chief, Procurement & Production, GS-16, ASD, Directorate of Procurement & Production, AFSC, Wright-Patterson AFB, Ohio . . . M/G Joseph G. Wilson, Cmdr., 19th AF, TAC, Seymour Johnson AFB, N.C., to DCS/Ops, 7th AF, PACAF, Tan Son Nhut Airfield, Vietnam . . . Dr. Lynn E. Wolaver, Dir., Applied Mathematics Research Laboratory, Aerospace Research Laboratories, to Associate Dean for Research, AFIT, AU, Wright-Patterson AFB, Ohio.

**RETIREMENTS:** B/G Benjamin H. King; B/G Howard E. Kreidler. ■

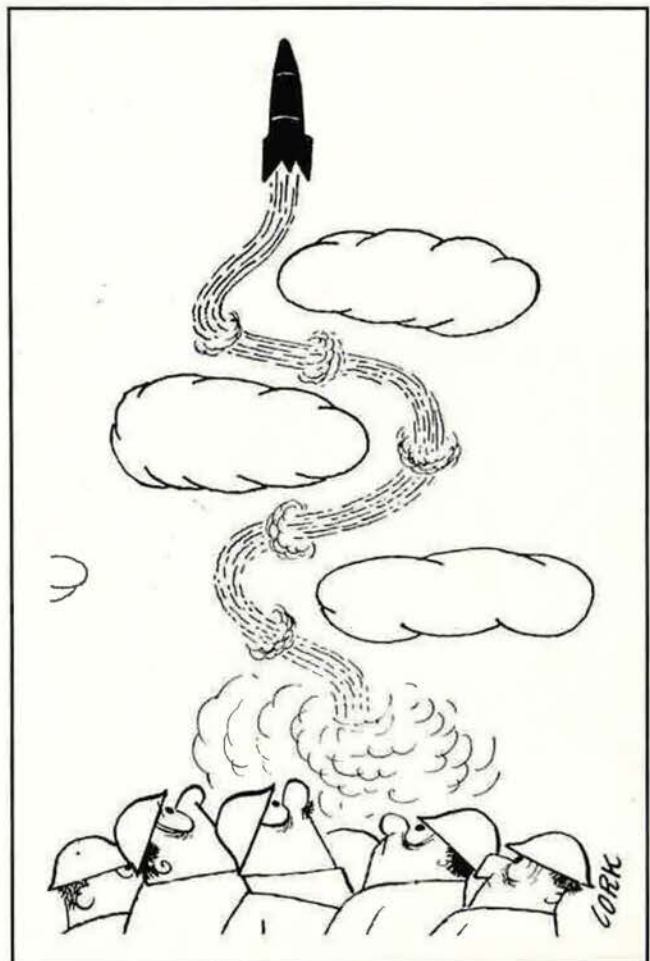
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# Why the Marines are sold on the Harrier.

With the Hawker Siddeley Harrier now on the USMC inventory and entering service, it's well worth taking a look at what persuaded the Marines to go for it.

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**A Reminiscence . . .**

# Milestones and Minutiae

By John F. Loosbrock

EDITOR, AIR FORCE MAGAZINE

It all started for me on a cold day in March back in 1951. The Air Force Association was already five years old, but I didn't know that. In fact, I knew of its existence only through the copies of AIR FORCE Magazine that came regularly to my office in the National Press Building in Washington. A thin thing it was, too, but well edited, usually informative, always provocative.

The telephone rang. It was Bill (William G.) Key, then Director of Public Relations for the Fairchild Aircraft Corp.

"Do you do any free-lancing?" he asked.

Did I? At the moment that was how I was paying the rent and putting food on the table. I had just resigned my job as Washington Editor for a well-known, New York-based science magazine, and the word hadn't yet got around.

"Once in a while, when I've got the time," I lied. "What's on your mind?"

"Jim Straubel, over at the Air Force Association, is looking for someone to do a piece on MATS for their magazine," Key said. "Why don't you give him a call?"

So I did, and we made a date for lunch.

From the beginning, I knew it was going to be different. How different and for how long I couldn't know. I met Straubel in a dark little restaurant on K St., in Northwest Washington, next door to the ancient building that then housed AFA. The talk went in circles, as it does at such times between strangers. We just weren't getting through to each other.

Then it dawned on us. We weren't talking about the same thing at all. I thought we were discussing an article for AIR FORCE Magazine. Straubel thought I was applying for a job. He didn't know I was looking for one, and I didn't know how badly he needed a managing editor. I soon found out, however, after we came to an agreement and I showed up for work, in a funny room with an old fireplace, to find that the May issue deadline was two weeks away and that all there was at that moment to put in the magazine was a list of ads.

Well, Jim Straubel and I wrote that May issue from scratch, and it wasn't bad. I wrote the lead article on the train to Dayton, where the magazine was printed at the McCall plant. I had done a lot of aviation stuff for my previous employer, but my formal Air Force experience was zilch. So, for that first piece, I drew on my personal experience as a dough-foot, on the receiving end of Luftwaffe airpower in North Africa, and told about how it felt when the other guy had air superiority. I related it to the retreat, a few months before, from the Yalu, after the Red Chinese entered the war in Korea, the point being that the bumper-to-bumper, nose-to-tail march back just couldn't have happened if the Communists had controlled the sky. We called the piece "Start Digging, Brother."

At the time, I looked on the job at AFA and AIR FORCE Magazine as only a gap-filler. It didn't turn out that way, obviously. I quickly learned that one didn't have to change jobs to find new challenges. At AFA you just stayed put and the job would change under you.

Change is endemic, of course, both in the aerospace business and in the publishing business. Put the two together and you get what the engineers call a synergistic effect, where the whole is greater than the sum of the parts.

If there is a hallmark of the Air Force Association and, I hope, of AIR FORCE Magazine as well, it is this ability to keep pace with the fast flow of events, to anticipate the issues that are important to us, and to react quickly and positively to them.

To tick off some of the important ones there was the battle for the independence of the Air Force itself and the struggle toward a seventy-group force during the lean, pre-Korea budgets. We predicted the Korean invasion itself and the early Soviet development of both thermonuclear weapons and intercontinental ballistic missiles. Early in the game, we pushed for acceleration of the US ballistic missile program, documented its progress, and were pre-Sputnik



advocates of the view that space should be purposefully explored and exploited in the interest of maintaining peace on earth.

There were lighter moments along the way. I recall particularly a special issue devoted to the Strategic Air Command and its tenth anniversary back in 1956. Arthur Godfrey, then at the peak of his nationwide popularity, was so impressed with our SAC issue that he mentioned the magazine on his evening television show—unbeknownst to us. Jim Straubel was working late that night, and the telephone rang in his office. A woman asked how she could get a copy of the wonderful magazine Godfrey was talking about.

"We'll send you one," Straubel said. "Where are you calling from?"

"Enid, Oklahoma," was the reply.

Next day I got a call from Godfrey's office. They were getting requests. I said we had a couple of thousand excess copies that we'd be happy to send out as long as they lasted. So Godfrey gave out our address on his daytime radio show. We were then in the old Mills Building, at 17th St. and Pennsylvania Ave.

That simple announcement changed our life style for weeks to come. Letters and postcards started pouring in, first by the bag, then by the truckload. Some were addressed to the "General Mills" building (General Mills was a Godfrey sponsor and many of the letters contained Bisquick or Wheaties boxtops.) We bought an electric letter opener, hired extra help, and set aside an "Arthur Godfrey Room," which was soon awash to the windowsills with mail. We received more than 180,000 requests before the flood subsided. We ran out of magazines the first day, but the good name of AFA was at stake. We threw budgetary caution to the winds, did a fast reprint, and fulfilled every request. It cost \$17,000, but we told ourselves it was worth it, and I guess it was.

In August 1957, we devoted an entire issue of the magazine to what is still the closest thing to a definitive history of the Air Force. The issue came to 458 pages and our printer, McCall's, told us it was the single largest issue of any magazine they had ever printed. Runner-up was the back-to-school issue of *Mademoiselle*. As far as I know, that record still stands. The history was later published in book form and is still a standard reference work.

A similar publishing tour de force occurred in May 1964, when we again devoted an entire issue to a slice of Air Force history. This time it was that of the first ten years of the ballistic missile program. This issue likewise found its way into hard covers and still appears consistently in bibliographies relating to missiles and space.

Other books to come from the pages of AIR FORCE Magazine included *Space Weapons*, *The Wild Blue*, and *Speaking of Space*. And, along the way, we developed our annual "Air Force

Almanac" special issue, now published every May. Its accumulation of basic and updated reference material has made it, we are told, the "bible" in its field.

In this tradition we begin, in this Twenty-fifth Anniversary issue, what we trust will be a long and useful association with the publishers of *Jane's All the World's Aircraft*. Every other month we will publish, in these pages, *Jane's Supplement*, a compendium of new information, as it becomes available between the annual editions of Jane's definitive work (*see page 107*).

We begin also a new typographical and printing process, modern in design and making use of advanced printing technology, including offset printing and computer-assisted typesetting. And, although advertising volume is down, reflecting the current economics of the aerospace industry, we are maintaining our editorial content at its normal level. This is contrary to usual publishing practice, but we feel our readers come first.

Over the years, nothing has given me more personal satisfaction than our editorial activity concerning the US servicemen held as prisoners of war or carried as missing in action in Southeast Asia. The first thorough treatment of their plight and the first systematized approach to public action in their behalf was carried in this magazine in the issue for October 1969. We commissioned Louis R. Stockstill, free-lance writer, former Editor of *The Armed Forces Journal*, and long-time commentator on the Washington military scene, to do the job. His article—"The Forgotten Americans of the Vietnam War"—struck sparks immediately. It appeared as the lead article in the November 1969 issue of *The Reader's Digest* and, in full or in the *Digest's* condensation, was inserted in the *Congressional Record* on four different occasions. The article stirred the conscience of the nation as few magazine articles ever do and kicked off what became a continuing editorial campaign in behalf of the POWs, MIAs, and their families. And our efforts will continue until this vicious impasse is fully resolved.

There is no pretense to completeness in this brief review of a personal experience. Nor of modesty, either, I might add. It may even be presumptuous to have deserted my customary editorial "we" in favor of the first person singular. Many achievements have been passed over, notably the many awards for writing excellence, garnered over the years by our outstanding staff. Finally, no editor can be any better than his publisher will permit or than his managing editor makes possible. In having Jim Straubel for the one and Dick Skinner for the other, I have been blessed beyond my deserts.

It has been a long and tumultuous journey from that little restaurant on K St. I won't pretend I've loved every minute of it, but it has been better than I had any right to expect. ■



# AFA's 25th Anniversary

## "POWER FOR PEACE"

As the Air Force Association rounds out its first twenty-five years of service to the nation, to US aerospace power, and to the men and women of the United States Air Force, external threats and domestic challenges are mounting. Unsympathetic public attitudes toward the man in uniform and disregard for vital defense needs combine with a precipitous decline of US strategic power relative to that of the Soviet Union and foreshadow a period of national crisis without an accompanying sense of national urgency. What this means in terms of AFA's mission in the years ahead is outlined by the Air Force Association's President . . .

# AFA's Mission:

## Power for Peace

By George D. Hardy

PRESIDENT, AIR FORCE ASSOCIATION

From time to time it is useful to pause and ponder the past, the better to assess the present and plan the future. The twenty-fifth anniversary of the Air Force Association affords such a moment.

Our genealogy is direct and our legacy uncompromising. We were conceived in the waning days of World War II by the Commanding General of the Army Air Forces and architect of modern American airpower—General of the Army H. H. Arnold. "Hap" Arnold saw the need for an independent, civilian advocate of military preparedness. AFA became an operational reality in the midst of a runaway demobilization that made future conflict well-nigh inevitable.

We believed then, as we believe now, that freedom is neither negotiable nor divisible, that the only historically valid guarantor of freedom is military preparedness, and that the protection of our liberty is a paramount and immutable social requirement of our democratic society. A quarter of a century ago, this philosophy was widely accepted, even though not put into practice. Today, it has been eroded by quarrels over national priorities based more upon bias and emotionalism than on reasonable discussion.

The preamble to the Constitution of the Air Force Association says it well:



Arnold: He saw the need.

"Endowed with the right to life, liberty, and the pursuit of happiness, men have the duty to protect and defend that right."

And the Association's *general* concern with the notion of "power for freedom" was directed by its founders into the area of our *particular* concern, with the pledge to "support the achievement of such aerospace power as is necessary for the defense and protection of our national heritage as free men."

In the twenty-five years that the Air Force Association has served as a national spokesman for these principles, we have encountered many crises and some setbacks. We have suffered defeats. But AFA has never let up in its pursuit of these objectives. On balance, I believe, we have prevailed more often than not. AFA's track record can be considered quite good. I am less sanguine about the current state of affairs and I am certain of only one factor: The need for AFA has never been greater and our task never more difficult.

### Antimilitary Attitudes

The controversial and divisive nature of the war in Vietnam has resulted in unjustified, and often unreasonable, backlash against those who were most reluctant to become involved in an



Asian land war—namely, the military. And once our military leaders were faced with the necessity to fight such a war, they struggled under unrealistic restraints ordered by the civilian leadership. Despite all this, an articulate amalgam, sparked by political opportunism, has succeeded in placing the onus for the lack of success in Vietnam on the military. The sluice gates opened to a flood of caricatures of bloodthirsty, unfeeling military men, leagued with venal weapons-makers, which still pours from the screen, the television tube, and the printed page. The men and women in uniform, who were the folk heroes of twenty-five, or even five years ago, have become the folk villains of the day.

Counteracting these trends is clearly the primary task of the Air Force Association in the months ahead. The role of bridge-builder between the civilian and the military communities, assigned us prophetically by General Arnold, takes on added importance in these days of polarization, inverted values, and artificially created schisms between the civilian and uniformed segments of society.

Ironically, the growing rift between the military and the civilian sectors takes shape at a time when the need for even greater dependence, one upon the other, has intensified. A move toward an all-volunteer military force can hardly be expected to succeed if a large and influential part of our society treats the military as social outcasts, immures the professional soldier, sailor, and airman in spiritual isolation, and questions the very morality of military service.

Those who would burn the bridges between the uniformed and civilian sectors of our society are writing off a great national asset. The Air Force has much to offer society, over and above the obvious areas of national security and the strengthening of the nation's technology base.

### **Air Force Expertise**

In the crucial field of education, for example, the Air Force is both a leading consumer and

a provider. As a matter of fact, the Air Force is the largest educational institution in the world and has developed many educational techniques and materials that are applicable to civilian school systems.

AFA, through our affiliate, the Aerospace Education Foundation, has served as a catalyst in the transfer of Air Force expertise to the civilian sector, and to the benefit of both. Secretary of the Air Force Robert C. Seamans, Jr., recently acknowledged the contributions of our Foundation in adapting Air Force courses to a civilian setting, when he commented on our Utah Project:

"In spite of understandable initial skepticism, instructors and students liked the new approach, and the experiment proved successful. It seems probable that more courses of this sort will be adapted to community needs." (See the related article beginning on page 63 of this issue.) The Air Force has a direct stake in the quality of public education. With about ninety-five percent of all Air Force enlisted men high school graduates, and more than eighty percent of all officers college graduates, USAF must depend on efficient civilian school systems to furnish the basic educational levels required by a technology-oriented military service.

A similar interdependence exists in other societal problem areas. While the Air Force is engaged in rehabilitating drug users in its own ranks, the more practical solution to this widespread social problem is to fight drug use at the teen-age level, that is, long before youngsters reach military age. By helping to fight the drug problem in the schools, the Air Force hopes to reduce the problem within its own ranks. Once again, AFA is preparing to serve as an intermediary, to help establish a meaningful dialogue between the Air Force and the civilian schools. The same approach applies to the eminently successful Air Force safe-driving program designed to reduce off-base, off-duty, civilian-car accidents. Again, AFA has taken the lead in transferring this experience to the civilian sector of society.

In the field of low-priced, modular housing,



# AFA's 25th Anniversary

## "POWER FOR PEACE"

Air Force programs, employing extensive computer analyses of various design and material choices, are expected to reduce construction costs by between fifteen and twenty percent below conventional standards. Its findings are being made available freely to the civilian community and other government agencies.

Pollution control is yet another major field where the Air Force is developing new techniques and concepts over a wide range of problems, from jet-engine noise to water pollution.

These examples of the interface between the Air Force and civil society typify benefits that both sides can reap if they work together, or lose, if forced to work apart. The Air Force Association will continue its efforts to heal the

than has the US military. The US citizen-soldier, in subordinating himself and his mission to the requirements and rules of society, has neither sought nor attained political power outside of constitutional channels.

It is particularly galling that the present wave of antimilitarism should come hard on the heels of an era in our history when legitimate military influence was at perhaps its lowest point. Over most of the preceding decade, all vital decisions, from the conduct of the war in Vietnam to contract structure and source selection for weapon systems, were made by



*Students in Utah school system already are benefiting from an Aerospace Education Foundation-sponsored program to adapt USAF electronics course to civilian use.*



*Educators, community representatives, youth from across the country exchanged ideas and techniques at Foundation's 1970 National Laboratory for the Advancement of Education.*

artificial rift that has been created between the civil and military sectors of our society.

### The Military as Scapegoat

Obviously, making the military the scapegoat for real or fancied societal deficiencies generates a mood in the nation's schools and on the nation's campuses that is inimical to ROTC programs and general recruitment, and will narrow the base from which the Air Force and the other services must meet their future leadership and manpower needs. It is ironic that the very people who have erected the straw man of creeping militarism are now actively isolating the defense community, to the detriment of our traditional citizen-soldier concept. No group has adhered more faithfully to the supremacy of elected, civilian leadership

the civilian hierarchy. Military professionals often were consulted only in a perfunctory manner or not at all. In the case of the Vietnam War, the root cause of the present anti-military mood, our entrance into that war and our methods of waging it were the result of decisions made by the civilian stratum of government.

The Air Force Association has noted with gratitude the forthright statement by Secretary



of Defense Melvin Laird that "our men in uniform carry out national-security policy; civilians decide the strategies we shall follow; civilians decide our force structures; and civilians run the Department of Defense. . . . It seems particularly ironic to me that the military is blamed today for policy decisions made earlier during periods when civilian control over the military was tighter and more extensive than ever before."

It is well worth remembering AFA's repeated public warnings that the Vietnam War, if viewed as a testing ground for national policy, projected a "grim future," subjecting the nation's wealth and manpower to the drain of attrition because of the faltering application of military resources, and especially our air-



*Over the years AFA has supported the need for the best-educated officer corps possible. These Arnold Air Society AFROTC men are readying to meet that need.*

power, toward the goal of a viable political solution.

### The War in Vietnam

While the Association has expressed substantial doubt about the methods by which the war in Southeast Asia has been fought, we remain firm in our opposition to a policy of cut and run in Vietnam. Nor can we accept a solution which would jeopardize the safety of our South Vietnamese allies.

At the same time, we have warned that, because of the demands of the war in Southeast Asia, "US technological efforts are being diverted from other necessary, long-range objectives," mainly in the crucial areas of strategic deterrence and force modernization. The past policy of fighting a broad-based con-

ventional war without a correspondingly broad national commitment prolonged the war, has led to a dangerous curtailment of the national R&D effort, and slowed military force modernization. The latter, in turn, has caused the present logjam in weapon-system requirements, which feeds today's antimilitary psychosis.

The third major element of defense policies of the 1960s involves the problems resulting from inflexible management of technology and



*Back in 1955, a scene like this AFA-sponsored salute to the armed forces was publicly accepted without question. Today, the military is taking undeserved lumps.*

the nature and structure of procurement contracts. In the case of the former, unproved or even speculative laboratory techniques were optimistically certified as ready for mass production, and essential prototype developments were halted. In the case of the latter, deficiencies of the total-package-procurement concept



# AFA's 25th Anniversary

## "POWER FOR PEACE"

exploded on the national scene long after the basic damage had been done, leaving it for the military to bite the bullet.

While it would be false to claim that the Air Force and the other services are completely blameless in connection with recent cost overruns, it is even more specious to portray military managers and their industry counterparts as inept, venal, or both. Future historians may well argue over what was cause and what was effect, but, concurrent with the growing animus toward the military, there has developed a basic opposition to technology itself and the sciences that support it. All this has culminated in the favorite myth of our times—the military-industrial complex.

The so-called complex is the all-purpose whipping boy of those whose quest for instant cure and correction of all societal shortcomings has created frustrations that need venting. The curious side effect is a double-edged assault—undertaken ostensibly as means of healing the country—against the very institutions that provide much of the impetus for the nation's economic advance.

### Stand Up and Be Counted

On this and related issues, the Air Force Association must continue to stand up and be counted in refuting the corrosive myth of the military-industrial complex. That continues to be a paramount task of this Association. The wealth, basic enlightenment, educational foundation, and freedom of expression that are the hallmark of America were bought and paid for by the industrial growth of this country and by the patriotism of its military servants. The "arsenal of democracy," and the individuals whose ingenuity and dedication created it, are the driving forces in our national advancement. They must not be sacrificed to those whose primary article of faith calls progress a dirty word and profit a social crime.

The areas of advanced technology, in which the Air Force and the weapons-industry function, are marked by high risks. Nevertheless, the record of military and weapon managers is generally better than that in most consumer

areas or social fields. Freed of the often unworkable restrictions previously imposed, this record will improve even further.

### Scientific and Technological Base

Today, an adversary relationship has developed between the humanities and technology. To counter this, AFA has long been active, through its Aerospace Education Foundation, in the field of "scientific literacy," meaning the interface between society and science and technology, and emphasizing the benefits the nation can derive from their prudent exploitation. Clearly much more needs to be done to enhance public understanding in this field.

A special case in point, and one that is especially alarming to the Air Force, is the downgrading or outright prohibition of defense-oriented R&D within the academic community. This trend must be reversed before the nation experiences further, and irreparable, erosion of its technological base, which supports not only



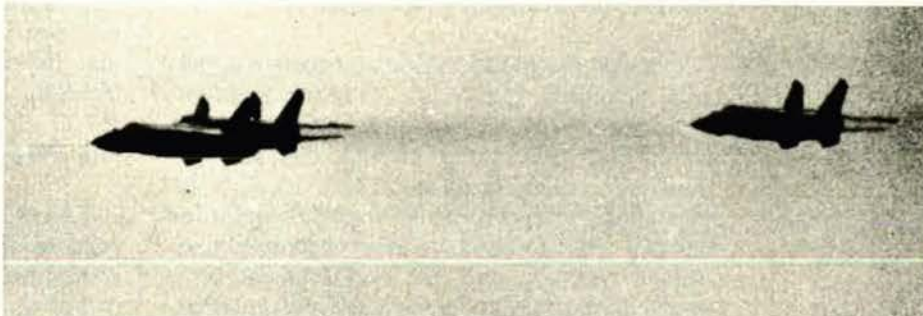
our national defense but our economic well-being.

### Intensified Soviet Efforts

While the United States is in the midst of its most severe cutback of defense-oriented technology since the end of World War II, the Soviet Union is intensifying its own technological efforts across a wide spectrum. Defense spokesmen have acknowledged that the Soviet Union's military R&D effort outstrips that of the United States by about forty percent, and that "theirs is growing at an annual rate of ten to thirteen percent . . . while US research and development efforts have leveled off and are now declining." By 1975, the Soviet technology program is expected to be double that of the US. In permitting this condition to persist, we



While US military research and development is being cut back, the Soviets are intensifying their technological efforts. Lower left, the Soviet solid-fueled SS-13 missile on parade. At right, Soviet SA-1 anti-aircraft missiles being reviewed by Soviet leadership in Moscow. Lower right, the Soviet MIG Foxbat, NATO's code name for Russia's most advanced fighter, designed as a Mach 3 high-altitude interceptor.



invite a series of conditions that place in jeopardy this nation's future deterrent capabilities. R&D not only produces new weapons but also enables our planners and analysts to understand the circumstantial evidence we gather concerning what the Soviets and others are doing. Without this store of knowledge, we may not be able either to perceive Soviet breakthroughs or to counter them in time.

Equally ominous is the effect of this R&D imbalance as described by Secretary Seamans in congressional testimony: "The move from R&D status to operational systems involves long lead times, and we have yet to see the results of the massive Soviet research and development efforts of the past four years. If the Soviet Union is successful in adding technological superiority to its present and growing numerical advantage, our national security could be severely jeopardized."

The severity of the danger becomes clearer when we realize that the FY 1971 R&D budget

of the Air Force is about forty-five percent below 1963 levels, if measured in actual buying power. Yet even these bare-bone funding levels are subjected to further budget-paring attempts.

### The Threat

The American electorate's wariness and fatigue about a more or less permanent requirement for high levels of military preparedness is understandable after almost a quarter century of cold war or limited war. But this wariness factor, nurtured by doubts about the seriousness and extent of the threat, constitutes our single greatest national danger. Sen. Henry M. Jackson (D-Wash.) has said that "in its foreign policy, the Soviet Union is like a burglar who walks down a hotel corridor trying the handles on all the doors. When he finds one unlocked, in he goes." Senator Jackson said the experience of the past ten years with regard to Soviet



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activities in the Middle East led him to this analogy. I submit that it is valid on a much broader scale.

Benign coexistence is the stated national policy of the United States; but, wishful thinkers notwithstanding, it is not that of the Soviet Union. There is mounting evidence that the Soviet Union's cyclical policy shifts from thaw to freeze and back again are calculated to take advantage of the United States' boredom with continuous tension. They do not constitute an abrogation of the Kremlin's expansionistic policies. I cannot find one smidgen of evidence to support the theory that Soviet communism has retreated from its central objective, *i.e.*, making the whole world over in its own image, by guile if possible, or by force if necessary.

Those of us who have acquired a sense of history recognize that the Brezhnev Doctrine, so cynically invoked in the oppression of Czechoslovakia, only reaffirms communism's creed that power grows out of the barrel of a gun. The growth of that power today is indeed alarming.

### Toward an Imbalance of Power

Our foreign policy is oriented toward a balance of power. The recent transition from nuclear superiority to parity, achieved by arbitrarily and unilaterally freezing our strategic missile forces at their mid-1960s level, is an outstanding example of this country's quest for détente. This historically unprecedented move toward equality, and the establishment of a policy of negotiation in place of confrontation, has not been met in kind, however. Their newly won parity, it seems to me, is being used by the Soviets in two principal ways: To build from it toward their own superiority in terms of strategic weapons, and to treat it as a lever for expanding their political, economic, and military spheres of interest.

No further detailed accounting of the decline of US strategic capabilities relative to those of the Soviet Union would seem called for in the pages of AIR FORCE Magazine. The facts are that the nuclear "throw weight," the missile-deliverable megatonnage, of the USSR exceeds that of the United States by a factor of two; that the number of Soviet ICBMs is about one-third greater than ours; that our nuclear submarine fleet will be surpassed by the Soviets by 1974; that they have deployed an anti-ballistic missile defense system and we haven't; and that by 1975, if present trends continue, the Soviet Union will have a first-strike capability against this country. Bluntly put, this will mean that our present low strategic silhouette will have turned into that of a sitting

duck. The meaning of such a strategic imbalance is predictable: The US will be open to nuclear blackmail on the grandest scale in its history.

The grim picture with regard to strategic weapons is matched in tactical airpower. The Soviet inventory of tactical aircraft numbers about 3,500, roughly twice the number in our own tactical inventory. While the Soviet Union is developing a great variety of new, high-performance interceptors, the US air defense force shrank from about 770 aircraft to about 250 within a five-year period and was accompanied by a reduction in the number of air defense radar installations from 170 to 115.

Yet whenever responsible public officials present these facts, they are accused of saberrattling and provocation. The Air Force Association, in the past, has consistently upheld the notion that this country can't afford to be second best in strategic capabilities without forfeiting its ability to contribute to the future peace of the world. We recognize the need to improve the quality of life at home but, as we set forth in our current Statement of Policy, a retreat from the external responsibilities of the United States "can only lead us, as it has in the past, to the ultimate disaster of global war." Clearly, there exists the need to intensify further our efforts to inform the American people of the deteriorating defense posture of the US and its consequences in relation to security, freedom, and peace.

### The POW Tragedy

The Air Force Association has a special concern for the more than 1,500 American servicemen missing in action or held prisoners of war by Communist forces in Southeast Asia. For the last eighteen months, AFA has spearheaded a national crusade on behalf of these military men and their families. Past efforts have had impact, as evidenced by the increased flow of letters and packages, in many cases answering the crucial question as to whether a missing man is alive or dead. But the situation continues to justify a sense of national outrage. We will continue our national and chapter-level programs aimed at "telling it to Hanoi" and at the same time support the government in all its efforts to secure better treatment for these men. We applaud the recent attempt to rescue some of the POWs as a demonstration of this nation's deep concern for their fate. We also consider the freeing of all our POWs as an unalterable and absolute requirement of any settlement of the Vietnamese War.

### Career Status of the Military

Another human problem is of deep concern to AFA and deserving of our best efforts—the general well-being of the men and women who



# The Air Force, Navy and Army keep taking shots at our product.

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Teledyne CAE is the world's largest manufacturer of turbojet engines for unmanned applications. You know. Target drones, Missiles, Decoys, RPV's. The works.

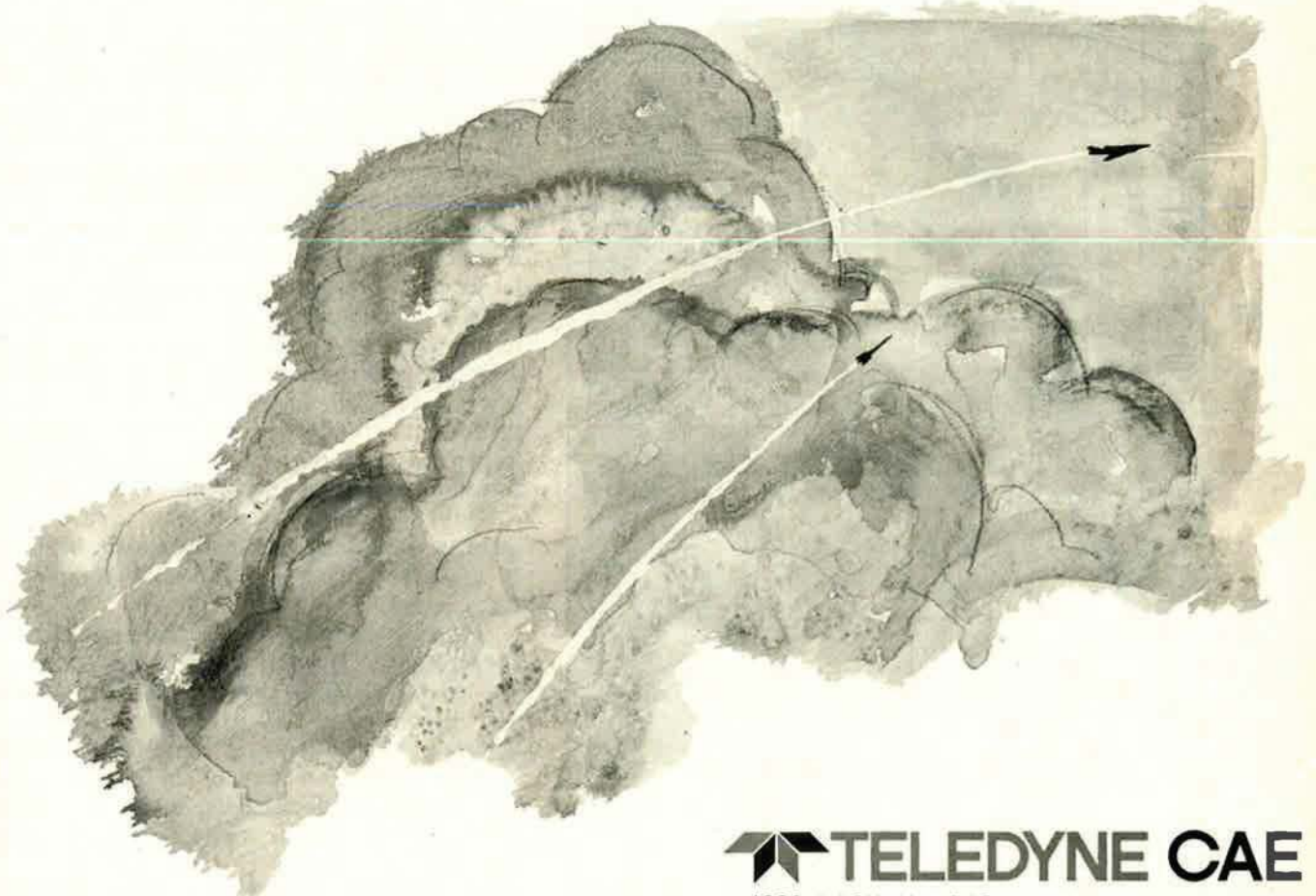
And hardly a day passes when one of our engines isn't leading something—or somebody—a merry chase.

We've built over 4,500 turbine engines for subsonic and supersonic drone applications. Our drone engines alone have undergone 20,000 launches—ground and air. One of our engines will fly a drone at Mach 1.1 on the deck and Mach 1.5 at 60,000 feet. And we're working on another engine that will hit Mach 2.5. Why, we're

even looking at speeds of Mach 3.0 and beyond.

And, right now, we're expanding into turbine engines for decoy and missile power such as the SCAD and Harpoon Programs.

You might say we're big shots in the drone engine business.



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1330 LASKEY ROAD • TOLEDO, OHIO 43601

THE WORLD'S LARGEST MANUFACTURER OF TURBOJET ENGINES FOR UNMANNED APPLICATIONS.

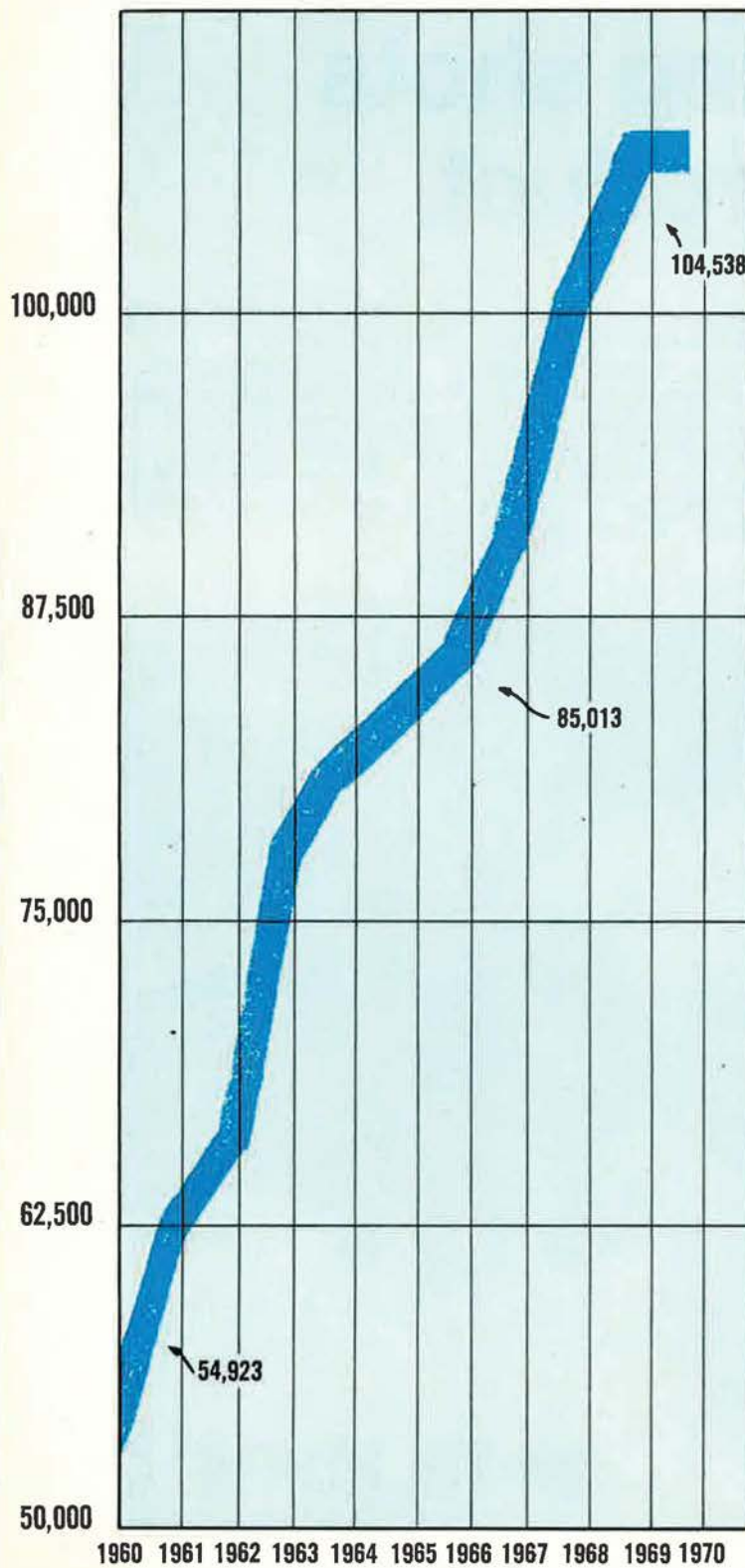


# AFA's 25th Anniversary

"POWER FOR PEACE"

## How AFA Membership Grew in the 1960s

 Total AFA Membership



serve in the United States Air Force. Our efforts in this regard date back to our inception when we set forth as a primary objective the enhancement of the prestige and career status of the military profession, including full comparability of pay and adequate housing. Considerable progress has been made in this regard, but a great deal more needs to be done.

A series of relevant resolutions submitted to Congress and a dynamic program by AFA's several Advisory Councils assure us that AFA's views on these matters are effectively disseminated to those who have responsibility and authority in these areas.

As we move toward reduced drafts and, perhaps, zero-draft and an all-volunteer force, the vital question of incentives takes on added importance. With more than half of the Air Force's current volunteers believed "draft-motivated," we fear that any abrupt termination of the selective service system could reduce the strength of our armed forces below the danger point. The urgency to increase significantly the starting pay for officers and airmen is, therefore, evident.

Similarly, the incentives structure must be improved in terms of housing, travel privileges, and other areas, in order to attract and retain the high-caliber personnel the Air Force mission requires.

Increases in material benefits, USAF Chief of Staff Gen. John D. Ryan explained recently, must be accompanied by an improvement in leadership, because leading today's "young people, compared to leading the youth of twenty years ago, is about as different as flying a Wright Pusher and a C-5 Galaxy. You don't just tell them to do something, you also tell them why. . . . They are less willing to respond to mere symbols of authority, but more willing to follow intelligent leadership."

And General Ryan added that "we are leading them, and we are constantly making changes to make sure that our leadership techniques are relevant."

Dynamic change is a way of life in the world of aerospace. The Air Force Association, as well as the Air Force, needs to remain relevant and responsive to change. Only in that way will we be able to serve the cause of freedom—and the men and women of the United States Air Force—as effectively in the next twenty-five years as we believe we have during the past quarter of a century.

In this effort we will need, as we have received in the past, the talents, the energies, and the dedication of our entire membership. ■



# 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.

## Membership

**Active Members:** US citizens who support the aims and objectives of the Air Force Association, and who are not on active duty with any branch of the United States armed forces—\$10 per year.

**Service Members (nonvoting, nonofficeholding):** US citizens on extended active duty with any branch of the United States armed forces—\$10 per year.

**Cadet Members (nonvoting, nonofficeholding):** US citizens enrolled as Air Force ROTC Cadets, Civil Air Patrol Cadets, Cadets of the United States Air Force Academy, or a USAF Officer Trainee—\$5.00 per year.

**Associate Members (nonvoting, nonofficeholding):** Non-US citizens who support the

aims and objectives of the Air Force Association whose application for membership meets AFA constitutional requirements—\$10 per year.

## 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.



**PRESIDENT**  
George D. Hardy  
Hyattsville, Md.



**BOARD CHAIRMAN**  
Jess Larson  
Washington, D.C.



**SECRETARY**  
Nathan H. Mazer  
Roy, Utah



**TREASURER**  
Jack B. Gross  
Harrisburg, Pa.

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Hugh W. Stewart  
Tucson, Ariz.

Arthur C. Storz  
Omaha, Neb.  
Harold C. Stuart  
Tulsa, Okla.  
James M. Trail  
Boise, Idaho  
Nathan F. Twining  
Hilton Head Island, S.C.  
Jack Withers  
Kettering, Ohio  
James W. Wright  
Williamsville, N.Y.  
Rev. Robert D. Coward  
(ex-officio)  
National Chaplain  
Orlando, Fla.  
Phillip Robinson (ex-officio)  
National Commander  
Arnold Air Society  
Seattle, Wash.

## VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the Vice President of the Region in which the state is located.



Will H. Bergstrom  
655 Bridge St.  
Colusa, Calif. 95932  
(916) 458-2179  
Far West Region  
California, Nevada,  
Arizona, Hawaii



John G. Brosky  
513 Court House  
Pittsburgh, Pa. 15222  
(412) 355-5424  
Northeast Region  
New York, New Jersey,  
Pennsylvania



C. W. Burnette  
Box 3535  
Anchorage, Alaska  
99501  
(907) 272-3537  
Northwest Region  
Montana, Idaho,  
Washington, Oregon,  
Alaska



B. L. Cockrell  
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San Antonio, Tex. 78216  
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Southwest Region  
Oklahoma, Texas,  
New Mexico



Lester C. Curl  
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Melbourne Beach, Fla.  
32951 (305) 723-8709  
Southeast Region  
North Carolina,  
South Carolina,  
Georgia, Florida,  
Puerto Rico



Wm. D. Flaskamp  
400 Second Ave. South  
Minneapolis, Minn. 55401  
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North Central Region  
Minnesota,  
North Dakota,  
South Dakota



Stanley Mayer  
P.O. Box 14252  
West Omaha Station  
Omaha, Neb. 68114  
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Midwest Region  
Nebraska, Iowa,  
Missouri, Kansas



H. John McGaffigan  
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Tennessee, Arkansas,  
Louisiana, Mississippi,  
Alabama



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Vermont,  
Connecticut, Rhode  
Island



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Clearfield, Utah 84015  
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Rocky Mountain Region  
Colorado, Wyoming,  
Utah



David M. Spangler  
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Danville, Va. 24540  
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Central East Region  
Maryland, Delaware,  
District of Columbia,  
Virginia, West Virginia,  
Kentucky



W. M. Whitney, Jr.  
708 Francis Palms Bldg.  
Detroit, Mich. 48201  
(313) 961-6936  
Great Lakes Region  
Michigan, Wisconsin,  
Illinois, Ohio,  
Indiana



# AFA's 25th Anniversary

## "POWER FOR PEACE"

*In its twenty-five years, the Air Force Association has had nineteen presidents, each of whom helped fashion the character of AFA according to his talents and his times. They have been men of diverse background, but all have shared a profound belief that aerospace power, in its many manifestations, is the key to lasting peace. For their quarter century of service to the nation, we salute . . .*

# The



**JAMES H. DOOLITTLE**  
President  
February 1946-September 1947  
Chairman of the Board  
September 1947-July 1949



**EDWARD P. CURTIS**  
Chairman of the Board  
February 1946-September 1947



**THOMAS G. LANPHIER**  
President  
September 1947-September 1948  
Chairman of the Board  
August 1951-August 1952

The men on these pages, each in his own way, have left their imprints on AFA. So it is fitting on this occasion that we recognize those who have served as AFA National Presidents and/or Chairmen of the Board of Directors over the past twenty-five years.

This select group starts with Lt. Gen. James H. Doolittle, USAF (Ret.), AFA's first President, who led AFA in its fight for a coequal and autonomous Air Force.

Next came Tom Lanphier, who fought for a seventy-group Air Force; then C. R. Smith, who spoke out for big bombers. Bob Johnson established cadet memberships and helped organize the Arnold Air Society.

AFA's fifth President, Harold Stuart, urged air support in Korea, and Art Kelly established the new Industrial Associate program during his term.

Retired Gen. George Kenney warned the American public of the Soviet H-bomb threat, and Reserve Maj. Gen. John Alison fought for a 137-wing Air Force.

AFA's 1956 President, Gill Robb Wilson, took the lead in meeting the airpower education challenge. The golden anniversary of US military aviation was observed during John Henebry's term. AFA staged the first World Congress of Flight while Pete Schenk was President.



**C. R. SMITH**  
President  
September 1948-July 1949  
Chairman of the Board  
July 1949-August 1950



**ROBERT S. JOHNSON**  
President  
July 1949-August 1951



**CARL A. SPAATZ**  
Chairman of the Board  
August 1950-August 1951



**HAROLD C. STUART**  
President  
August 1951-August 1952  
Chairman of the Board  
August 1952-August 1953



**ARTHUR F. KELLY**  
President  
August 1952-August 1953  
Chairman of the Board  
August 1953-August 1954



**GEORGE C. KENNEY**  
President  
August 1953-August 1954  
Chairman of the Board  
August 1954-August 1955



**JOHN R. ALISON**  
President  
August 1954-August 1955  
Chairman of the Board  
August 1955-August 1956



**GILL ROBB WILSON**  
President  
August 1955-August 1956  
Chairman of the Board  
August 1956-August 1957



# Presidents of AFA

Deterrence was at the crossroads during the term of President Howard Markey. Tom Stack, AFA's 1961 President, campaigned for a military capability in space, and 1962 President Joe Foss supported the military-industry partnership.

AFA's fifteenth President, J. B. Montgomery, opened AFA voting membership to all private citizens. During Randy Lovelace's term, AFA observed the tenth anniversary of the USAF missile program.

Jess Larson, who is current Chairman of the Board, campaigned as AFA President for the 1965 military pay raise. It was during Bob Smart's term that AFA membership topped 100,000.

George Hardy, AFA's current President, initiated AFA's current top-priority project—the POW campaign.

Most of the Presidents also served at least one term as Chairman of the Board of Directors, as indicated. A few Board Chairmen served in that capacity only, as indicated. They include Edward P. Curtis, Carl A. Spaatz, James M. Trail, Julian B. Rosenthal, and Jack B. Gross.

AFA's membership is deeply grateful to each of these men for his contribution to the success of the Association. ■



**ROBERT W. SMART**  
President  
March 1967-March 1969



**GEORGE D. HARDY**  
President  
March 1969-Present  
Chairman of the Board  
March 1966-March 1967



**W. RANDOLPH LOVELACE, II**  
President  
September 1963-September 1964  
Chairman of the Board  
September 1964-December 1965



**JACK B. GROSS**  
Chairman of the Board  
September 1963-September 1964



**JESS LARSON**  
President  
September 1964-March 1967  
Chairman of the Board  
March 1967-Present



**THOS. F. STACK**  
President  
September 1960-September 1961  
Chairman of the Board  
September 1961-September 1962



**JOE FOSS**  
President  
September 1961-September 1962  
Chairman of the Board  
September 1962-September 1963



**JOHN B. MONTGOMERY**  
President  
September 1962-September 1963



**JOHN P. HENEBRY**  
President  
August 1956-August 1957  
Chairman of the Board  
August 1957-September 1958



**PETER J. SCHENK**  
President  
August 1957-September 1959



**JAMES M. TRAIL**  
Chairman of the Board  
September 1958-September 1959



**HOWARD T. MARKEY**  
President  
September 1959-September 1960  
Chairman of the Board  
September 1960-September 1961



**JULIAN B. ROSENTHAL**  
Chairman of the Board  
September 1959-September 1960



# AFA's 25th Anniversary

## "POWER FOR PEACE"

*The Air Force Association's Board of Directors has brought to the formulation of AFA policy a breadth of experience that is unique in aerospace affairs. For their wise counsel and devotion to the ideals of this country and of this Association, the members of AFA pay tribute to these men . . .*

# AFA's Board



**JOSEPH E. ASSAF**  
Hyde Park, Mass.



**WILLIAM R. BERKELEY**  
Redlands, Calif.



**MILTON CANIFF**  
Palm Springs, Calif.



**M. LEE CORDELL**  
Berwyn, Ill.



**S. PARKS DEMING**  
Colorado Springs, Colo.



**\* A. PAUL FONDA**  
Washington, D.C.



**PAUL W. GAILLARD**  
Omaha, Neb.



**JACK T. GILSTRAP**  
Huntsville, Ala.



**MARTIN H. HARRIS**  
Winter Park, Fla.



**\* JOSEPH L. HODGES**  
South Boston, Va.



**SAM E. KEITH, JR.**  
Fort Worth, Tex.

AFA's Board of Directors consists of a Chairman and eighteen elected members; the Board also includes the officers of the Association and all Past Presidents and elected Chairmen of the Board of Directors, retired Chiefs of Staff of the United States Air Force, and those elected as a National Director, a Vice President, or as National Secretary or Treasurer for an aggregate period of ten years, who are permanent members (indicated by an asterisk). The National Chaplain and the National Commander of the Arnold Air Society are ex-officio (non-voting) members of the Board of Directors. Photos of current national officers may be found on page 49.

Photos of all of AFA's Past Presidents and Board Chairmen appear on pages 50 and 51.

The balance of the Board membership is shown on these two pages. ■



# of Directors



**REV. ROBERT D. COWARD**  
(ex-officio)  
National Chaplain  
Orlando, Fla.



**PHILLIP ROBINSON**  
(ex-officio)  
National Commander,  
Arnold Air Society  
Seattle, Wash.



**MAXWELL A. KRIENDLER**  
New York, N.Y.



**ROBERT LAWSON**  
Los Angeles, Calif.



**\* CURTIS E. LeMAY**  
Newport Beach, Calif.



**\* CARL J. LONG**  
Pittsburgh, Pa.



**\* J. P. McCONNELL**  
Washington, D.C.



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Boise, Idaho



**MARTIN M. OSTROW**  
Beverly Hills, Calif.



**DICK PALEN**  
Edina, Minn.



**JOE L. SHOSID**  
Fort Worth, Tex.



**\* WILLIAM W. SPRUANCE**  
Wilmington, Del.



**HUGH W. STEWART**  
Tucson, Ariz.



**\* ARTHUR C. STORZ**  
Omaha, Neb.



**\* NATHAN F. TWINING**  
Hilton Head Island, S.C.



**JACK WITHERS**  
Dayton, Ohio



**JAMES W. WRIGHT**  
Williamsville, N.Y.



# AFA's 25th Anniversary

"POWER FOR PEACE"

*Dating from 1952, when the war in Korea jolted the US into realization that a continuing national effort would be required to contain communism and ensure security for the free world, the Industrial Associate Program has acted as catalyst and clearinghouse.*

## **AFA's Industrial Associate Program**



*AFA's Aerospace Luncheon, held in 1964, filled the huge ballroom of Washington, D.C.'s Sheraton-Park Hotel with Industrial Associates and guests. Gen. Curtis E. LeMay, then USAF*

*Chief of Staff, was the principal speaker. Behind the head table are arrayed the awards presented that day to various Air Force officers and units honored for distinguished exploits and service.*



Two hundred US business firms, most of them developers and manufacturers of equipment used by the Air Force, are currently affiliated as the Industrial Associates of the Air Force Association.

To the Industrial Associates, whose active interest in AFA dates back to 1952, when the war in Korea was a national and industry responsibility, AFA serves as a catalyst. It provides platforms, information service, and meeting grounds where issues, trends, and problems of aerospace power are discussed at a sophisticated level.

The date, 1952, is significant. Both the leaders of AFA and the executives of the companies that made up an industry then confined to aircraft and related weaponry had been through World War II. They had looked on in awe and distress as demobilization followed that conflict, then struggled to meet the challenge with people, talent, and hardware when the Communists opened a new front against South Korea. It was in the early 1950s, as the history books will show, that reliance on the military-industry team became a necessity of national security. The military-industrial force in being, we learned in those days, is a basic requirement for the national welfare.

AFA itself, with its declared determination to "assist in obtaining and maintaining adequate airpower for national security and world peace," always has been outspoken in defense of this concept. Challenged in 1959 by a congressional committee examining the USAF-industry team concept, the organization went on record as favoring a strengthening of the partnership.

"We have seen the arsenal concept become as outmoded as trench warfare," Peter Schenk, then AFA President, testified. He went on to point out that, in today's technological race, it frequently is the industry contribution that is a key factor in determining what can be done and how it can be done.

The 1959 testimony was based on AFA's experience with the first seven years of the IA program. In the first four years alone, a dozen AFA Airpower Conferences had been held in Washington, Detroit, Omaha, San Francisco, Colorado Springs, and New Orleans. In those

*Congressional interest in AFA's Aerospace Briefings is evident every year. Here, the late Congressman L. Mendel Rivers asks some questions about Martin Company exhibit. He was Chairman of the House Armed Services Committee and was accompanied to the meeting by John Blandford, the committee's chief counsel.*



cities, the top industry and USAF experts, plus academicians, scientists, and political leaders, had threshed out such topics as manpower, strategy, logistics, air defense, research and development, the coming jet age, guided missiles (then largely a mystery to the lay public and press), and industry problems.

As recently as 1965, five technical seminars were held on "The Coming Revolution in Aeronautics." The meetings were held in Garden City, N.Y., Los Angeles, San Francisco, Chicago, and Dallas. It was five years later that Congress and the public caught up with such issues as the supersonic transport, the revolution in propulsion and materials, and the impact of aerospace technology on our way of life. These subjects had all been explored in depth at the industry meetings sponsored by AFA for its Industrial Associates. The transcripts of those meetings have provided a wealth of material for the debates that emerged with such vehemence in 1970.

Since 1965, an annual IA event has been the Aerospace Development Briefings, held in Washington in mid-September of each year. In these, industry not only displays its

new products and concepts, but individual companies brief groups of visitors on an organized basis. The 1970 briefings, held in conjunction with AFA's National Convention, were attended by more than 3,000 persons. They came from USAF commands—in the US and abroad—and other interested agencies, including the Atomic Energy Commission, the Department of Commerce, the Joint Chiefs of Staff, NASA, the National Science Foundation, the Army and Navy, State Department, FAA, Office of Education, and Library of Congress.

At such meetings, and at occasional gatherings held in other cities, IA members get frequent opportunities to meet USAF and other government officials to discuss current problems. Also, at the annual AFA Convention, IA chief executives attend as special guests.

From AFA's home office in Washington, IA companies are provided with current organization charts of the major Air Force commands and the Defense Department, NASA, Army, and Navy. These identify key personnel and provide each man's correct title, address, and telephone number.

*(See next page for roster of companies)*





At the 1966 Fall Meeting of AFA's Industrial Associates, more than 4,000 government officials, military officers, educators, and industry executives took part in the Aerospace Development Briefings. Here, United Aircraft Corp. tells about Titan III.

On an irregular basis, with publication depending on the availability and urgency of new information, AFA publishes its "Industrial Service Reports." These are designed to keep IA members informed about current topics of interest in USAF and the Defense Department, with frequent looks in recent years at developments on Capitol Hill. Special events, military budgets, and congressional reports are made available, often within twenty-four hours of their release. AFA also provides a "Guide to Air Force Bases"—an annual listing of all locations and the major USAF units based at each one. It has been a favorite with the industry for many years.

Additional service for IA mem-

## ROLL OF AFA INDUSTRY

### A

Abex Corp.  
Aero Corp.  
Aerodex, Inc.  
Aerojet-General Corp.  
Aeronca, Inc.  
Aerospace Corp.  
AIL, Div. of Cutler-Hammer  
Airmotive Engineering Corp.  
Allegheny Ludlum Steel Corp.  
AMBAC Industries, Inc.  
American Telephone & Telegraph Co.  
AT&T, Long Lines Dept.  
AMF Inc.  
Atlantic Research Corp.  
Avco Corp.

### B

Battelle Memorial Institute  
Bechtel Corp.  
Beech Aircraft Corp.  
Bell Aerospace Co.  
Bell Helicopter Co.  
Bendix Corp.  
Benham-Blair & Affiliates  
Boeing Co., The  
Brush Beryllium Co., The  
Bunker-Ramo Corp., The  
Burroughs Corp.

### C

CAI, A Div. of Bourns, Inc.  
Canadian Marconi Co.  
Carborundum Co., The  
Cessna Aircraft Co.  
Chromalloy American Corp.  
Clevite Corp.  
Climax Molybdenum Co.  
Coca-Cola Co., The  
Collins Radio Co.  
Colt Industries, Inc.

Conrac Corp.  
Control Data Corp.  
Cresci Aviation Equipment Co.  
Curtiss-Wright Corp.

### D

Dalmo Victor Co.  
Day & Zimmermann, Inc.  
DECCA Navigator System, Inc.  
de Havilland Aircraft of Canada Ltd.  
E.I. du Pont de Nemours & Co., Inc.  
Dynalectron Corp.

### E

Eastman Kodak Co.  
Electronic Communications, Inc.  
Emerson Electric Co.

### F

Fairchild Hiller Corp.  
Federal Electric Corp.  
Firestone Tire & Rubber Co.  
Ford Motor Co.  
Fortune Magazine

### G

GAF Corp.  
Garrett Corp., The  
General Dynamics Corp.  
General Dynamics/Convair  
General Dynamics/Fort Worth  
General Electric Co.  
Aircraft Engine Group  
Aircraft Equipment & Electronic  
Systems Div.  
Defense Programs Div.  
Re-Entry & Environmental Systems  
& Space Divs.  
General Motors Corp.  
Allison Div.

Delco Products Div.  
Harrison Radiator Div.  
Packard Electric Div.  
General Time Corp.  
Goodyear Aerospace Corp.  
Goodyear Tire & Rubber Co., The  
Grimes Manufacturing Co.  
Grumman Corp.

### H

Hayes International Corp.  
Hazeltine Corp.  
Hoffman Electronics Corp.  
Hi-Shear Corp.  
Ordnance Div.  
Honeywell, Inc.  
Howell Instruments, Inc.  
HRB-Singer, Inc.  
Hudson Tool & Die Co., Inc.  
Hughes Aircraft Co.  
Hughes Tool Co., Aircraft Div.  
Hycon Co.  
Hydro-Aire Div., Crane Co.

### I

IBM Corp.  
International Harvester Co.  
ITT Aerospace Controls Group  
ITT Aerospace, Tubes, and  
Electro-Optical Operations  
ITT Arctic Services, Inc.  
ITT Defense Communications Div.  
ITT Defense Space Group  
Interstate Electronics Corp.  
Itek Corp.

### K

Kaiser Aerospace & Electronics Corp.  
Kaman Aerospace Corp.  
Kelsey-Hayes Co.  
Kollsman Instrument Corp.



bers includes a standing invitation to call on AFA or information. The staff, over the years, has acquired a vast stock of knowledge about USAF and other government agencies, their personnel and activity. Industry executives take advantage of this when the answer to a question will save time, money, and effort.

AFA's Industrial Associate program studiously avoids regular time-consuming weekly or monthly luncheon meetings. Events and publications are restricted to matters of currency and of importance to industry executives.

Industrial Associate companies have no voting power in AFA and are not represented on the AFA Board of Directors. ■



The 1966 meeting was opened in the exhibit hall by Hubert H. Humphrey, then Vice President of the United States. He is flanked by Gen. J. P. McConnell, USAF Chief of Staff and Dr. Harold Brown, AF Secretary (back to camera), and other top US officials.

## L ASSOCIATES

### L

Lear Siegler, Inc.  
Leigh Instruments Ltd.  
Libbey-Owens-Ford Co.  
LTV Aerospace Corp.  
LTV Electrosystems, Inc.  
Litton Industries Inc.  
Litton Guidance & Control Systems Div.  
Lockheed Aircraft Corp.  
Lockheed Aircraft Service Co.  
Lockheed-California Co.  
Lockheed Electronics Co.  
Lockheed-Georgia Co.  
Lockheed Missiles & Space Co.  
Lockheed Propulsion Co.  
Loral Electronic Systems, a Div. of Loral Corp.

### M

Marquardt Corp., The  
Martin Marietta Corp.  
Denver Div.  
Orlando Div.  
McDonnell Douglas Corp.  
O. Miller Associates  
Mitre Corp., The  
Motorola, Inc.

### N

National Cash Register Co., The  
North American Rockwell Corp.  
Autonetics Div.  
Los Angeles Div.  
Northrop Corp.  
Northrop Electronics  
Northrop Norair  
Northrop Ventura

### O

OEA, Inc.

Owens-Corning Fiberglas Corp.

### P

Pacific Corp., The  
Page Communications Engineers, Inc.  
Pan American World Airways, Inc.  
Philco-Ford Corp.  
Aeronutronic Div.  
Pneumo Dynamics Corp.  
Products Research & Chemical Corp.

### R

Radiation, Inc.  
Rand Corp.  
Raytheon Co.  
RCA Corp.  
Rohr Corp.

### S

Sanders Associates, Inc.  
Scans Associates, Inc.  
Scott Aviation  
Singer-General Precision, Inc.  
Solar Div., A Div. of International Harvester Co.  
Space Corp.  
Sperry Gyroscope Div.,  
Sperry Rand Corp.  
Standard Mfg. Co., Inc.  
Stresskin Products Co.  
Sundstrand Aviation, A Div. of Sundstrand Corp.  
Sverdrup & Parcel & Associates, Inc.  
Sylvania Electric Products, Inc.  
Symbolic Displays, Inc.  
System Development Corp.

### T

Talley Industries, Inc.

Teledyne, Inc.  
Teledyne CAE  
Teledyne Continental Motors  
Teledyne Ryan Aeronautical  
Texas Instruments Inc.  
Thiokol Chemical Corp.  
Thompson Aircraft Tire Corp.  
TRACOR, Inc.  
TRW, Inc.  
Tyler Corp.

### U

Union Carbide Corp.  
UNIROYAL, Inc.  
United Aircraft Corp.  
Hamilton Standard Div.  
Norden Div.  
Pratt & Whitney Aircraft Div.  
Sikorsky Aircraft Div.  
United Aircraft Research Laboratories  
United Technology Center  
UNIVAC Federal Systems Div.,  
A Div. of Sperry Rand Corp.

### V

Vapor Corp.  
Vickers Aerospace Div.,  
A Div. of Sperry Rand Corp.  
Vitro Corp. of America

### W

Western Air Lines, Inc.  
Western Electric Co., Inc.  
Western Gear Corp.  
Western Union Telegraph Co., The  
Westinghouse Electric Corp.  
Aerospace Div.  
Electronics Systems Support Div.  
World Airways, Inc.  
Wyman-Gordon Co.



# AFA's 25th Anniversary

## "POWER FOR PEACE"

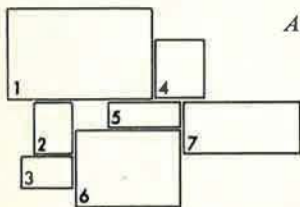
We sifted through our photo files for high moments during the first quarter century of AFA's history. We hope you were there when they happened—and even more important—that you'll be there in the time to come . . .

# WERE YOU THERE?

*The shots in this mini-album, culled from AFA's photo files, represent but a few of the thousands of memories carried around in the minds of those who through the years have stood up for aerospace power as members of the Air Force Association.*

*In a real sense, the most important photos are not on these pages—or even in the files—because they don't exist. They are the pictures that never got taken, especially the record of members working tirelessly to keep the AFA program going during the years when the rest of the country seemed*

1. The styles are different but enthusiasm is evident at 1949 Convention, Chicago.
2. Newsman Ed Murrow wins AFA Arts and Letters trophy at Detroit in 1952.
3. Sen. and Mrs. Barry Goldwater, USAF Chief of Staff Gen. Nathan F. Twining, AFA's John Henebry at 1957 Washington, D.C., Jet Age Conference.
4. Leaders Gill Robb Wilson and Jimmy Doolittle at the 1954 AFA Omaha Convention.
5. Fantastic air show at Andrews AFB, Md., held in conjunction with 1957 USAF Golden Anniversary Convention in Washington.
6. Philadelphia, 1961, AFA's 15th anniversary year.
7. Mrs. "Hap" Arnold beams in 1957 at airmen in USAF uniforms of various eras.









# AFA's 25th Anniversary

## "POWER FOR PEACE"

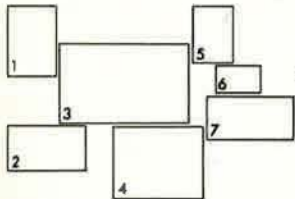
hell-bent on disassembling most of the military strength that made possible the triumph of the free world over the forces of barbarism in World War II.

There ought to be pictures, too, but there aren't—because the people involved were too busy working at what they were doing—of the quiet efforts by AFA members to ease the burdens of Air Force active-duty people who needed decent pay and housing.

Also, there's no real record on film of what AFA people everywhere have been trying to do to get America and the world alerted to the tragic issue of the American prisoners in Southeast Asia. Again, people have been too busy doing things to worry about getting their pictures taken on the job, whether it's writing letters to congressmen and embassies and the media, organizing meetings, or visiting with military families.

Even in a media-ridden world, the most important things don't get photographed. How can you really get a picture of how people feel? Or how dedicated they are to a set of ideals? Or how hard they've worked? Or how they feel about the people they've worked with through twenty-five momentous years? The camera only records the public image. ■

1. Riding the cable cars between sessions at 1960 San Francisco Convention.
2. Vince Barnett and Joe E. Brown gag it up at Miami Beach AFA meet, 1959.
3. Getting the aerospace story to the public—a press briefing in Philadelphia, 1961.
4. Gen. Bennie Foulois gets standing ovation at 1964 Outstanding Airmen banquet.
5. Gen. "Tooe" Spaatz, wearing boots and tuxedo, doesn't let blizzard keep him from AFA's 15th anniversary dinner in Washington in 1961 (the photo made the national wires).
6. Air Force Secretary Eugene Zuckert, AFA's Joe Foss, Bob Hope enjoying the 1962 Las Vegas AFA Convention.
7. The international flavor at 1966 Washington Aerospace Education Foundation Conference.



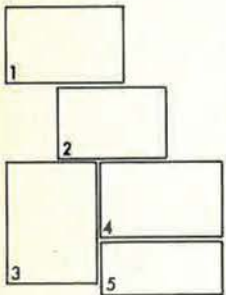






# AFA's 25th Anniversary

"POWER FOR PEACE"



1. Vice President Hubert Humphrey views aerospace displays at 1966 Washington Fall Meeting. 2. General LeMay meets the press at 1967 AFA San Francisco Convention. 3. Conferees at AFA 1969 Houston Convention pay tribute to USAF war dead. 4. Opening color guard ceremonies at the 1970 AFA Washington Convention. 5. Top honors for the Apollo-11 team at the 1970 Convention: Left to right, AFA's George Hardy; J. L. Atwood, former president of North American Rockwell; Lt. Gen. Sam Phillips, former Apollo Program Director; and Astronauts Col. Michael Collins and Col. Edwin Aldrin, representing flight crew.





## EDUCATION: AFA's Basic and Continuing Mission

By James McDonnell

Through the years, AFA has served as an important catalyst across the country in the vital process of educating society in all its aspects for meaningful participation in a complex technological era. The AFA effort has run the gamut from aerospace to educational research and development. And its efforts have paid off handsome dividends to the nation . . .

Education is the cornerstone of the Air Force Association. Indeed, AFA's national constitution sets forth as a basic objective that members "educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind."

"Adequate aerospace power" means far more than planes and missiles and the men who operate them. It covers a wide range of issues and activities that go deep into the heart of the American community. It means, within the US Air Force, a vast educational and training establishment; and, on the outside, civilian school systems updated on the dynamics of science and technology in a democratic society.

These two great segments of American education—the civilian public school system and the military training establishment—have existed, side by side, over the years, essentially as two different worlds.

How best, in the national interest, to bring these two worlds together?

To this challenging issue the Air Force Association long has addressed itself in many ways, and primarily through its affiliate, the Aerospace Education Foundation.

Actually, the Association's educational efforts started at the community level in the early years as AFA chapters took on sponsorship of educational projects in one form or another. Today, education is a top-priority subject on the long list of voluntary chapter activities.

### AFA and Education in the 1950s

As an organized effort within the AFA structure, the Association's education program began taking root early in the 1950s.

Students and educators from college



Through the years, AFA has strongly supported the ROTC concept and is a sponsor of the Arnold Air Society. Above, Arnold Air Society's 1970 Conclave.

campuses took the initiative—Air Force ROTC cadets seeking organized support for their efforts, professors and deans seeking more information for their classrooms.

The ROTC cadets, at the time, were organized into three extracurricular professional societies, and this split in the ranks was becoming counterproductive. Both student leaders and the Air Force saw the need for closing ranks, and saw the Air Force Association as the logical middleman and sponsor. With AFA's help, the three cadet groups merged into one national organization—the Arnold Air Society, now 5,500 strong on 158 campuses, and now supported by more than 5,000 young women in Angel Flights on 133 cam-



pus. Most of the young men in Arnold Air Society and many of the Angels are Cadet Members of the Air Force Association. AFA provides logistic support at its national headquarters to maintain Arnold Air's staff secretariat, and provides financial support for the Society's annual National Conclave.

Air Force ROTC has top priority in the AFA education program, now administered through the Aerospace Education Foundation.

As for the educators, it's important to explain, in brief, what drew them to the Air Force Association. Dr. Leon M. Lessinger of Georgia State University, while serving as Associate Commissioner, US Office of Education, put it this way:

"People who work in the aerospace world are on the frontiers of technological advance. They think in terms of total objectives. They have pioneered the systems approach in getting big jobs accomplished. They are realistic about the present, but they think in futures. Research and development is not a fringe benefit for them, but a basic ingredient in their work. Change is not an emergency measure, but a way of life.

"So it wasn't surprising that a decade or so ago educators began seeking out the leading aerospace organization in the country—the Air Force Association—as a way for them to get closer to the trends in our modern age.

"Technological revolution was all around the educators, but it had not yet entered their classrooms. It isn't surprising that the Air Force Association, in response, formed the Aerospace Education Foundation. . . ."

As college students from ROTC and educators from all walks of campus life became acquainted with the Air Force Association, through meetings and seminars, the US Air

Force always remained on center stage. AFA regularly brought Arnold Air Society delegations to Washington for discussions with Air Force leaders. Student suggestions at one such meeting led to a complete revision of textbooks in the then emerging Air Force ROTC program. The educators expanded an informal committee into a full-fledged Council as they met, under AFA sponsorship, at Air Force centers of advanced technological development. And in the process, hundreds of educators—many of them exposed to military life for the first time—gained a new and positive perspective about the US Air Force.

### The Air Force's Manpower Crisis

Meanwhile, in 1954, the Air Force faced a new manpower crisis, and sought AFA's support in seeking solutions.

The end of the Korean War and the subsequent scale-down in military staffing had caused the Air Force to experience a decidedly uneven personnel profile. In many instances, in critical career fields, the Air Force was losing experienced men faster than replacements could be recruited and trained.

AFA, tackling this task head-on, sponsored an Air Force Manpower Conference in Washington, D.C. Contacts were made with leading educators around the country. All elements of the Association contributed. And, as a corollary, in the process of stimulating national interest in the Air Force's manpower problems, AFA became more aware of the problems that plagued the nation's civilian school systems.

Against this background of interest and action on the part of the Air Force and AFA's own membership, plus students, teachers, and administrators, the Air Force Association, on



*Arnold Air Society AFROTC cadets and their coed auxiliary organization, "The Angel Flight," also sponsored by the Air Force Association, examine aerospace hardware at their 1970 meeting. Both Arnold Air and Angel Flight are viewed by AFA as major investments in youth development.*



May 1, 1956, formally established an educational affiliate, first known as the Air Force Association Foundation. The late Gill Robb Wilson was the first Chairman of the Foundation's Board of Trustees, a group purposely comprised of both AFA Board Members and non-AFA members from the fields of education, business, science, and industry.

The Foundation early set forth, as an article of faith, the proposition that only through "scientific literacy" could citizens act and vote intelligently on the many complex issues that modern technology thrust upon them, including aerospace power. From the beginning, the Foundation recognized that the answers to this important problem would have to center in the nation's educational capabilities. Here, a huge gap, almost a vacuum, came into focus.

In sharp contrast to an aerospace community where research and "futures" were taken for granted, the Foundation discovered that less than one percent of the nation's total educational expenditures was being invested in research and development.

Thus, the Foundation undertook to help strengthen the emphasis on educational R&D. This effort, in relation to AFA's mission, was explained in a Foundation statement published by Ohio State University's Bureau of Educational Research and Service. The article stated:

In this vast and complex struggle for freedom with communism we cannot afford second-best on the research and development front. . . . We need a steady stream of new basic knowledge—available only through research. . . .

Certain areas permit no compromise with first place—if we are to preserve freedom over the long pull. Basic research is one of these areas. The school system is another. And they go hand in hand. . . .

Our schools . . . demand aggressive research and development—in quantity—as do no other American institutions, because the end product is fundamental to all our institutions.

Then, as the Congress engaged in a lengthy study of educational research, the Aerospace Education Foundation was invited to testify before various committees (on seven separate occasions). It was the only group so honored that was not a professional education society.

### Tours and Seminars

Meanwhile, acting on the premise that the Air Force represented a rich but untapped resource of educational experience that deserved sharing with the civilian community, the Foundation arranged tours for educators to visit Air Force training facilities and observe their operations.

Campus conferences, called "Space Age Seminars" and including teachers' workshops, were conducted at numerous locations through-

*A pioneer in aviation and air-age education, the late Gill Robb Wilson was the first chairman of the Air Force Association Foundation, the original educational affiliate of the Air Force Association and the progenitor of today's high-impact Aerospace Education Foundation.*



out the United States, in cooperation with state departments of education.

Particularly significant were the annual (through 1967) National Aerospace Education Seminars in Washington. Here, educators and industry representatives could meet to view a broad array of the latest in aerospace technology.

Through these projects, close liaison was established with local, state, and private education officials. Many AFA Chapters, and some Arnold Air Society units, cooperated in this endeavor. And a close relationship between the Foundation and the US Office of Education evolved.

In 1964, for example, more than 400 teachers and administrators from seventy-one countries participated in a Washington, D.C., conference sponsored by the Foundation in cooperation with the US Office of Education.

Also in 1964, the Foundation sponsored a National Youth Flight Seminar in cooperation with the National Association of State Aviation Officials, again in Washington, D.C. Seminar delegates included two high-school class presidents from each state, selected by state aviation leaders, who received briefings on the aeronautical revolution and other aerospace subjects, as preparation for talks they later gave in their home states.

In 1967, a Foundation seminar in Washington featured a battery of nationally known educational research and development leaders described by a government education leader as a collection of "more intellectual power than has ever before been mobilized for an exercise of this kind." A book entitled *Technology and Innovation in Education*, based on this seminar, was published by Praeger Publishers as part of their Special Studies program.

In 1968, the Foundation broke new ground with a three-day event attracting 1,600 people from all fifty states—the first National Laboratory for the Advancement of Education. It represented a new medium of communications



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wheeled, hulled or tracked. ■ ITCS has the capability required to include a vector miss distance scoring system. It can be used as a lightweight, low-cost, bomb scoring or radar bombing system. ■ ITCS is comprised of a family of eight different control stations, each compatible with the single compact vehicle subsystem. ■ ITCS, or a portion of it, may meet your unique range or tactical requirement.

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*Sponsored by the Aerospace Education Foundation in 1970 in Washington, D. C., in cooperation with the US Office of Education, the National Laboratory for the Advancement of Education attracted thousands of participants in all fields of education and business. During the meeting, they viewed (above left) Air Force advanced technology, saw live demonstrations of exciting new classroom instructional techniques and devices (above right), and "rapped" (lower left) on relevant educational questions ranging from teacher accountability to computer-assisted instruction.*

for the creative development and application of innovative educational techniques.

In 1970, more than 3,000 persons attended the Foundation's second National Laboratory. They came to learn more about "Education for the World of Work."

Of particular interest was a classroom demonstration presented by the US Air Force, featuring its driver safety education program. This successful concept, aimed at changing the behavior of drivers (and a key factor in the Air Force's decreasing auto accident fatality rate) drew keen attention from the attendees.

The Foundation, also highly impressed by this program, published *The Safe Driving Handbook* (Grosset & Dunlap) based on the Air Force course. It is receiving wide readership throughout the country.

Since 1964, the Foundation has sponsored, at the US Air Force Academy Library, the Theodore von Kármán Memorial Collection, which consists of a bust of Dr. von Kármán, a display of Kármán memorabilia, and a library of scientific books and various periodicals.

Recognition of the annual Best Author among Air Force Civil Engineers, presentation of awards annually at the Air Force Science and Engineering Symposium, support of the National Science Fair (in cooperation with the

Air Force), and other awards programs also are elements of the Foundation program.

### The Utah Project

But the major effort of the Foundation in the last few years has been the pioneering program to adapt Air Force course materials to public school use. It centers in a project funded by the US Office of Education, undertaken at the request of the State of Utah, and initiated by the Utah State AFA organization. The project was prompted by a manpower study by the Air Force, which (at Hill AFB) is the largest employer in the state. In this eighteen-month experiment, Utah teachers selected portions of three basic Air Force courses for implementation: Electronics Principles, Aircraft Pneudratics, and Medical Laboratory Technician (nurse's aide).

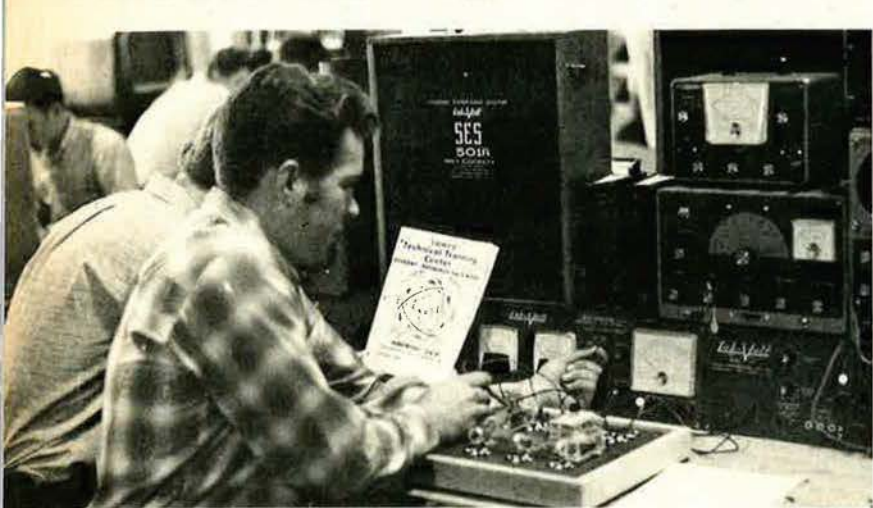
The program included extensive use of motion pictures, slides, books, programmed texts, survey materials, and teacher training aids—all developed and made available at cost by the Air Force. Evaluation of the project was conducted by an independent contractor.

These evaluation tests showed that the students taking the Air Force courses scored higher in both post tests and retention tests than those who were taught the standard way.





*The Aerospace Education Foundation has served as an important medium for the adaptation of Air Force-developed education and training techniques for use in the civilian schools. A prime program has been the successful utilization of Air Force courses in the Utah school system. These Utah youngsters are using USAF-developed electronics instructional materials.*



Both students and teachers preferred the Air Force courses. The final report sent to the US Office of Education summed up: "Use of Air Force techniques and materials resulted in student performance as good or better, in each instance, than student performance resulting from the use of conventional techniques and materials. . . ."

And perhaps more importantly, the savings in time were impressive. For example, in utilizing the Air Force concepts, techniques, and course materials, nurse's aide training was accomplished in about half the time required by the conventional course. (Again, a book based on the Utah Project is to be published as a Praeger Special Study.)

The Utah Project represented the first attempt to systematically explore the feasibility of applying military training experience to civilian education. Although bits and pieces of such programs had been tested before, there had never been a full-scale evaluation with supporting action to structure the program and assess the results obtained. This experience has prompted Utah, on its own, to incorporate additional Air Force training materials into its school system, to work more closely with the

user of the school product—industry and Hill Air Force Base—and to emulate the "criterion-referenced systems approach" that the Air Force uses.

Perhaps just as important are the spinoffs emanating from the Utah project. An example is the matter of changing the behavior of teachers toward criterion-referenced instruction. The Foundation is working with the US Office of Education on this problem in an effort to test, again in Utah, the courses the Air Force uses to train its own instructors.

### Inventory of Vocational-Technical Material

The most recent Foundation project, which builds on the successful experience of the Utah Project, is the first inventory ever made of Air Force vocational-technical materials for use by civilian school systems, a project also funded by the US Office of Education. Special attention is being given to Air Force materials in "emerging occupations"; that is, new technical skills required in industry.

Thus, a vast new resource for the nation's schools is emerging from US Air Force experience and under Aerospace Education Foundation sponsorship. And, as this resource takes shape, in the Foundation's fifteenth year, a new dimension is added to "aerospace power," and to the public image of the Air Force. In the face of antimilitary feelings on all sides, the Air Force Association can be proud of its role in this achievement.

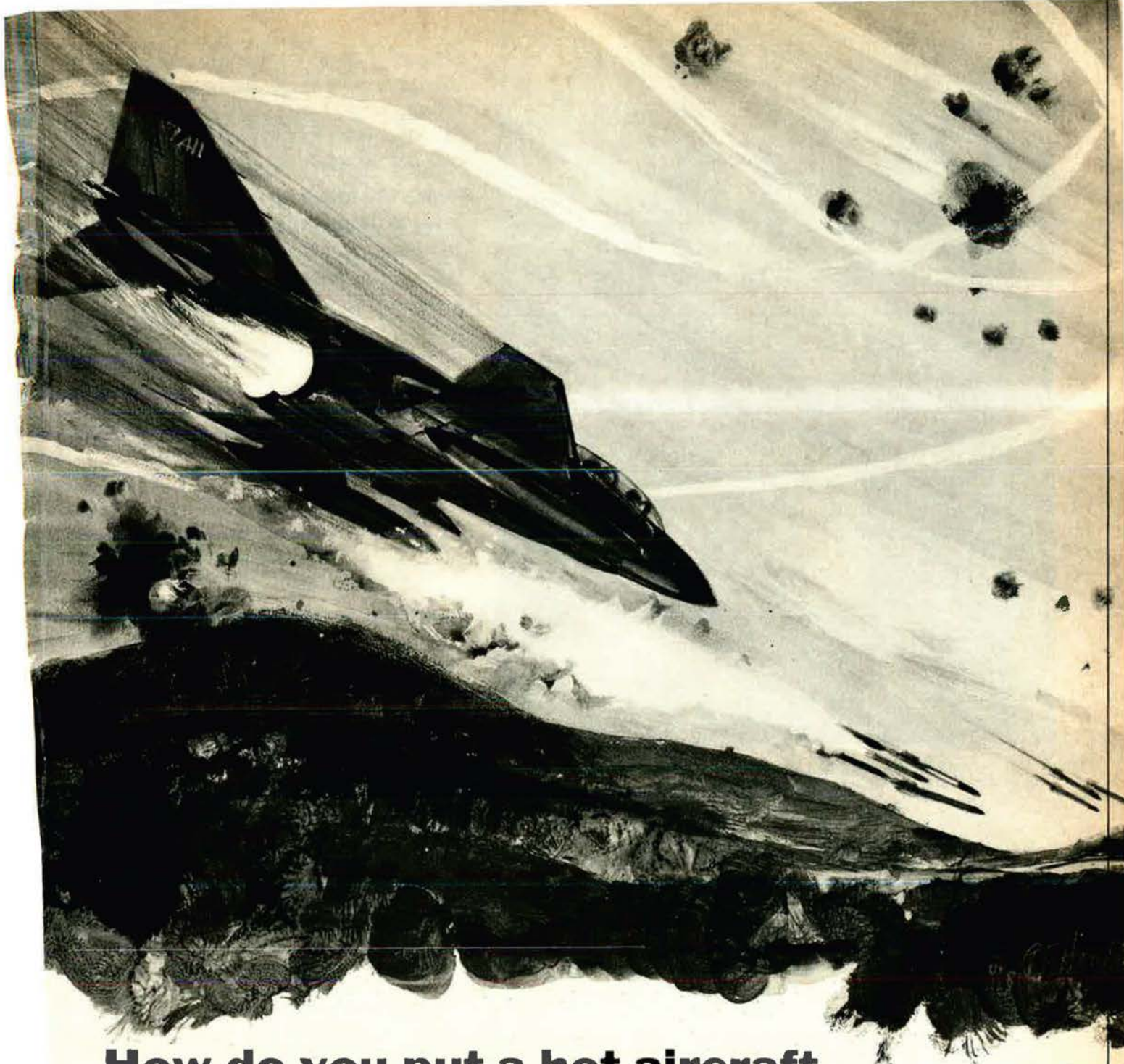
Dr. Leon Lessinger, one of the nation's most distinguished educators, has spoken with emphasis on the thrust of this current effort. He has said ". . . in education, we have to play what football coaches call 'catch-up ball.' This means innovation and new approaches. . . . Here USAF's contributions in developing advanced teaching techniques, including its work in programmed instruction, provides a vast reservoir of experience and validated data.

"A great part of the Aerospace Education Foundation's total effort is devoted to the adaptation and transfer of this educational experience from military to civilian classrooms.

"Sooner or later, and the sooner the better, all elements of society must become not merely supporters of, but active participants in, the educational process. This means, to begin with, a close working relationship between the educational community—especially the student—and industry and the professions, civic leaders and government, local, state, and national.

"The Foundation already has established this working relationship. And the perennial barriers to action in advancing education concepts and practices are, happily, missing in this organization. The Aerospace Education Foundation represents a new avenue toward the total involvement of our society in education. We can all be grateful for this leadership." ■





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*Hiroshima, August 6, 1945; the start of a new era, its strategy dominated by aerospace power.*

On Tinian, 1,500 miles southeast of Japan, it was 2:45 in the morning on August 6, 1945. Three B-29s revved their engines. The *Enola Gay*, Col. Paul Tibbets at the controls, started to roll down the center runway, finally gained flying speed, and lifted off just at the end of the concrete. In the darkness, the two companion B-29s, for observation, lumbered off after the *Enola Gay*, and all three winged northward.

William L. Laurence, in *Dawn Over Zero*, later wrote that, at 9:15 a.m., "Hiroshima stood out under the clear blue sky. One-tenth of a millionth of a second later, a time imperceptible by any clock, it had been swallowed by a cloud of swirling fire as though it had never existed. The best watches made by man still registered 9:15."

It was, of course, an end and a beginning. On August 9, a second atomic bomb was dropped, on Nagasaki, and on August 15 the Japanese Emperor announced to his nation that the war was over. On September 2, 1945, the surrender document was signed on board the *USS Missouri* in Tokyo Bay, formally ending the most destructive war ever waged. But over the next eighteen months a new and different

The Air Force Association came into being largely in response to the vastly changed and potentially threatening environment of the early postwar period. A quarter century has elapsed since the founding of AFA. World events have confirmed the wisdom of air leaders and the founders of AFA who, with remarkable clarity, saw the shape of the future mirrored in . . .

## The Strategic World of 1946

kind of war emerged. It came to be known as the cold war, and it overturned the very premises on which the United States had fought World War II and planned for its peaceful aftermath. Indeed, before the end of the war, when men were just beginning to frame its lessons, the realization began to dawn that hopes long held were about to be smashed.

### Fading Hopes, Dawning Realities

President Franklin Roosevelt had not thought in terms of a postwar balance of power to protect the United States. Rather, he looked forward to mutual goodwill between Russia and America—an "era of good feeling." The utopian nature of this kind of thinking was characteristic of the traditional American philosophy, which held that war was an exception, an interruption to the normal state of relations between nations. Once the war was over, harmony would be restored and the struggle for power ended. This attitude contained that special American amalgam of naïve optimism and the penchant for believing that if we didn't think about unpleasant problems, they were likely to evaporate.

The Soviets harbored no such illusions about the power character of conflicting national aims or about the basic nature of man. During the Second World War, the Russians, in fact, had suspected the US and Britain of devious and even hostile intentions, especially with regard to the delay in opening the second front in the West. From the Soviet viewpoint, the Allies were doing exactly what they would be expected



## By Herman S. Wolk

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*... the best way to win a war is to prevent it from occurring. ... The prevention of war must be the ultimate end to which our best efforts are devoted. It has been suggested, and wisely so, that this objective is well served by insuring the strength and the security of the United States. ... Prevention of war will not be furthered by neglect of strength or lack of foresight or alertness on our part.*

—U.S. Strategic Bombing Survey, July 1946

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to do—delaying the second front while Russia and Germany exhausted each other.

Then, in February 1945, at Yalta, Stalin had made—and received—some concessions on United Nations membership, had agreed to zones of occupation in Germany, and had promised to support self-government and allow free elections in eastern Europe. The victors in the war would cooperate. At the close of the Yalta conference, the Americans felt that they had done as well as they could. Harry Hopkins, the President's closest adviser, recounted:

We really believed in our hearts that this was the dawn of the new day we had all been praying for and talking about for so many years. We were absolutely certain that we had won the first great victory of the peace—and, by "we," I mean *all* of us, the whole civilized human race. The Russians had proved that they could be reasonable and far-seeing, and there wasn't any doubt in the minds of the President or any of us that we could live with them and get along with them peacefully for as far into the future as any of us could imagine.

In late June 1945, the Charter of the United Nations had been signed at San Francisco. The ink was hardly dry when the chasm between hope and reality was rudely demonstrated. Even as the final drama of the second Great War of the century was played out, it became clear that the concept of free elections and democratic governments meant something quite different to the Russians. In Poland, Hungary, Bulgaria, Romania, and Albania,

"free elections" meant that parties not in sympathy with the Communists were barred, and "democratic governments," quite simply, meant Communist regimes. Eastern and central Europe were going under Communist control. On August 16, 1945, Churchill—who had lost an election and been replaced as Prime Minister by Clement Attlee during the last days of the Potsdam conference—warned that a great tragedy was unfolding in eastern Europe.

This was not all. The Soviets had always coveted the Middle East, and on January 19, 1946—nine days after the first meeting of the UN General Assembly in New York—Iran charged the USSR with attempting to overthrow her government. The fact of the matter was that the Soviets had refused to withdraw their troops from Iran and were in the process of trying to reduce that country to the status of a Soviet satellite.

### The US Disarms

Thus, the US Army Air Forces came out of the Second World War facing a dynamic situation—a confluence of historical forces, as we have seen, going in opposite directions at the same time. On the one hand, the military was facing a massive postwar demobilization and, on the other, cold-war challenges were heating up rapidly. The AAF had played a major part in the victory over the Axis powers. Buffeted in the early part of the war in Europe, it had, as Gen. Carl "Tooey" Spaatz put it, worked things out "by experiment in the grim practice of war." After very tough going in 1942–1943, the Army air arm had come on strong after being buttressed by long-range P-51 Mustang escort fighters, had carried the fight to the enemy, driven him from the skies, and brought his war effort to the point of collapse.

In the Pacific the results were, if anything, even more striking. The bombing of Japan was more concentrated and the destruction comparatively greater, considering it occurred over a shorter period. Although dropping the atomic bombs unquestionably played a major part in the Japanese decision to surrender, the fact remains that Japan had begun peace initiatives to the Soviet government before Hiroshima. The American strategic bombardment campaign against Japan in the summer of 1945 was a model of bold execution, and there is no question but that it shortened the Pacific War and made an invasion of the Japanese home islands unnecessary.

Thus, as part of the demobilization, the Army Air Forces were in the process of being dismantled. The great majority of the military were returning to civilian life, and by early



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1946, the AAF had suffered a tremendous loss, not only in men but in combat effectiveness. There were few combat-ready units left. Despite the fact that it was being torn apart, the Army air arm had reorganized its forces. General Spaatz had succeeded Gen. H. H. "Hap" Arnold as Commanding General, AAF, on February 15, 1946 (Spaatz had commanded a combat aerial unit in the First World War), and on March 21, 1946, the Strategic, Tactical, and Air Defense Commands were created.

### Lessons of the Air War

The men who came out of the war to build the foundation for the postwar air arm lived at an historic crossroads of great moment, a point in time when one kind of world vanished and another took its place. Generals Arnold and Spaatz believed the war had proved them correct. At the same time (and to this day) a case was made to the contrary. Some argued that the reckoning fell somewhere in between. At any rate, the air leaders felt that their understanding of what was now required to keep the peace was based firmly on the lessons of the Great War just ended. "What we shall lose in size as a peacetime air force," said General Arnold, "we must compensate for in the lessons we have learned in two world wars."

What were these lessons, as the air leaders understood them? Primarily, they were three in number. First, that a sustained strategic air offensive, successfully directed against the enemy's war-making capacity, could bring his ability to carry on the conflict to the point of collapse. Second, in the atomic age no nation could long survive a sustained air attack. Third, whereas in World War II we had time to come back and ultimately gain victory, an all-out war in the future would probably be decided early. Because of the enormous destructive potential of the atomic bomb, the time required to achieve a strategic decision had been vastly reduced. "A world accustomed to thinking it horrible that wars should last four or five years," wrote strategist and author Bernard Brodie, "is now appalled at the prospect that future wars may last only a few days."

The historic "cushion of time," which the US had always enjoyed, had vanished. No longer would it be possible to mobilize our resources after hostilities began, although this was not recognized at this time by all military or governmental leaders. The era of come-from-behind victories was over. The next game, if all-out, would be won early. The Second World War would not be repeated. The mobilization philosophy, therefore, now had to be relegated to history's dustbin. Forces in being would be absolutely necessary. We needed a capability to *deter* aggression. Arnold, Spaatz, and W. Stuart Symington, Assistant Secretary of War for Air, all felt that the next war would be total



*The leaders through two wars to autonomy: Gen. of the AF Henry H. Arnold, Gen. Carl A. Spaatz, first USAF Chief of Staff, and Gen. Hoyt S. Vandenberg.*

war. "If we can do it to others," declared Symington, "others can do it to us. . . . The surest defense will be our ability to strike back quickly with a counteroffensive. . . ."

Therefore, the postwar air arm had to be the kind that would convince any potential aggressor that he had a great deal more to lose by attacking than he stood to gain. The cutting edge of this force would be strategic air—a force that could react swiftly and against an enemy's homeland. Arnold, Spaatz, and Symington agreed—and the United States Strategic Bombing Survey made the point—that the threat of immediate retaliation offered the best means of deterring an attack. In the postwar period, this would take improved aircraft and also the use of overseas bases. At the close of the war, General Arnold forecast that, as the air arm developed in the postwar period, there would be less need for a large army and navy. He noted that

Air superiority . . . is the first essential for effective offense as well as defense. A modern, autonomous, and thoroughly trained Air Force in being at all times will not alone be sufficient, but without it there can be no national security.

The interesting thing here is that, despite analysis that tended to be vague and sometimes ambiguous, these men came to a conclusion that made sense, to a finding that—even now with hindsight—is easily defensible. Consequently, even though their predictions as to the character and duration of the next war were wide of the mark, they arrived at eminently practical conclusions as to the kind of air force required in the postwar period.

In the face of demobilization, did the air leaders want more men and aircraft? Did they





On March 5, 1946, at Fulton, Mo., Winston S. Churchill, then out of power, warned of the descent of an Iron Curtain dividing Europe.

remain dedicated to their long-held goal of an independent air force? Of course they did. But given the situation at that time and all that had happened since World War I, it would be a disservice to them and to history to conclude that these men were anything less than honest in believing that the nation's security depended to a large degree upon them. One may think them wrong—although now the weight of evidence is on their side—but they were intellectually honest. They harbored no conspiratorial visions. In the years ahead, they would accomplish their objectives fairly in the give and take of democratic politics. Others would have to be convinced, if they were to succeed. Their job became one of persuasion.

In this task, the USSR—by its postwar behavior—was to prove a valuable but unwitting ally. The fact is our airmen would never have succeeded if the nation's citizens and leaders hadn't believed their case to have been reasonable and based on reality. They were men of character, apolitical in temperament, who thought in terms of advancing technology, of what could be done if we put our minds and resources to work. Not given to history or phi-

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*Prior to joining the Office of Air Force History in 1966, Herman Wolk was a historian at Hq. SAC. He is an expert on the military-political aspects of warfare and has been a frequent contributor to this magazine as well as to Military Review, Air University Review, and several other journals. Mr. Wolk holds an M.A. degree in history from American International College, Springfield, Mass.*

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losophy, their minds weren't unduly cluttered with doubts and fears.

### The New World Takes Shape

As we have seen, at almost the same time that the AAF created its postwar organization, the Soviets were menacing Iran, and discordant notes were sounding in Europe. Churchill, now out of power and brooding about the deteriorating situation, had been invited by President Truman to deliver an address at Westminster College in Fulton, Mo. Thus, the old warrior went to Fulton on March 5, 1946, and there delivered his "Iron Curtain" speech. With characteristic eloquence, he said that

from Stettin, in the Baltic, to Trieste, in the Adriatic, an iron curtain has descended across the continent. Behind that line lie all the capitals of the ancient states of Central and Eastern Europe. Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucharest, and Sofia, all these famous cities, and the populations around them lie in what I must call the Soviet sphere, and all are subject in one form or another, not only to Soviet influence, but to a very high and, in many cases, increasing measure of control from Moscow. . . .

Before the iron curtain of which Churchill spoke descended, the United States had been studying (since Hiroshima, really) the compelling question of the international control of atomic energy. Now, on June 14, 1946, a little more than three months after the Fulton speech, Bernard Baruch—America's "elder statesman"—addressed the first session of the newly established United Nations Atomic Energy Commission. Addressing himself to the members of the Commission and "my fellow citizens of the world," Baruch declared that "we are here to make a choice between the quick and the dead." The major ideas embodied in this first postwar disarmament plan that Baruch presented were based on a study conducted by the State Department Committee on Atomic Energy under the chairmanship of Under Secretary of State Dean Acheson, aided by a Board of Consultants under the direction of David Lilienthal.

With the Baruch Plan, the United States proposed the international ownership and control of atomic energy and the surrender of a large measure of national sovereignty to an International Atomic Development Authority. The American proposal rested on two assumptions: (1) that the US atomic monopoly would prove to be fleeting, and (2) that any disarmament agreement must rest on strict verification to ensure compliance. Promises were not good enough.

As expected, the Soviet Union rejected the Baruch Plan, thereby reinforcing the impression its expansionist actions had already created. American counteraction would not be long in



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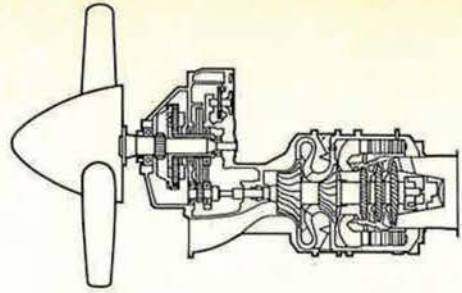
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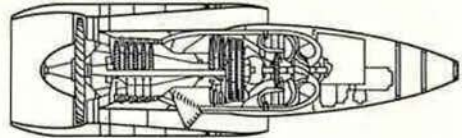
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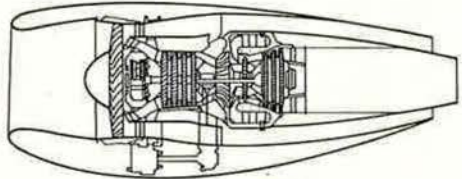
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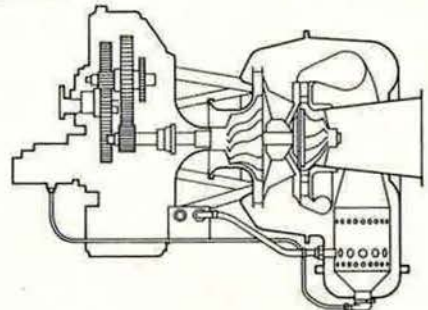
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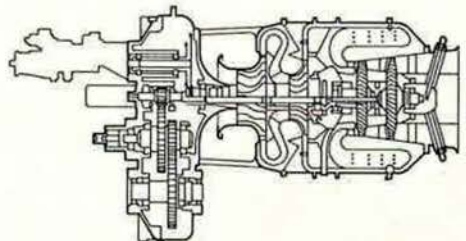
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coming. With its Army of millions now reduced to a few hundred thousand, the American political-military strength would come to rest primarily on the so-called absolute weapon, which was regarded with so much awe and anxiety—the atomic bomb.

In addition to Iran, Turkey also was feeling the pressure, as Moscow—between mid-1945 and August 1946—attempted to gain control of the administration of the Dardanelles Strait. In Greece, too, large-scale guerrilla warfare had broken out in the fall of 1946, with the Communist forces in northern Greece receiving help from Yugoslavia, Albania, and Bulgaria.

Thus, the United States was confronted immediately with a situation of the utmost gravity, since Britain—the traditional protector of this area—was prostrate in the aftermath of the war. Both countries implied that they would defend Iran if necessary, and the Soviets then announced that their troops would withdraw. In the case of Turkey, the US sent a task force into the Mediterranean in August 1946 and rejected the Soviet demand for a share in the Dardanelles. This infusion of American seapower into the eastern Mediterranean set the precedent for the presence of the Sixth Fleet in this area in years to come.

Then, on February 21, 1947, Britain formally informed the US that it could no longer meet its traditional responsibilities in Greece and Turkey. Only the United States could prevent a Soviet breakthrough. Meanwhile, the situation in Greece had turned critical. A collapse there not only would have meant a Communist breakthrough into the eastern Mediterranean, but would also have had a great impact upon western Europe, already demoralized by the war, by grave economic difficulties, and by a general fall from power.

### Isolationism Abandoned

Accordingly, President Truman went before Congress on March 12, 1947, and, in one of the most fateful addresses in American history, outlined what became known as the Truman Doctrine. "Totalitarian regimes imposed on free peoples," Mr. Truman declared, "by direct or indirect aggression, undermine the foundations of international peace and hence the security of the United States." He recommended that Congress approve \$400 million in economic and military aid for Greece and Turkey, and proposed to send American military and civilian personnel to help the two countries in their struggle. Mr. Truman grimly observed that "great responsibilities have been placed upon us by the swift movement of events." The United States had little choice but to grasp the burden of leadership. In one stroke, the US abandoned its policy of isolationism.

While the US moved to save Greece and Turkey, Europe was in a state of economic



President Truman proclaims August 1 "Air Force Day" as AFA's Jimmy Doolittle, Generals Vandenberg and Norstad, and Secretary Symington look on.

collapse. Recognizing that economic chaos would only benefit the Communists, the US, in June 1947, proposed the Marshall Plan to assist all European countries. Based on Secretary of State George Marshall's recommendation to the Europeans that they present to the US a joint recovery plan, the Marshall Plan was also offered to eastern Europe and the USSR, but there was turned down. In fact, Stalin forced Czechoslovakia to reverse its original acceptance of this aid. Although the Marshall Plan called for massive US loans and shipments of goods to get western Europe back on its feet, the ultimate objective was to restore the balance of power on the European continent.

The crisis in Europe and the Mediterranean that resulted in the Truman Doctrine and the Marshall Plan brought about a broader American framework to contain Communist expansion. The idea for the so-called Policy of Containment was originally articulated by the American diplomat George F. Kennan in a memorandum dated February 1946. He later publicly spelled out the basis for containment in an article under the pseudonym "X," in the July 1947 issue of *Foreign Affairs*. Kennan noted that communism taught a perpetual struggle with the non-Communist world in which, under certain circumstances, expansion would be called for. In Europe, therefore, it was now up to the US to stop the tide of Red expansion. Thus, the Policy of Containment outlined the general direction that US foreign policy was to take during the cold-war era.

### USAF: New First Line of Defense

While alarmed at these developments, which indicated that what wartime cooperation there had been was coming unglued, the leaders of the AAF also had to grapple simultaneously



with the debilitating effects of demobilization, and with the long-deferred plans for organizing an independent air arm. The fight for autonomy had been long, difficult, and sometimes acrimonious, spilling over into public argument through the numerous boards and committees that debated the issue in the period between World War I and the Second World War.

Despite the resistance of the Army, Navy, and the War Department over the long years since the end of the First World War, the inexorable development of aircraft, the demonstrated effectiveness of the air weapon, and the insistence and perseverance of the airmen had led to a step-by-step advance toward complete autonomy for the Air Force. The Second World War accelerated this process, and by the close of the war, the argument for independence—for a position coequal with the Army and Navy—could no longer be postponed.

As a result, many hearings were held between 1944 and 1947, and finally, with President Truman's strong support, the National Security Act of 1947 became law on July 26, 1947. It created a National Military Establishment with three coequal branches under the Department of Defense. Thus, the Army Air Forces became the United States Air Force, and on September 18, 1947, W. Stuart Symington took the oath of office as the first Secretary of the Air Force. On September 26, Gen. Carl Spaatz became its first Chief of Staff.

Events of the relatively short period between the end of World War II and the creation of the National Military Establishment ordained no breathing spell for the United States. Pearl Harbor was still fresh in our national consciousness, and the air leaders felt that a future war might well begin without warning. General Arnold recalled that we had not been ready for the Second World War. We won, but at great cost. And, sounding an implied warning, he observed:

. . . at times the margin of winning was narrow. History alone can reveal how many turning points there were, how many times we were near losing, and how our enemies' mistakes often pulled us through. In the flush of victory, some like to forget these unpalatable truths.

Sometimes there is only a fine, almost indistinguishable, line between extinction and survival. The balance between peace and order on one hand and anarchy and destruction on the other is often delicate. And history shows that, in a democracy, the people will sacrifice only after the necessity for such an effort has been clearly demonstrated.

In retrospect, perhaps these are the grim lessons of World War II and the immediate postwar years.

They ought not be forgotten. ■

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## QUID PRO QUO

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After breakfast, I came on the Hatfield type gazing thoughtfully at the ring of rugged hills that encircled the camp, rising thousands of feet above the strip on all sides. "Say, now, you didn't say anything about those hills when we were landing last night, Magellan," he allowed. I knocked a clod of mud off my boot and, not meeting his accusing eyes, harumphed and replied, "Well, I didn't see any sense in distracting you while you were landing." Despite the squint and slight upturn of his lips as he strode off, I thought the matter was closed.

A couple of weeks later, while flying out to the Ho Chi Minh Trail, the same laconic type was in high position, responsible for warning me—in the low position—of any enemy guns. We flew in silence until the familiar popcorn sounds of enemy fire alerted my back-seat observer. We quickly danced out of the hot area.

I called up to the Hatfield descendant, "Hey, we got one down here. How come you missed him?" A pause. Then, "Well, I saw him, but I didn't see any sense in distracting you while you were hunting."

—MAJ. RICHARD A. STRONG, USAF

(AIR FORCE Magazine will pay \$10 for each anecdote accepted for publication.)



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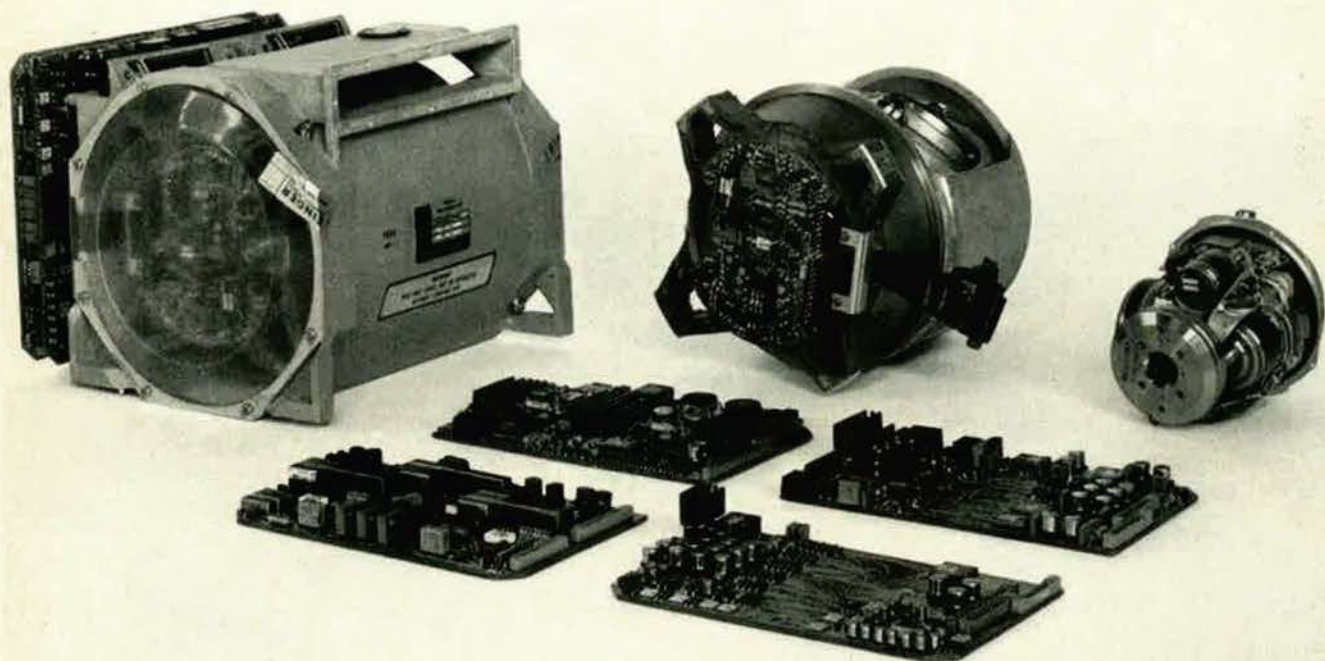


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Do very accurate MIRVed Minuteman missiles signal a US "first-strike" strategy, as some observers have claimed? Is MIRV an impediment to a SALT agreement? What is the logic of the Administration's MIRV policy? The author, an experienced military analyst, answers these and other questions in . . .

## MIRV: Anatomy of an Enigma

By Phillip A. Karber

On September 22, 1970, Gen. John D. Ryan, USAF Chief of Staff, told the Air Force Association that the Minuteman III missile, "with a multiple, independently targetable, reentry vehicle, will be our best means of destroying time-urgent targets like the long-range weapons of the enemy." This was misinterpreted, first in the Senate and subsequently in the press, as a provocative "first-strike" policy that would lead the USSR to believe the US is attempting to threaten Soviet strategic forces. The resultant political uproar precipitated a disclaimer from Secretary of Defense Melvin R. Laird, who emphasized that the US does not have, and is not attempting to establish, a "first-strike option."

Yet General Ryan's comment on the counterforce advantage of the MIRVed Minuteman is neither mistaken nor contradictory to Administration policy. It merely fell victim to the unenlightened, emotional, and one-sided approach that has characterized recent public consideration of strategic issues. The purpose here is not to argue for or against MIRV but to discuss the logic upon which the Nixon Administration's MIRV policy and its implementation by the Defense Department is grounded.

### MIRV and Stability

When combined with high yields and great accuracy, a MIRVed missile potentially can destroy more than one of an opponent's missile silos. For example, the Soviet SS-9, with its tremendous throw-weight of twenty-five megatons, could, when MIRVed, provide the USSR with the ability to destroy ninety-five percent of our land-based missiles. Thus, with approximately 400 boosters, the Soviet Union could knock out nearly 1,000 Minuteman missiles in a surprise first strike.

Only our manned strategic bombers and sea-based Polaris force would survive. However, the B-52s are vulnerable to attack by Soviet

submarine-launched missiles, as well as by the SCRAG orbital bombardment system, whose limited accuracy is offset by its advantage of short warning time and extremely high-yield warhead. Furthermore, the B-52s remaining would face the largest air defense system in the world, including more than 7,000 SAM launchers, which would be ready and waiting, unscathed, since the Minuteman missiles that could have disrupted the SAM defensive effort would have been destroyed in their silos.

While the portion of the Polaris force deployed at sea could survive a first strike, only about half are at sea and within range of their targets at any time. Also, since Polaris submarine-launched missiles cannot be fired in salvo, they would arrive over their targets at different times. This would leave the Polaris missiles vulnerable to the Soviet area-defense ABM system. Therefore, an American second strike would inflict less damage than the USSR received in World War II. And the Russians would still have more than 1,000 land-based missiles, mostly Minuteman-size but liquid-fueled SS-11s, plus their entire bomber force, remaining for countercity coercion or for mop-up operations.

The impending Soviet strategic posture is *destabilizing* because it threatens a first strike by the USSR and accelerates the nuclear arms race by its continued deployment of the SS-9.

To counter the threat of a Soviet first strike, the Nixon Administration has wisely begun development of the Safeguard ABM system to protect our land-based missiles and bombers. By deploying 500 Minuteman III missiles carrying three MIRV warheads each and the Poseidon submarine-launched missiles with ten to fourteen lower-yield MIRV warheads per booster, the President has also increased the penetration capability of our strategic retaliatory forces.

Unlike Soviet strategic developments, the American ABM and MIRV are *stabilizing* in



that they counterbalance the SS-9 first-strike threat without posing a US first-strike threat to the Soviet strategic forces. Safeguard is not an area-defense ABM system and, therefore, does not impair the Soviet retaliatory capability; the Poseidon cannot be used in a first strike because of its limited accuracy, low MIRV payload, and limited range; and, while the MIRVed Minuteman force is capable of counterforce targeting, it does not constitute a preemptive threat to the Soviet Union.

If all the American Minutemen were MIRVed, they could destroy less than half of the Russian land-based missiles in a first strike. Even by the end of the decade, assuming that the current accuracy of our Minutemen is doubled, we would not have the means to launch a first strike against the Soviet Union.

### Post-Preemptive Coercion

If we lack a preemptive capability, then why mention the counterforce role of our MIRVed Minutemen? Our land-based missile force was designed, through dispersion and hardening, to ride out any Soviet attack that has been feasible thus far. This posture not only decreases the possibility of a miscalculated launch but also provides the Commander in Chief with the flexibility of controlled retaliation. However, this prudent doctrine is weakened by the growth of the Soviet strategic arsenal. Should the Soviets attack our land-based retaliatory forces before Safeguard is fully operational, the President would have to decide whether or not to fire our surviving Polaris missiles against Soviet cities, in the full knowledge that the Russians then could wipe out American cities. The President expressed this worry in his State of the World message in February of last year:

Should a President, in the event of a nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of certainty that it would be followed by the mass slaughter of Americans? Should the concept of assured destruction be narrowly defined and should it be the only measure of our ability to deter the variety of threats we may face?

Clearly, enough of our strategic forces to do unacceptable damage to an attacker must be able to ride out a surprise first strike. But why should we passively watch the destruction of our Minuteman force in its silos if, through infrared satellite detection and over-the-horizon radar, we have sufficient and unambiguous warning that a massive attack has been launched? A Soviet first strike would require all of their SS-9s and most of their submarine-launched missiles. The remaining Soviet land-based missiles would be reserved as a coercive option—as a deterrent to and retaliation against

a US countercity response. Yet, with a half-hour's warning and the surveillance capability of infrared detection satellites to identify which Soviet missiles had not been fired, we could launch our Minutemen against the remaining Soviet missile force, thus foreclosing the Soviet coercive option. For every Russian missile destroyed, an American city would be spared and the Soviet SS-9s would have been wasted on empty silos.

MIRV increases the American deterrent, not only through the threat of assured destruction but also through the Minuteman potential of damage limitation. And, unlike the Soviet ABM system and MIRVed SS-9s, our damage-limitation capability is stabilizing, since it would threaten only the Soviet missiles held in reserve as a coercive force should the Russians launch a first strike.

### MIRV and Arms Control

Many popular and some professional commentators are now criticizing the Administration for not accepting recent congressional resolutions calling for a MIRV testing moratorium. They argue that the Administration failed to act when it could have halted the Soviet development of the MIRVed SS-9. This is spurious hindsight at best, for the moratorium arms-control method of the 1950s, which utilized primitive international bargaining, is not necessarily the most applicable, efficient, or secure technique of stabilization in the decade of the 1970s.

The Nuclear Test Moratorium, in effect from 1958 through 1961, provides an excellent case study of the ineffectiveness of the moratorium method of arms control. The Nuclear Test Moratorium was the first arms-control measure to be effected in the postwar period. Because of political tensions and the lack of a successful bargaining precedent, this first nuclear arms limitation was more tacit and ambiguous than explicit. What success it had was due to the fact that nuclear weapons had been tested for thirteen years and because the technicians on both sides generally assumed that nuclear weapons technology had reached a plateau. The nuclear bomb of the late 1950s was not a new

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*Phillip Karber, a Fellow at the Center for Strategic and International Studies, Georgetown University, Washington, D. C., is serving as a research assistant on national security and arms control affairs to Rep. Craig Hosmer (R-Calif.). Mr. Karber has contributed articles on military affairs to American and foreign publications. His analysis of the ABM issue, "Deterrence, the ABM, and Stability in Asia," appeared in the October 1970 issue of this magazine.*

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# SAFE DRIVING— THE AIR FORCE WAY

THIS is to tell you about a current and important program of AFA's Aerospace Education Foundation. We have published, in cooperation with Grosset & Dunlap, Inc., a New York publishing firm, an excellent book called THE SAFE DRIVING HANDBOOK.

The book is based on the highly successful safe driving program of the Air Force, which accounts for our interest. It is an unusual example of how research and techniques paid for and developed by the Air Force can be converted into useful material for the civilian population at large. Perhaps the best way to describe the book is to print an excerpt from the Foreword:

"... The Air Force concluded that the principal factors in vehicle accidents, aside from mechanical failure, were operator errors and violations resulting from personal driving attitudes. Education in the basic facts of safe driving and the development of a good attitude were the keys to the Air Force approach...

"We of the Aerospace Education Foundation feel that a public service will be performed by making the substance of the Air Force study program available to the general public...

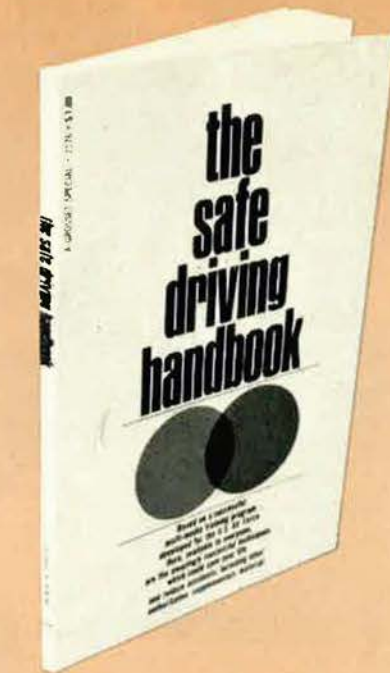
"This handbook is about driving factory model cars on 'ordinary American highways and streets.' The techniques are the latest findings of civilian and Air Force safety engineers studying thousands of cars and thousands of drivers. We believe there are three main reasons why this course material has been so well received by U.S. Air Force Airmen.

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"But the main topic is you and your behavior in the social system we call traffic."

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technological breakthrough but a weapon that had been extensively tested, the effects of which were catalogued in detail, and one with which both sides were closely matched in experience.

Yet, after three years of moratorium and after the USSR had achieved *theoretical* advances in large megatonnage and high-altitude detonation-effects technology, the Soviets unabashedly abrogated the Nuclear Test Moratorium without so much as an announcement. US intelligence failed to give warning of the Soviet preparations for testing; official political judgment erred in assessing Soviet intentions; and for unknown and unexplained reasons, a prudent US posture of readiness was not maintained despite the pleas and warnings of the military establishment and the Atomic Energy Commission.

It was the moratorium's potential for surprise abrogation, without even the moral or legal restraints of a negotiated treaty, that led President Kennedy to denounce the moratorium method as an ineffectual and destabilizing approach to arms control. His statement is just as relevant today as when it was made:

We know enough about broken negotiations, secret preparations, and the advantages gained from a long test series never to offer again an uninspected moratorium.

Some may urge us to try it again, keeping our preparation to test in a constant state of readiness. But in actual practice, particularly in a society of free choice, we cannot keep topflight scientists concentrating on the preparation of an experiment which may or may not take place on an uncertain date in the future, nor can large technical laboratories be kept fully alert on a standby basis, waiting for some other nations to break an agreement. This is not merely difficult or inconvenient. We have explored this alternative and found it impossible of execution.

The proposed MIRV testing moratorium resolutions introduced in the Congress have been extremely imprecise in defining MIRV, what type of testing would be allowed, the length of the abstention, whether it would automatically be terminated or extended, and through what means a suspected violation could be challenged without precipitating an international crisis. A tacit agreement cannot be expected to go into the detail that is necessary to achieve a successful moratorium on MIRV testing.

The wisdom of maintaining high arms-control standards was demonstrated by the recent examples of Soviet cheating along the Suez Canal. Here they blatantly violated a negotiated and easily verifiable agreement by moving in hundreds of missiles virtually overnight, thereby drastically altering the tactical military balance. This raises the question of

whether *any* moratorium agreement to limit MIRV development or deployment can be depended on.

Both sides now have tested to such an extent that even a SALT agreement calling for a ban on all missile testing would not convince the Soviets of a reversal in our MIRV deployment or ensure us of their lack of operational confidence in the multiwarhead SS-9. A comprehensive deployment ban would require on-site inspection, which the Soviets have traditionally refused, and, according to the Nixon Administration's prestigious verification panel, no practicable amount of on-site inspection would add assurance to a MIRV deployment ban.

Yet, contrary to the prophets of doom, the destabilizing aspects of MIRV can be limited at the Strategic Arms Limitation Talks. The SS-9 is a threatening first-strike weapon because of its combination of multiple warheads, high accuracy, extremely large yield, and the extensive numbers being deployed. While we cannot ascertain the accuracy of a particular missile or verify, except through on-site inspection, whether it has been MIRVed, we can, through satellite observation, reliably estimate its yield and the extent of its deployment. As Dr. Harold Brown, former Secretary of the Air Force, suggested:

... it is possible that even without on-site inspection we can tell enough about each other's missiles to obtain reasonable assurance. This is so because the probable number of warheads per missile is proportionate to the payload of that missile, and payload, in turn, is directly related to the gross volume, which we may be able to determine unilaterally. Thus, a ceiling on numbers and sizes of missiles could also limit MIRVs to a number less than that needed for an effective first strike, and yet permit enough reentry vehicles to penetrate missile defenses—as required for deterrence. The size of the missile force and its general characteristics can probably be monitored satisfactorily without on-site inspection.

Thus, should the Soviets agree at SALT to limit the number of deployed SS-9s, in exchange for an American commitment to keep Safeguard from becoming an area-defense ABM, and should a mutual gross ceiling on all ICBMs be set, then the Minuteman, Poseidon, and the Soviet SS-11 missiles—even if MIRVed—would not have the numbers, accuracy, or yields to pose a first-strike threat on either side.

MIRV is destabilizing only to the extent that the Soviet Union is obstinate at SALT. If the Russians want strategic instability, as their continued deployment of the SS-9 has seemed to indicate, unilateral American abandonment of our MIRV option will furnish it. ■



## Jet FACs—The Fast-Movers

As the SEA interdiction campaign spread to North Vietnam and Laos, slow-moving forward air controllers (FACs), in their O-1s and O-2s, began to encounter intense ground fire. It was then, in 1967, that the jet FACs began to take over in high threat areas. A former commander of the famed 8th Tac Fighter Wing's jet FACs reminisces about these men . . .

# A GROUP CALLED WOLF

Lt. Col. Mark E. Berent, USAF





It's a year now since I returned from combat, since I flew my last mission from a fighter base in up-country Thailand. And I'm filled with memories—some sweet, some bitter, but all of them so intense I can recreate any given moment in my mind.

Combat makes indelible marks on a man's spirit, if he thinks more than just gunnery-range thoughts. True, your political philosophy undergoes a massaging, a rethink. Then, eventually, comes an inner affirmation, more solid than you ever thought Stateside: "Yes, I know why I am here." But the down-deep emotional feelings, conceived and born from day-to-day living a war, undergo no such evaluation. They are just there; no chance at metamorphosis, or even redress. You can't change what you've seen and felt, and that's it.

In the bitter and the sweet, the dark and the light of my recollections is one that shines out brighter perhaps than all the rest. It is of a group called Wolf.

When I knew those pilots at Ubon, their radio call sign was Wolf, and they wore a simple "Wolf FAC" flash at the shoulder seam of their flight suits. They called their boss Papa

Wolf on the ground and Wolf-Oh-One while airborne. Their F-4 combat unit didn't exist on any organizational chart. It had no unit manning document. Instead, it was supported entirely by the four fighter squadrons of the Wolf-pack—the famed 8th Tactical Fighter Wing. The squadrons supplied the aircraft, the maintenance, and the weapons people. They also supplied the carefully selected, full-time pilots and navigators who flew the Wolf mission.

Although they came from different squadrons, you couldn't find a more closely knit fraternity of fighter pilots than those fast-moving forward air controllers (FACs) who flew their jet fighters along the Ho Chi Minh Trail, in a role traditionally belonging to the "slow-movers."

The slow-movers are those valiant FACs who control air strikes from O-1s, O-2s, and the OV-10. And, friend, they are considered slow relative only to their plane's ground speed vs. that of an F-4 or an F-100. Ask any Green Beret in South Vietnam (and other places) about his personal Air Order of Battle. Chances are he'll promptly respond with a somewhat irreverent sign and the words, "FAC, TAC, and Napalm." These men know who does the job in close air support.

As the interdiction war spread to North Vietnam and Laos, so did the plucky slow-movers. Operating at their normal low altitudes, where they could see things, survival became a chancy proposition for them. To complement the slow-movers, something else was needed, something that could get eyeballs down on the deck yet maneuver them fast enough to avoid the severe myopia brought on by lead pollution.

So the F-100 pilots started the fast-mover FAC program in 1967 and chose "Misty" as their call sign. The idea spread to F-4s and even Marine TA-4s, call sign Playboy.

Stormy, Laredo, Tiger—these are other call signs of the fast-movers now flying from various fighter bases in SEA. Each unit has more or less identical criteria for its members: They must have at least a hundred combat missions, be topflight crews, be unconditionally recommended by their squadrons, and be volunteers.





Invariably they are the loner type who likes to mix it up, get down in the weeds and find the enemy, then challenge him to come out and fight. But, like their slow-moving brethren, they must have the maturity to mix prudence with daring, to differentiate between courage and recklessness. They must have a fast eye, memory for detail, ability to control several flights of fighters at once, and an intimate knowledge of every rock, bush, gun, bypass, truck park, and trail over hundreds of square miles. They must know location and height of the black-rock karst, and be intimately familiar with where the guns are, when they like to shoot, and what positions look promising for new sites. These are the fast-movers, the jet-FACs who, along with the slow-movers, fly the Ho Chi Minh Trail.

These men must also be in damn good physical shape to take the four- and five-hour trail-sniffing missions. They twist and turn, dive and zoom, always pulling Gs, jinking, heads constantly swiveling as they cut back and forth over the trails, around the karst, and through the passes at 400 to 500 knots. Don't think they can't see things during those maneuvers and at those speeds. One Wolf saw a bush out of place, just an ordinary run-of-the-mill bush among hundreds by The Alligator at Ban Karai. He chandelled up, rolled in to check it out, and found his gunsight square on a camouflaged command car. Scratch one command car and not-too-wise driver.

That kind of perception is common among all the FACs, fast or slow. And in other ways, too, the Wolves are fairly representative of the fast-movers. For one thing, when I knew them, half were bachelors, and that says something right there. For another, all were top-rated officers who most assuredly had minds of their own. Papa Wolf didn't have to lead this kind of pack; he sometimes had to lope like hell to stay up with them.

Then there are the black thoughts, the memories of men lost in the Wolf mission. There was Jim who spoke so quietly while coolly directing hot firefight, whose laconic last comment was, "Well, I guess we better get out," as his aircraft went uncontrollable from ground fire. His back-seater got picked up; Jim is still up there in the karst.

Paul and Peter just never came back; fine Paul who worked so tirelessly as the Wolf Ops Officer, and quiet, gentle Peter who was on his first Wolf mission. Sturdy Grey, and Neal—the enthusiastic, laughing pilot we called Indian—got it one day while rooting out a bulldozer at the Dog's Head. Brad was the Papa Wolf who got blown out of the sky but was safely rescued with his back-seater one dark afternoon. Rick took a hit and is still having his skin glued back on. His back-seater was last heard from on the ground, over his survival radio, in a shoot-out with the enemy.

Kenny spent a night hanging in a tree while the local Lao chamber of commerce whacked all around the area looking for him. Ray, the founder and first Papa Wolf, once brought back his Phantom with the nose blown clean off and no landing gear. He walked away from that one.

Despite their casualties, the Wolves spread more than their share of havoc, as was evidenced by an array of enemy gunners rotting by their busted guns, or the great number of enemy truck drivers who had little more than a smoking steering wheel to show for their grand drive down the Trail. I remember B.C. getting the Silver Star on his first front-seat mission. Golden Throat Butch was in the back seat as his checkout pilot. (The then-current Papa Wolf used to get airsick back there!) How they whooped and hollered as they de-gunned, de-trucked, and de-destroyed practically everything the enemy had in Mu Gia Pass that day.

Black Dan, the Wing Director of Operations,





was on the raid that day as a strike commander, and he won the Star, too. He and Super Skip, the Wing Commander, went through the regular Wolf checkout program and would fly a Wolf mission at least once a week. You won't find commanders like that much anymore. It's damn near not allowed.

The Wolf Operations office was an interesting place. It was an old converted lounge, just off the main intelligence room in Wing headquarters. (It was sort of folksy and a favorite gathering spot for the strike pilots, so it didn't look too military.) To foil unfavorable reports from Inspector General or other administrative teams that would periodically inspect the base, the Wolves would merely flip over the sign hanging above the door, "Wolf Ops." Its back side read "Lounge." Then they would sit around and whistle, read intelligence magazines, and look busy. After all, no inspection team expects too much from a lounge, anyhow.

They really didn't have much time for that sort of thing, though; they had to be on the trails from before first light to dark. One Wolf FAC would relieve another after a four-hour stint by joining up, if he had enough fuel, and showing the next man where new enemy materials were hidden. Otherwise, they would switch to Wolf common channel on the radio and talk each other in. They could procure air strikes for hot targets by calling the airborne command post, but mostly they had flights fragged to them the night before. They carried plenty of smoke rockets and a full load of 20-mm, and rarely returned with any of either.

The Wolves, as did the other FACs, had huge areas of responsibility and would hum up and down their route structure looking for trucks and guns and trouble. They would make bullfighter pirouettes by suspected guns to make them come up and give away their positions. They would look under karst overhangs and in caves for hiding trucks. To block traffic, they would destroy whole sections of trail where it wound around cliffs.

Except while controlling a strike, they were alone. Beside the psychological strain on the enemy of someone always on their trails, the Wolves successfully prevented daylight traffic



flow and road repairs in their area. They provided real-time intelligence on such things as new trails being hacked out. They found foot and bicycle traffic prints, discovered fuel pipelines, located revetted guns and truck parks, and just generally raised hell throughout their section of the Ho Chi Minh Trail. But that's nearly over now.

Soon these units may not exist except in the war memories of the FACs and hundreds of strike pilots (not to mention North Vietnam's transportation troops and its AAA battalions). Misty—the great Misty—already deactivated, has disappeared from the rolls.

A vast amount of anti- and satirical material has been written and filmed about this war, but not much has been said about the courage and honor of the men in the field, the guys out doing the job—men like the Wolf FACs. Some are alive, some dead or torn up. Too many are in the solitary hell of the Hanoi Hilton. You don't hear much about any of them. Not now, you don't. Maybe you will someday, when the bitterness and frustration that cloak this strange war fade. Then the vague, valiant figures, who now move almost unseen in the mists, may emerge. Until then, the Wolves and the Tigers, the Playboys and the Stormys, Mistys, Falcons, and the Laredos will have to live and fly in our memories. You just can't forget. ■

*The author, Lt. Col. Mark E. Berent, a much-decorated veteran of 760 jet-fighter combat hours, flew his second SEA tour with the 8th Tac Fighter Wing's all-night-flying 497th TFS at Ubon AB, Thailand. In the August 1970 issue of this magazine, Colonel Berent's story, "Night Mission on the Ho Chi Minh Trail," told about life with that squadron. The author now is assigned to AFSC's Space and Missile Systems Organization (SAMSO) as a staff development engineer.*

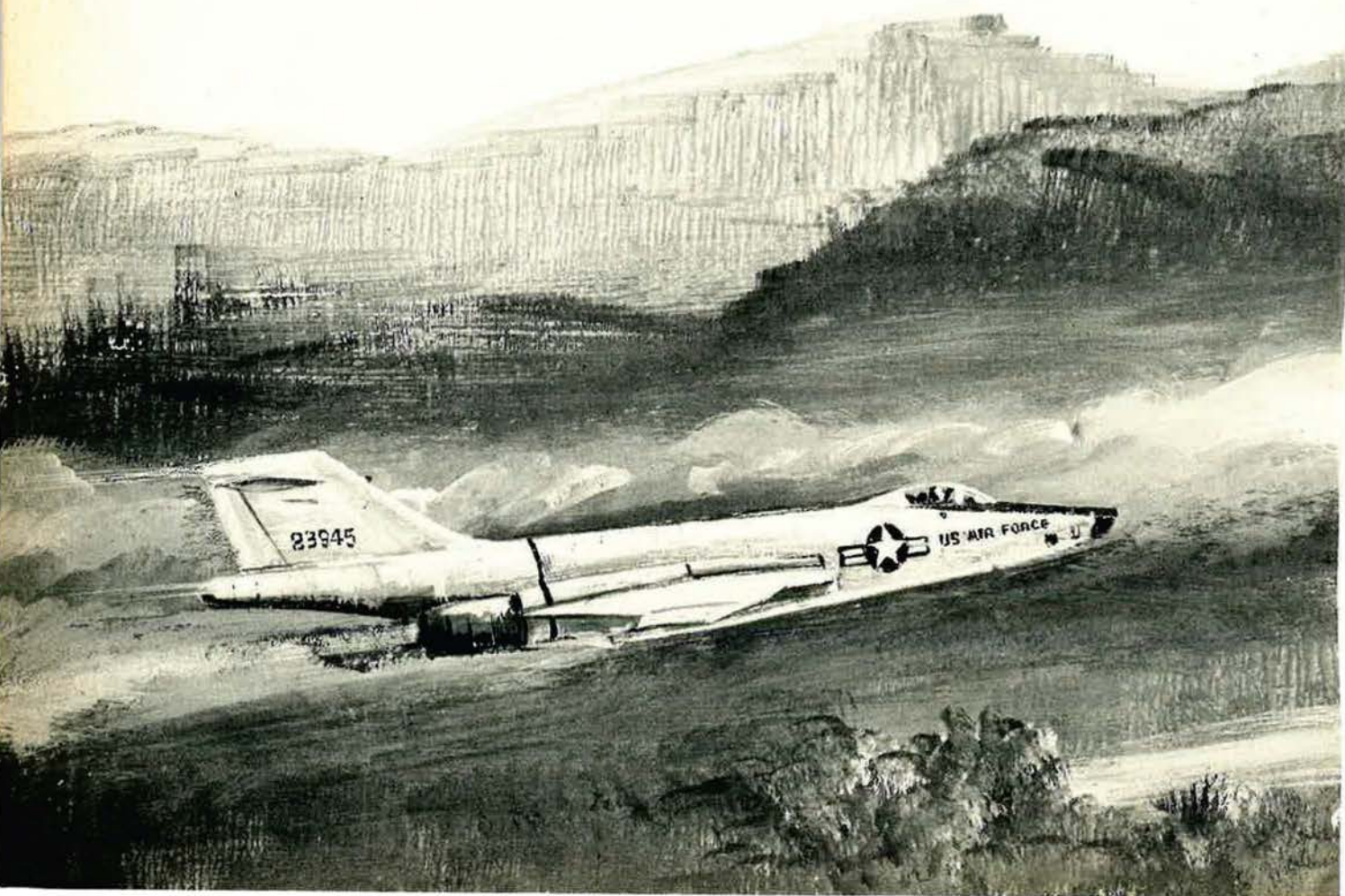


Two RF-101s screamed over the North Vietnamese countryside at treetop level on one of the first photo-recon missions to a SAM site. Suddenly there was a flash . . . and big trouble. But the lead pilot, hit by ground fire, refused to abandon the mission despite his wingman's frantic warning . . .

# 'GET OUT, JACK! YOU'RE BURNING!'

By Glenn B. Infield

*Illustration by Gordon Phillips*





The two RF-101 Voodoo reconnaissance aircraft swept over the North Vietnamese countryside fast and low. Maj. Jerry Lents glanced at his instrument panel, reading the dials quickly, knowing it would be fatal to keep his head down very long. The altimeter needle stood at the 200-foot mark. Airspeed was 600 knots.

Ahead of him, Capt. Jack W. Weatherby headed his RF-101 straight for the target area. Lents was concerned about Weatherby. Minutes after they had left Tan Son Nhut AB, the Captain had lost his UHF radio transmitter.

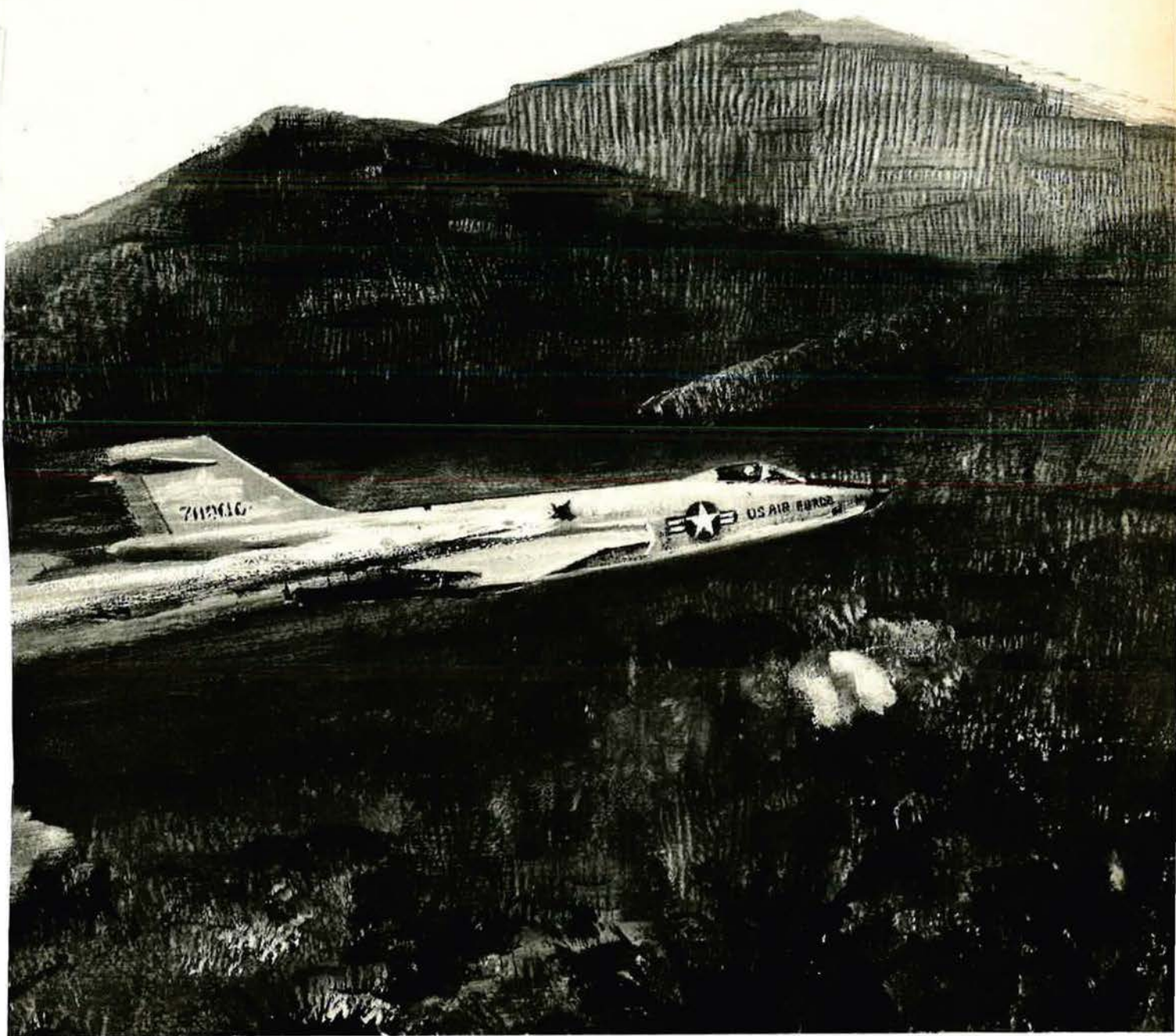
"The SAM site should be directly ahead," Lents muttered as he stared toward the suspected location of the

enemy missile-launching position. Their mission objective was to get photographs that would pinpoint the exact location of a surface-to-air missile site northwest of Hanoi. They had planned the flight to approach the target at low level. It was July 29, 1965, and at that time very little was known about SAM capabilities.

The two recon pilots believed that low level was the safest path through the area. No electronic jamming pods were available for the RF-101s in 1965—those packages of electronic wizardry that hung below the

wings in later years and completely duped the SAM crews.

Both Lents and Weatherby knew the hazards involved in their reconnaissance missions long before they took off from Tan Son Nhut. As early as 1962, while stationed in Japan, Weatherby had flown surveillance missions over Vietnam. He was known as one of the most aggressive of that elite group—the reconnaissance pilots—who fly deep





behind enemy lines unarmed, alone or with only a wingman; making their own decisions on procedures, altitudes, airspeed, and approaches in one of the most technically sophisticated of all Air Force activities.

On this morning of July 29, Weatherby and Lents already had flown an "in-country" mission over South Vietnam. The radio message from higher headquarters concerning the SAM mission northwest of Hanoi came through while they were still airborne. Both men had good reasons to *not* volunteer for this one. They had already been out once; they would lose time refueling and checking their aircraft prior to taking off again; other flyers were available.

Weatherby had an additional reason. Two days earlier he had flown against another SAM site, the first photo-recon flight to those emplacements. He knew exactly how tough those "out-country" missions were, and the odds against surviving very many of them.

Despite all this, Weatherby immediately volunteered to lead the mission. Lents agreed to go with him. After deciding to go into the target area at low altitude and full speed, the two recon pilots took off from Tan Son Nhut. It was shortly after getting airborne that Weatherby lost his UHF radio transmitter and Lents assumed the lead.

They made the required rendezvous with the tanker on their way north and took on a full load of fuel. After leaving the tanker, Weatherby began clicking his microphone button and, through a series of questions from Lents and "click" answers in return, the Captain made it clear that he wanted to take the lead again. He did, and the two Voodoos continued toward the Hanoi area, circling thunderstorms along the way. Some of the storms looked so bad that it seemed doubtful they could complete their mission. Weatherby kept flying north, however, and broke out of the clouds just south of the target area. Recognizing his position, Weatherby let down to the starting point of the photo run, roughly forty miles from

the target. Lents stuck right with him.

As Lents and Weatherby neared the target, the Major checked his camera switches. They could make only one pass over such a dangerous target. He had just completed his check when he saw what looked like a strobe light flashing up from the ground. Puzzled, Lents stared at the light in fascination. Then:

"I've been hit! I'm breaking off to the north!"

Captain Weatherby's radio message—the first since his transmitter went out—startled the Major. Quickly he scanned the Captain's aircraft. As Weatherby started a slow turn to the left, Lents crossed over him. Weatherby's RF-101 was badly damaged—a hole in each side of the fuselage at midsection, and fuel streaming from both sides. A shell must have passed through the Voodoo without exploding. So far, Weatherby had been lucky. Real lucky. Maybe his luck would hold.

The damaged Voodoo reminded Lents of a mission he had flown four months earlier with Capt. Thomas Malone on his wing. That had been a bomb damage assessment (BDA) mission to a radar site at Vihn San. He and Malone had approached the target from the ocean, again at low level, only to find the fighter-bombers still on the target. The much-admired Col. Robbie Risner, who had been a jet ace in Korea, was leading the last flight over the target, and while Lents and Malone orbited at 500 feet waiting for the fighter-bombers to break away, Risner had been shot down. [He is known to be a POW.]

It was hardly an encouraging omen for the two recon pilots, but as soon as the last of the fighter-bombers cleared the area, Lents led Malone over the target at low level. Malone had been hit by ground fire. Lents surveyed the large hole in the aft section of the fuselage and decided that Malone had a chance to get home. The two recon pilots contacted a tanker in the Da Nang area, refueled, and returned to Saigon safely, but it was a close call. A shell had nearly severed the tubular aluminum rod that controlled

the stabilator. Only a shred of metal about a half inch long had saved Malone. Now, as Lents studied Weatherby's aircraft, he tried to decide whether his wingman could make it back to Tan Son Nhut.

"Jack, it appears that a shell . . ." Lents started to explain to Weatherby, but at that instant he saw a new danger. Fire! Small flames were erupting from the hole on the right side of the fuselage.

"Get out, get out! . . . Jack, you're on fire!"

There was no answer from Weatherby. Lents thought that perhaps his warning had not been heard so he repeated it.

"Get out, Jack. You're burning!"

Ignoring the damage to his aircraft, and disregarding the flames, Weatherby continued toward the target. The North Vietnamese gunners kept up a steady barrage of fire, but Weatherby stubbornly stayed on the photo run.

Time seemed to "freeze" for Lents as the fire in the aircraft directly ahead of him became more intense. Lents saw that they were flying between a range of hills, higher on either side than their flight path. They were on a "strait-jacket" course, unable to take evasive action to avoid enemy fire. The only way to complete the mission and get out was to fly the length of the range of hills at near-ground level and at top speed. Weatherby, unwilling to abandon the photo run or to eject and be taken prisoner, was going to try this dangerous escape route. He refused to be intimidated by the enemy gunners or by the flames eating away the fuselage of his RF-101. It was a courageous attempt, but it didn't succeed.

Part way through the range of

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*Glenn B. Infield, a former Air Force major, is a combat veteran who has written extensively about flying. He is the author of a recently published book on photo reconnaissance, *Unarmed and Unafraid* (Macmillan), which was reviewed in the January issue of this magazine.*

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hills, with the undersection of Weatherby's burning aircraft nearly scraping the ground, the Voodoo suddenly exploded.

One second it was a sleek marvel of mechanical and electronic workmanship carrying one of the most skilled reconnaissance pilots in the world. The next second the RF-101 was an orange fireball tumbling toward the ground, leaving a path of flame and debris through which Lents flew at full speed. In seconds the disintegrating plane thudded into the North Vietnamese countryside, scattering fiery fragments over a wide area.

Jerry Lents, stunned by the sudden tragedy, kept his own RF-101 low until he cleared the hills, then climbed to a safer altitude and returned to Saigon alone, refueling en route.

On November 23, 1965, the Air

Force Cross, awarded posthumously to Captain Weatherby, was presented to his widow, Mrs. Barbara N. Weatherby, at Carswell AFB, Tex. An RF-101 from Shaw AFB, S.C., provided a background for the ceremony. Jack Weatherby would have liked that; he believed that the Voodoo was one of the best aircraft in the USAF. He would have liked the citation that accompanied the Air Force Cross, too, but it probably would have embarrassed him.

The citation said:

"Captain Weatherby voluntarily flew an unarmed aircraft at extremely low altitude deep into hostile territory, which was heavily defended, to photograph a target of vital significance to the US Air Force and Republic of Vietnam Air Force.

"As he approached the target area, his aircraft was severely damaged by accurate ground fire.

"With complete disregard for his personal safety, Captain Weatherby elected to press on to the target until his badly damaged aircraft exploded and crashed."

Jerry Lents, on his twenty-ninth mission the day Weatherby was lost, continued to fly photo reconnaissance over North Vietnam until he completed 100 such missions. He also had logged 151 "in-country" missions before he returned to the United States.

Today, a main point of discussion at the Paris peace negotiations is the US reconnaissance flights over North Vietnam. President Richard M. Nixon's insistence that the flights continue indicates their importance. And it illuminates the invaluable service performed by the recon pilots who probe deep into enemy territory—unarmed, unafraid, and unsurpassed in skill and courage. ■

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## POETIC JUSTICE

During the early days of World War II, I was assigned to Selfridge Field for combat-crew training in the good old P-40. Due to the fact that ours was one of the first all-Negro squadrons, I soon found myself one of that rare breed—a second lieutenant flight leader. You just don't find those anymore.

One day, my flight, detached to Oscoda for weapons training, was on the schedule for air-to-ground gunnery. We went through the usual briefings, dashed out, kicked the tires, lit the fires, and were airborne. The range was quite busy, so I led the flight away to fly around and kill time until our turn came. When I finally got the flight on the range, we did our usual outstanding job, joined up, and in about fifteen minutes (thirteen-second traffic pattern included) were back in the chocks.

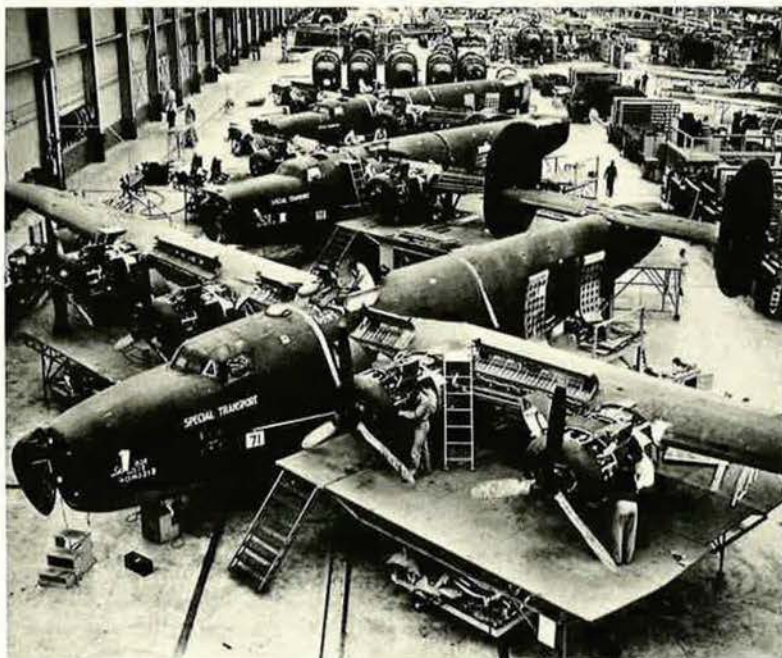
I immediately noted the commander standing on the ramp, obviously waiting for me, which was unusual. I knew we were pretty warm on that mission, but didn't expect this sort of reception. While wondering what sort of citation he would give me and how I would graciously accept, I was snapped out of this dream by his voice from the ground saying: "Get the hell up to my office immediately." I suspected by the tone we were in trouble. When I reached his office, my suspicions were confirmed. He informed me that a mink rancher had complained that a flight of four P-40s had buzzed his ranch and frightened his mink, many of them dying in the gyrations that frightened mink go through. The commander further stated that he knew it was my flight since we were prone to take part in such shenanigans at any opportunity.

It just so happened that I wasn't guilty in this case, but nevertheless I was fined \$300, because I refused to defend myself. When my roommate later asked me why I didn't offer a word in rebuttal, I came back, "How could I? During the time of the alleged mink killings, I was out turning over sailboats on Lake Huron with my propwash." Not knowing the going price for sailboats in the commander's court, I wasn't about to find out.

—BRIG. GEN. DANIEL "CHAPPIE" JAMES, JR., USAF

(AIR FORCE Magazine will pay \$10 for each anecdote accepted for publication.)





*In early 1943, the Consolidated plant at Fort Worth, Tex., modified three C-87s as VIP transports (left above). One of them, Guess Where II, was tailored for President Roosevelt's use. The aircraft was similar to the C-87 in which General "Hap" Arnold made a record flight from Australia to Bolling Field, D.C., in October 1942 (upper right). In March 1944, Guess Where II flew Mrs. Roosevelt (shown at right in Brazil) to US bases in the Caribbean and South America.*



—The Franklin D. Roosevelt Library, Hyde Park, N.Y.

# FDR and the Guesses

By Robert C. Mikesh





Ask any aviation buff to name the first Presidential airplane, and he'll probably say *Sacred Cow*. Wrong! Gone and almost forgotten is the very first predecessor of *Air Force One*—a C-87A that was custom tailored for President Roosevelt. The author restores that aircraft to its rightful place in history in this account . . .

# Where II

Names such as *Sacred Cow*, *Independence*, *Columbine*, and today's *Air Force One* have carved their niche in the history of US Presidential airplanes.

*Guess Where II* is another that should be added to that distinguished list. This aircraft, especially built for President Franklin Delano Roosevelt during World War II, slipped by unnoticed, to be overshadowed by the *Sacred Cow* when President Roosevelt made his history-making flight to the Yalta Conference. Thus, the *Sacred Cow* was the first aircraft publicly assigned to carry the Chief Executive, but *Guess Where II* actually was the first designated as the "President's Airplane."

*Guess Where II* was an unpretentious, four-engine C-87A, a VIP transport adaptation of the B-24 Liberator bomber so widely used in all theaters of the war.

Unlike the colorful markings that have identified Presidential aircraft of recent years, *Guess Where II* was olive drab, typical of Army aircraft of that time. Serial number 124159—painted in standard yellow numbers on its twin tails—identified it. At close hand, the name "*Guess Where II*" could be seen, but only a few staff personnel actually knew that this was the President's plane.

From the day of its arrival at the newly opened Washington National Airport in mid-1943, the plane was kept in constant readiness to serve President Roosevelt's needs. Frequently the White House called upon the plane and its crew to carry VIPs on missions for the President.

An around-the-world, fact-finding and goodwill mission was one of the first of many assignments. On board were several Senators and Generals serving as Presidential envoys. On another occasion the plane carried Secretary of the Treasury Henry Morgenthau on a similar mission to England and the war zone in North Africa. The list of notable passengers grew as the war went on and overseas missions became routine. And this C-87A carried the First Lady, too.

The President himself prepared the itinerary for Eleanor Roosevelt to conduct a 13,000-mile air tour of US bases in the Caribbean, South America, and the Galapagos Islands. The President wanted the troops in these areas





*It was a "first" when FDR flew overseas to the Casablanca Conference. He is shown above reboarding a commercial flying boat at Trinidad. On the return flight, left, FDR confers with Harry Hopkins aboard a TWA C-54, used for overland legs of the trip. The need for a specially modified, military-operated Presidential plane now was clear.*

to realize that, although they were not in the front lines, they were doing a necessary job and they were not forgotten. Mrs. Roosevelt's highly publicized trip took place in March 1944.

In January 1943, FDR had made a Presidential "first" when he flew overseas during wartime, from Miami to Casablanca. A commercial four-engine flying boat, *Dixie Clipper*, under contract to the Navy, was used to meet the President's switch to air transport. This mode of travel for Chief Executives had not been thought necessary before, but enemy submarines were considered too great a threat to the President's safety for shipboard travel. Future Presidential air trips were obvious from here on, and, as a result, the requirement for a special aircraft.

The Consolidated C-87 was considered the most suitable airplane then available. The cabin floor was level and, more important, low to the ground. This made access easier for Mr. Roosevelt, confined as he was to a wheelchair. Thirty-foot ramps were needed for him to board a C-54, for instance. Not only did having these ramps available present a logistics problem at bases the President was to use, but they also created a security compromise since

their very presence signaled a potential visit by the Chief Executive.

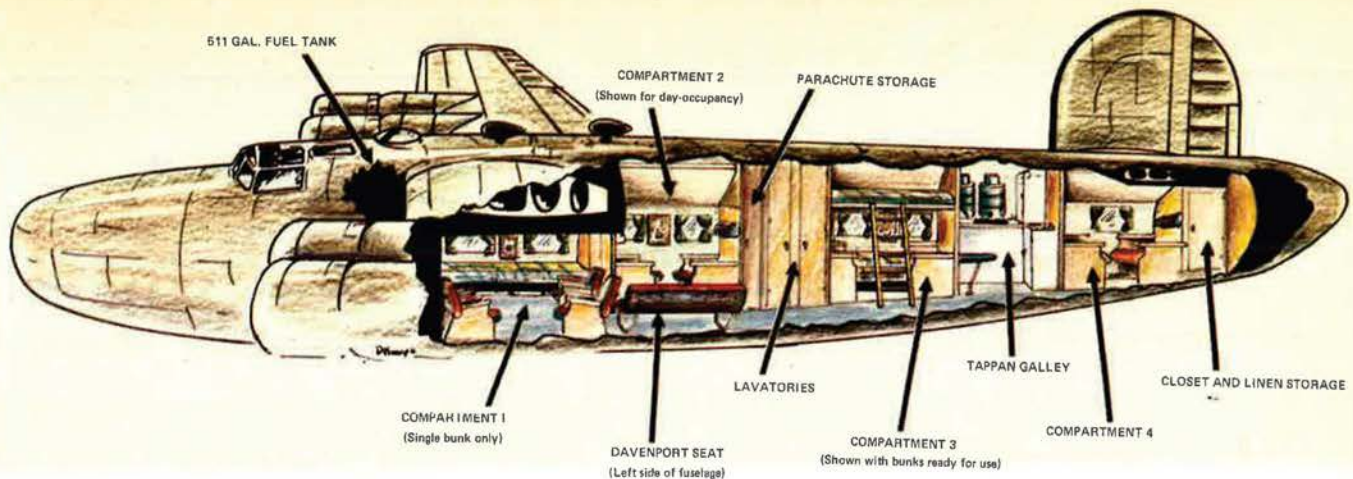
The C-87's long range was another advantage. Fueling stops required were at a minimum, a help to the security-conscious Secret Service, and the plane could make long overwater flights if need be. The airplane was generally liked by those who flew it and was considered reliable, with a respectable speed and performance for airplanes of that time. C-87s by then had established an excellent record in service with the Air Transport Command.

From the assembly lines at Consolidated's Fort Worth, Tex., plant, not one but three partially completed C-87s were moved to a remote corner of the factory. Stringent security measures were applied to these planes, indicating something unusually distinctive about them. The three special transports were redesignated C-87As—or VIP aircraft. It was a closely guarded secret that one was eventually to become the "President's Airplane."

The interiors of the C-87As (*see cutaway*), were specially designed to offer the latest in airline comfort. The deep fuselage afforded plenty of head room, and along the right side of the cabin were built four Pullman-type compartments, each with double seats and a removable table between. These compartments could be made into upper and lower berths with Pullman curtains. Under the wing was a similar compartment, which lacked an upper bunk. Two lavatories were provided, as well as a Tappan aircraft galley complete with electric stove and oven.

The aisle along the left side of the aircraft contained a davenport-type seat that could accommodate three people opposite the central compartment. It was so arranged that this compartment, along with a closet and lavatory,





could be isolated from the rest of the cabin by means of a curtain. The planes could sleep nine people, or could seat approximately twenty passengers.

The three VIP transports were destined for the Air Transport Command's 503d AAF Base Unit, often referred to as the "Brass Hat Squadron," located at Washington National Airport. The nickname obviously stemmed from the many military and government officials carried on frequent wartime missions.

Maj. Henry T. Myers was at the controls of the President's new plane when the selected C-87 arrived from the factory on June 6, 1943. He had been personal pilot for Gen. Harold L. George, Commanding General of the Air Transport Command, and was now to be the President's pilot.

No celebration of the plane's arrival took place, and no public recognition of its presence other than additional guards in the area. The term "Presidential Aircraft" had hardly been coined, and no one at the time imagined the glamour that would someday surround a President's personal aircraft.

But to Hank Myers, the plane had special meaning. Since pilots often feel a keen emotional attachment to an assigned aircraft, descriptive nicknames often were invented, a practice very popular during the war years. But a name that would associate the plane with White House activities would certainly not be appropriate under existing wartime conditions. Major Myers, however, had a "natural," a carry-over from the plane he had formerly flown for General George. He dubbed his new plane *Guess Where II*.

Because of the varying and widespread responsibilities of General George as Commander of the wartime ATC, it was not uncommon for him to have Major Myers change their destination to a different airfield after they were airborne. This often brought complications because of the close monitoring of flight plans, especially those when high-ranking personnel

*The C-87 combined many characteristics needed in a Presidential aircraft: long range, relatively high speed, reliability, plenty of headroom, and a level floor—low to the ground for easy access of FDR's wheelchair. This cutaway shows the extensive internal modifications that provided comfortable accommodations for Mr. Roosevelt and a Presidential party of as many as twenty.*

were aboard. As a subtle barb, yet in fun, Hank Myers painted "Guess Where" over the entrance door of their C-84 (DC-3B) transport so that the boarding General couldn't miss it. The name stuck.

The primary mission of the *Guess Where II* was to transport the President, as Myers and his crew were always aware. The opportunity seemed at hand as the President made plans for his participation in the Tehran and Cairo Conference. All airlift requirements were being centered around *Guess Where II*.

Myers and his crew prepared for this vital mission to the Middle East, and the President's C-87A was kept up to snuff.

But with just a few days left before the November 1943 departure date, word filtered down that the President and his party would again use contract airline C-54s. The change in plans came as a blow not only to the President's crew but also to the parent military unit organizing the trip and controlling the planes involved. Transporting the President, especially during wartime, was rightfully a military task for the ATC. But unforeseen circumstances had suddenly developed that made changing the type airplane the President was to use justifiable.

There were growing reports about other C-87s experiencing unexplained tail buffeting and oscillation problems. One incident involved a C-87 that had just taken off from Florida and was vacated by the crew because of this seemingly uncontrollable problem. The event made newspaper headlines at this critical time because the plane mysteriously ended up in



Mexico, where it eventually crashed, *sans* crew. The Secret Service concluded that it would not be in the best interest of the President to use this type airplane until all problems were resolved.

Investigation later revealed that when the inboard engine cowl flaps, normally closed in flight, were open, mild to moderate tail-buffeting occurred. The propellers and these cowl flaps were controlled from the cockpit by electrical toggle switches, close to one another and similar in appearance. All too many copilots discovered how, unwarily, they could operate the wrong set of switches.

Although the solution lifted the restriction on *Guess Where II*, it came too late for the President to use the plane this trip. Mission planners did, however, see a possibility that, should Mr. Roosevelt decide to visit other bases not equipped with loading ramps for the high cabin door of the C-54s, *Guess Where II* could be used. Consequently, the President's C-87 was included as a spare in the fleet with the four C-54s.

As the mission progressed, the President's plans remained unchanged, so that no occasion arose to publicly identify *Guess Where II* as the Presidential Aircraft. Instead, the plane was diverted to still another purpose.

Contrary to a previous agreement, the Russians released publicity about the Cairo Conference while still in session. To suppress considerable pressure generated by the American press, Major Myers was asked if he could

carry photos and press releases to the US within twenty-four hours; the trip usually took two days. Hank Myers believed this could be done if he were permitted a more direct route made possible by refueling at Lajes Field in the Azores. Quick permission was granted by the British government, which operated the field for antisubmarine patrols.

As the plane approached the island, however, it was evident that some troops didn't get the word—the plane was bracketed with heavy anti-aircraft fire.

British practice was to challenge unexpected aircraft and shoot at them simultaneously, sometimes making friendly aircrews suddenly unfriendly. While circling the island at a safe distance and firing signal flares, the crew of *Guess Where II* was advised by officials on the island to return to its point of departure. After several more bursts of flak, Myers was able to convince the ground forces that he didn't have enough fuel for such a flight (hardly true for this aircraft), and *Guess Where II* was finally allowed to touch down at Lajes. It was the first American plane to land in the Azores.

Contrary to the hostile reception received while in the air, a hearty ground welcome awaited the crew. After pausing long enough for food and fuel, the airplane was put on the final leg of its journey. When the flight ended, the plane and crew had shortened by twenty-four hours the record from Cairo to Washington, D.C.

Crew members, however, were understandably disappointed that the airplane intended for Presidential use was not allowed to serve him when the first need arose. Confidence having been shaken with *Guess Where II*, plans were initiated to acquire a replacement plane. Douglas Aircraft Co. was asked to produce a C-54 with a special internal loading elevator for FDR. The new aircraft, dubbed the *Sacred Cow*, therefore was actually the second plane built for the President, but the first one officially accepted and used by a Chief Executive.

Major Myers continued as the President's pilot in the *Sacred Cow* and later was President Truman's pilot in the *Independence*. *Guess Where II* was forgotten, and remained obscure at Washington National Airport for a month after being replaced. It then moved to other ATC bases within the US for the remainder of its sixteen months of service life.

On October 30, 1945, the plane made its last flight, landing at Walnut Ridge, Ark., where it was turned over to the Reconstruction Finance Corp. There it stood in the midst of row upon row of silent, war-weary bombers and transports. *Guess Where II* showed no strain of war, and received no recognition for its once-esteemed position. While air museums proudly possess other Presidential planes, *Guess Where II*, the first of the special breed, was eventually reduced to scrap. ■



Although *Guess Where II* was the first to be designated as the "President's Airplane," the *Sacred Cow*, a C-54C with an internal loading elevator, was the first to actually carry Mr. Roosevelt. It now is part of the Smithsonian's National Aeronautical Collection.

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Robert C. Mikesh, a retired Air Force major, flew B-26s in Korea, B-57s after that war, and was a FAC in SEA. An authority on the Japanese Air Force, he has contributed two articles on Japanese military aviation to this magazine. ("The World's First Intercontinental Missiles," April '68, and "Japan's Little Fleet of Big American Bombers," August '69.) Major Mikesh has prepared several studies, among them one on Presidential aircraft, for the American Aviation Historical Society, of which he is an active member. He now lives in Washington, D.C.

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# 1971 AIR FORCE ALMANAC

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In May, AIR FORCE Magazine will publish the 21st Annual Air Force Almanac Issue . . . the largest and most authoritative US Air Force reference volume. Extra copies are traditionally utilized by the major Air Force Commands—more than 12,000 additional copies last year alone. Circulation of the 1971 issue is expected to exceed 130,000 copies. Be sure your advertising is part of this important reference issue.

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**AIR FORCE**  
Published by the Air Force Association **MAGAZINE**





"To Our Comrades Up North"

# The Many Faces of Tragedy

"They Got Colanel Larson. And Colonel Hughes"



To some, the American prisoners of war in North Vietnam are but faceless pawns on the chessboard of war. But to their families, and to Los Angeles artist Maxine McCaffrey, their plight is real and personal. The four paintings on these pages tell in different ways the poignant story of men separated from their families for a cruelly long time and with no hint of when their ordeal will be over. The paintings are part of the Air Force Art Collection and have been shown in the Pentagon and on tour. Miss McCaffrey has visited Southeast Asia, and, by bitter coincidence, was on the scene in Thailand when the news came of the capture of Cols. Gordon A. (Swede) Larson and James L. Hughes (lower left, this page). She has done volunteer work for the Association of Wives and Families of Captured and Missing US Service men, and has met and admired the children of Lt. Col. Arthur Mearns (lower right, opposite page). In her work with the families of the captured and missing, she has come to know the MIA/POW problem firsthand. She is a member of the Society of Illustrators of Los Angeles, and her work has appeared in many magazines here and abroad.





Mrs. Dorothy Hughes, wife of Col. James L. Hughes, USAF F-105 pilot shot down over Hanoi and captured, has worked tirelessly to bring the plight of the captured and missing US flyers to the attention of the American public.

"Air Force Family:  
L/C J. L. Hughes"

In her volunteer work with families of the missing and captured, artist McCaffrey got to know the family of USAF Lt. Col. Arthur Mearns, missing in action over North Vietnam. The Mearns's daughters—Frances and Mary Ann—are depicted in this painting.



"Children of Lt. Col.  
Arthur Mearns, Missing  
in Action, North Vietnam"

My Name is Frances. My daddy is a pilot prisoner in Hanoi. We miss him very much. Please God bring him home.



# MIA/POW Action Report

By Maurice L. Lien

SPECIAL EDITOR FOR MIA/POW AFFAIRS



Alabama Governor Alfred P. Brewer (center) was given a Certificate of Honor by AFA State President Boyd E. Macrory for his work in behalf of MIA/POWs. On hand for the ceremony were Montgomery AFA Chapter head Frank Sego (left); Mrs. Michael McCuiston, of the League of Families; and Maj. Gen. Matthew K. Deichelmann, USAF (Ret.), a Montgomery AFA Chapter councilman.

## Stung by Criticism

MIA/POWs were much in the news at the close of 1970, but at this writing there has been no proof of any improvement in their lot, or that the date of their eventual freedom is any nearer.

There are indications, however, that Hanoi has been stung by the extensive criticism of its policy toward American captives. Hopefully, its reaction, once understood, will generate even stronger criticism.

A case in point is the censored interview, by the Canadian Broadcasting Corp. (CBC), of two Navy pilots, filmed in a POW camp on Christmas Day and broadcast in the US two days later. On face value it could be an effective propaganda effort, but it was, in fact, an insult to the intelligence of those aware of the facts, and criminal in its misrepresentation of conditions known to exist in POW camps in Southeast Asia.

The interview was carefully contrived to give the impression that all POWs receive humane treatment and thus relieve the concern for these men and destroy the campaign to keep

pressure on Hanoi to comply with the Geneva Convention. The description of life in a POW camp given by the men interviewed in no way resembled that detailed by men released to date—men who were free to report to the world what actually happened to them at the hands of the Communists.

US Air Force Col. Norris M. Overly, released by Hanoi in early 1968, described the treatment he received from the Communists—degradation, beatings, isolation, a weight loss of fifty-five pounds in one month. (See AIR FORCE Magazine, November 1970, for the full text of Colonel Overly's statement, made during AFA's 1970 National Convention.)

Other released POWs reported generally the same cruel treatment. We would like to believe that conditions under which POWs now exist have improved to the point depicted in the interview. We find it impossible to do so.

What are the facts today? No one outside Hanoi can say with any degree of certainty. There is suspicion on the part of some DoD officials that a small group of men—seven to ten, perhaps—are indeed well treated, and

that these men, probably without realizing it, are being exploited by their captors. The degree of coincidence seems too strong to be accidental. For, it seems, whenever interviews are permitted, or when delegations "inspect" a camp, it is generally the same site they see and the same men they talk to.

Men from this group, for example, were interviewed by a Swedish TV crew a few months ago. And four of the five POWs who appeared briefly in the film viewed in the US on December 27 were also interviewed on Christmas Day, two of them by the Japanese and two by an Algerian TV crew.

When prisoners from this small group answer questions prescreened by their jailers, there is no reason to believe they are not recounting factually their daily routine. Are they aware of other POWs and the conditions under which they exist? Obviously this question is never permitted to be asked.

Both men interviewed by CBC called for an immediate end to our participation in the Vietnam War. This is not surprising when one considers the carefully selected diet of news and reading material they had been fed. The books they named as part of their reading fare are all anti-war.

And, according to men released by Hanoi, current news force-fed to POWs concentrates on such topics as campus unrest, racial strife, and anti-Administration demonstrations, sprinkled heavily with antiwar statements made by nationally known figures, including three of those recently identified by Hanoi as "men of good will," Senators Fulbright, Kennedy, and McGovern.

## Barbaric

"Barbaric" was how Secretary of State William P. Rogers referred to the so-called "official" list of prisoners released by the North Vietnamese through Sen. Edward M. Kennedy just prior to Christmas. It would appear that Hanoi gave the roster to Mr. Kennedy and to two other Senators to



lend an air of legality to its efforts to convince the world that it has released the names of all men held prisoner.

Included with the list were the names of twenty men Hanoi reported had died in captivity. Thirteen of these were known POWs, while the remaining seven were listed as MIA. According to DoD, this leaves, still unaccounted for, some twenty-six men believed to be prisoners and nearly 400 others MIA in North Vietnam.

The Communists so far have refused to release any names of men held or known to be dead in South Vietnam or Laos. DoD believes seventy-eight men are held by the Viet Cong in South Vietnam, while an additional 463 are carried as MIA. In Laos, three men are held prisoner and 227 are missing.

### "Never Captured"

Less publicized in recent months has been the response of the North Vietnamese, through the Committee of Liaison and the Swedish government, to queries from MIA families about the fate of loved ones. The standard answer has been "never captured." In December, for example, the Swedes relayed to 203 families information they had received from Hanoi. They advised forty-five families that their loved ones were POWs (all were known to be prisoners), four that their men were dead, and 154 that their serviceman was "never captured."

The Geneva Convention requires that warring nations advise each other of men known to have been killed in action. Undoubtedly some of the men missing over North Vietnam perished in their aircraft. Undoubtedly the remains of some were unidentifiable. It

seems inconceivable, however, that this could happen to nearly 400 men. A number of pilots must have ejected from disabled aircraft, while others would have survived crash landings.

In any case, there would normally be enough remaining of an aircraft, such as a serial number, for identification. Or, one side could pinpoint the time and location of a crash sufficiently for the other to determine who was aboard. The "never captured" response by Hanoi highlights again that government's complete disregard for human life and for the feelings of the families who wait at home for some word of loved ones.

### Georgia Forum

A special hearing to help shed light on the plight of MIA/POWs was held in the Georgia State Capitol, in Atlanta, on December 18. Then Georgia Gov. Lester Maddox had earlier proclaimed that date as "a day of special recognition" for the sixty-seven men from Georgia held prisoner or missing in action.

Organizer and coordinator for the meeting was Dr. Dan Callahan, President of AFA's Middle Georgia Chapter. Sponsors of the hearing were the Georgia House and Senate Defense and Veterans Affairs Committees.

Special guests for the day were the families of MIA/POWs, including some thirty-nine children who had lunch in the Governor's Mansion and then attended a Christmas party in the Capitol. The party, complete with Santa Claus and presents for all, was sponsored by the State Assembly, with individual legislators contributing money for refreshments and gifts.

Speakers on the program included Governor Maddox; Governor-Elect

Jimmy Carter; Mrs. Bobby G. Vinson, National Coordinator for the League of Families; the Hon. Richard G. Capen, Jr., Assistant to the Secretary of Defense for Legislative Affairs; Maj. Fred N. Thompson, a former POW released by Hanoi; and author Louis R. Stockstill.

Also participating were State Sen. Culver Kidd and Rep. Crawford Ware, chairmen of the Senate and House Defense and Veteran Affairs Committees, respectively; and Mrs. Thomas V. Parrot, Georgia Coordinator for the National League of Families, whose Air Force husband is a POW in North Vietnam.

### Industry Support

North American Rockwell Corp. recently stepped up its company-wide campaign with a renewed effort to have employees write to Hanoi. North American Rockwell President Robert Anderson opened the drive with letters to the heads of major divisions, asking each to take a personal interest in the campaign.

Six bulletin-board posters were prepared (a total of 1,400 copies) for all company plants, with a new one posted each week for six weeks. Special inserts were also printed for company newspapers and sent to all 81,000 employees. Sample messages were included in the insert, and letters turned in to designated offices were mailed at company expense.

North American Rockwell also publicized the campaign in cities where its plants are located, urging all citizens to join their employees in asking, in the name of humanity, that Communist forces in North Vietnam, South Vietnam, and Laos comply with the Geneva Convention. ■



*Mrs. Bobby G. Vinson, National Coordinator for the League of Families, was a featured speaker at the Georgia forum for MIA/POWs. Others (from left) were Sen. Culver Kidd; Louis Stockstill; Rep. Crawford Ware; Richard G. Capen, Jr.; Maj. Fred N. Thompson; and (in foreground) Mrs. Thomas V. Parrott, Georgia Coordinator for the National League of Families.*



# Now in AIR FORCE

## The World's Most Authoritative Aircraft Data



Mr. Fred T. Jane was the originator of Jane's All the World's Aircraft and its editor from 1909-1916.



The current editor of Jane's is Mr. John W. R. Taylor, who is also editor of the regular Jane's Supplements.

Inaugurated in this issue is a new department that will be of special interest and value to readers of AIR FORCE Magazine. It is the *Jane's Supplement*, the first of which begins on the opposite page.

In the sixty-seven years since the Wright brothers' first powered flight, their concept has provided the basis for a technological revolution.

The acknowledged authority, enjoying a worldwide reputation for accuracy and completeness in documenting aircraft developments in the years since the birth of powered flight, is the reference work *Jane's All the World's Aircraft*. *Jane's*, published in Great Britain, appears in a new edition annually, but during the intervening months, new developments are reported in the *Jane's Supplements*.

Through an exclusive arrangement, AIR FORCE Magazine will present these *Supplements* in eight-page sections every other month, continuing the authoritative record of aircraft information in the parent *Jane's*.

The first volume of *Jane's All the World's Aircraft* appeared in 1909, following the success editor and publisher Fred T. Jane had with *Fighting Ships*, begun in 1897. The perception of Mr. Jane regarding aircraft technology was illustrated in 1902 when he stated that "only the 'heavier-than-air' flying machine seems likely to have any future at all."

Entitled *All the World's Air-ships*, the first edition's contents listed "Aeroplanes" first, so far as possible in order, according to whether they were Mono-, Bi-, Triplanes, etc. Then Helicopters and Unclassified Machines. Then Dirigibles in three classes: (1) Non-Rigid, (2) Semi-Rigid, and (3) Rigid.

Gathering information for the first edition must have been a complicated process. Mr. Jane, who died in 1916, relied mostly on correspondents, and even published blank forms on several pages so that interested and qualified readers could themselves fill in details. Mr. Jane's excuse for lack of information, as stated in the British entry, has a whimsical ring to it:

"The extreme tendency of the British inventor to isolate himself and work in secret is re-

sponsible for the meagre details about some of the machines and the possible omission of some others."

The 1909 edition was a volume of individual aircraft, the names of their owners, and the pilots who flew them. The eighth, ninth, and tenth editions recorded the aircraft, engines, and weapons used in World War I.

Mirroring industry trends, in 1920 the emphasis changed from inventors' machines and warplanes to the world's efforts to produce transport aircraft.

The 1922 edition contained the first Historical Section, describing the principal developments in military and civil aviation in each country.

In 1924 the book was changed to the style currently in use, with specifications standardized to increase its value as a reference work for aircraft users, engineers, and airline companies. It is "Jane's Style" that is used in the eight-page section that follows, and readers will note the use of "English-English," rather than American terminology, in all cases.

In its present form, *Jane's All the World's Aircraft* gives details of aircraft built by various companies, listed under thirty-seven countries. The entries in the *Supplements* are, of course, but a small sampling of new information.

The *Jane's Supplements* are the work of John W. R. Taylor, who has been Editor of *Jane's* since 1959. His experience includes seven years of design and technical writing at Hawker Aircraft Ltd., working on a variety of aircraft, followed by eight years as Editorial Publicity Officer of the Fairey Aviation Group. He has had 154 books on aviation published to date, with several others commissioned or now being printed.

Mr. Taylor is a Fellow of the Royal Historical Society, a Fellow of the Society of Licensed Aircraft Engineers and Technologists, and an Associate Fellow of the Royal Aeronautical Society.

AIR FORCE Magazine regards it a singular honor to be able to carry the *Jane's Supplements* as a vital part of our editorial growth in coming months.

—THE EDITORS



# JANIE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Prototype Sikorsky S-67 Blackhawk combat helicopter (two 1,500 shp General Electric T58-GE-5 turboshaft engines)

**SIKORSKY**  
SIKORSKY AIRCRAFT, DIVISION OF  
UNITED AIRCRAFT CORPORATION;  
Head Office and Works: Stratford, Connecticut 06602, USA

## SIKORSKY S-67 BLACKHAWK

On 22 September 1970, Sikorsky announced that a new high-speed attack helicopter, designated S-67 Blackhawk, had completed successfully its initial flight trials.

Developed as a private venture, the Blackhawk is a twin-turbine helicopter, utilising proven components on a low-profile gunship fuselage. A number of new design features are introduced to provide high speed, manoeuvrability, and versatility, some of these emanating from the S-66 concept that Sikorsky entered in the US Army's 1965 competition for an advanced aerial fire support system (AAFSS), as well as from de-

sign and flight experience with the S-61F compound helicopter.

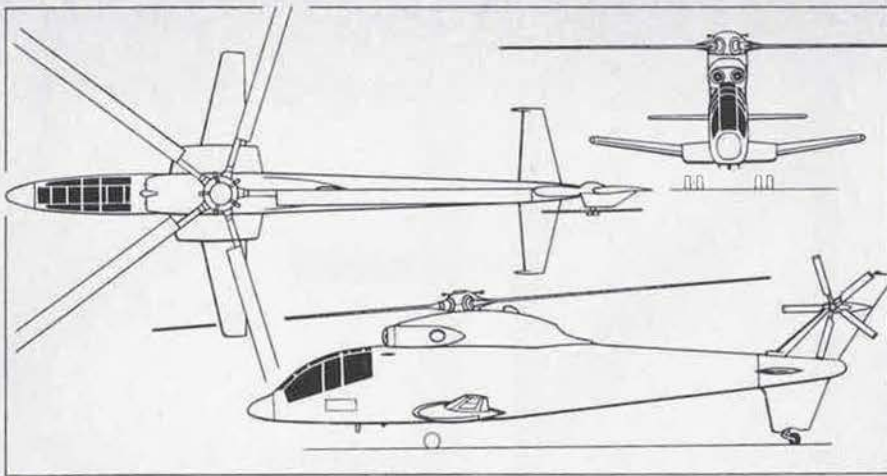
The S-67 has a vertical fin, similar to that of a fixed-wing aircraft, which extends beneath the fuselage and serves also as a mounting for the non-retractable tail-wheel. A controllable horizontal stabiliser is mounted at the rear of the long tapered fuselage; when set in a vertical position for hovering flight, it reduces considerably vertical drag. In the normal flight position it helps reduce rotor stresses in manoeuvring flight, and allows the pilot to trim the fuselage independently of the rotor and to achieve better fuselage alignment with the target. A detachable fixed-wing reduces main rotor loading as well as improving manoeuvrability and, for the first time on a helicopter, speed brakes in both upper and lower wing surfaces can be extended quickly to provide added control. These speed brakes

are reported to increase the time on target by 30%, reduce the aircraft's turning radius, permit improved firing accuracy and provide a 38% steeper dive angle. The combined effect of these innovations is to produce a highly manoeuvrable helicopter, able to take advantage of every scrap of cover close to the ground while approaching or leaving a target area.

While the proven dynamic system of the Sikorsky S-61R has been used in the new S-67, this too has undergone development to improve performance. The rotor head is now faired to reduce parasitic drag, and the tips of the rotor blades are swept back to delay blade-tip stall at high speeds, improve the lift/drag ratio of the blades, and reduce vibratory stresses. Specially designed air intakes also reduce drag at high speed.

The low-profile fuselage design of the Blackhawk not only serves to improve speed





Sikorsky S-67 Blackhawk

characteristics, but means that the gunship offers a more difficult target for an enemy's defensive armament: it presents a frontal flat-plate area of only 17 sq ft (1.58 m<sup>2</sup>) by comparison with that of the SH-3 Sea King, which totals 32 sq ft (2.97 m<sup>2</sup>).

With a maximum take-off weight of 22,000 lb (9,979 kg), Blackhawk is in the same general weight class as the S-61 series, and can carry up to 8,000 lb (3,628 kg) of weapons and ammunition. Typical loads include wing-mounted rocket or TOW anti-tank missile pods and under-fuselage and nose turrets housing either 7.62 mm multi-barrel Miniguns, 20 and 30 mm cannon or a 40 mm grenade launcher.

As a troop carrier, with modified cabin, it could transport up to 15 fully-armed troops in the upper section of a two-deck rear compartment, the lower section housing fuel and ammunition. In such a rôle it would have a range of up to 191 nm (220 miles; 354 km) at a speed of 143 knots (165 mph; 265 km/h).

When used as a long-range rescue helicopter, with auxiliary fuel tanks mounted on the wings, the S-67 could fly up to 521 nm (600 miles; 966 km) at high speed to recover as many as six persons.

Good payload characteristics mean that the Blackhawk could be used for observation or surveillance duties, equipped with sophisticated electronic devices to detect and record the emplacement and movement of enemy personnel and installations.

When carrying troops, or external loads of up to four tons, the Blackhawk would not need the fixed-wings, which are easily detachable, since weight-lifting rather than manoeuvrability would be the basic requirement.

Construction of the S-67 has been simplified by the use of spot weld bonding of many structures. This involves clamping together the surfaces to be bonded, after spreading uncured adhesive on the mating faces. Spot welding is then achieved by conventional variable-pressure-type electrodes, and this is followed by curing at low temperature for one hour. The new technique is said to be economical, faster, and weight-saving, and some 10% of the S-67 airframe area was joined by this process.

**TYPE:** Twin-engined high-speed combat and multi-purpose helicopter.

**ROTOR SYSTEM:** Five-blade fully-articulated main rotor of all-metal construction. Main rotor blades attached to Bifilar vibration absorbers. Blades do not fold. Conventional tail rotor with five aluminium blades.

**ROTOR DRIVE:** Twin turbines drive through free-wheeling units to main gearbox. Steel drive shafts. Tail rotor shaft driven

through intermediate gearbox and tail gearbox.

**FUSELAGE:** All-metal semi-monocoque low-profile structure.

**TAIL UNIT:** All-metal fin with swept surfaces. Upper section houses tail rotor drive and serves also as mounting for the tail rotor. Lower section projects beneath fuselage and acts as mounting for the non-retractable tail-wheel. All-moving horizontal stabiliser, which can be set in a vertical position in hovering flight.

**LANDING GEAR:** Tail-wheel type, consisting of two twin-wheel main units which retract rearward hydraulically, and a non-retractable tail-wheel.

**POWER PLANT:** Two 1,500 shp General Electric T58-GE-5 turboshaft engines, mounted side-by-side above cabin, immediately forward of main transmission. More powerful General Electric T58-GE-16, Lycoming PLT-27, or Army advanced technology engines could be used alternatively to improve performance.

**ACCOMMODATION:** Pilot and co-pilot/gunner seated in tandem beneath a single transparent canopy in the nose of the aircraft. Cockpit heated and air conditioned.

**ARMAMENT:** TAT 140 gun turret, housing XM-140 30-mm cannon, XM-188 30-mm cannon, XM-197 20-mm cannon or M61-A2 20-mm cannon, or 40-mm grenade launcher. XM-26 TOW missile system or

XM-159 2.75-in rocket launchers can be carried on underwing racks.

**DIMENSIONS, EXTERNAL:**

Diameter of main rotor	62 ft 0 in (18.90 m)
Main rotor blade chord	18.25 in (46.35 cm)
Diameter of tail rotor	10 ft 4 in (3.15 m)
Fuselage length	64 ft 9 in (19.74 m)
Span of fixed-wings	27 ft 4 in (8.33 m)
Height to top of rotor hub	15 ft 0 in (4.57 m)
Wheel track (c/l of shock-struts)	7 ft 0 in (2.13 m)

**AREAS:**

Main rotor disc	3,019 sq ft (280.5 m <sup>2</sup> )
Tail rotor disc	83.9 sq ft (7.80 m <sup>2</sup> )

**WEIGHT:**

Max T-O weight	22,000 lb (9,979 kg)
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**PERFORMANCE (estimated):**

Diving speed	200 knots (230 mph; 370 km/h)
Cruising speed	over 174 knots (200 mph; 322 km/h)
Normal range	217 nm (250 miles; 402 km)

**USSR**

**LUNA 17 (LUNOKHOD 1)**

Luna 17 was launched on 10 November 1970 from the Soviet space complex at Baikonur. Announcing the mission, Tass described its purpose as being "to test new equipment." After two mid-course corrections the spacecraft went into a near-circular lunar orbit on 15 November, with an initial height of 53 miles (85 km). The orbit was then changed to an elliptical one with a 12-mile (19 km) perilune, soon after which the spacecraft effected a successful soft landing in the Sea of Storms at 0947 GMT on 17 November.

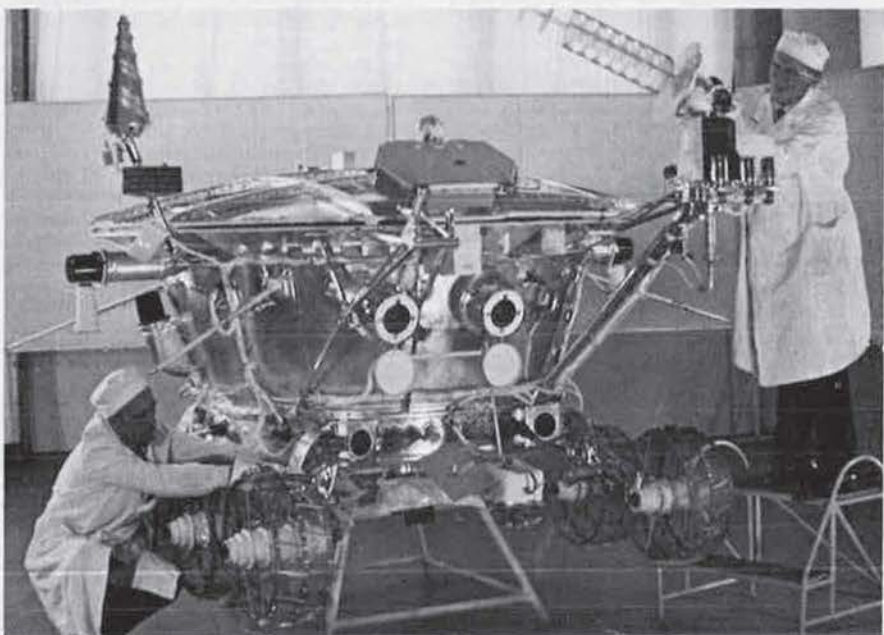
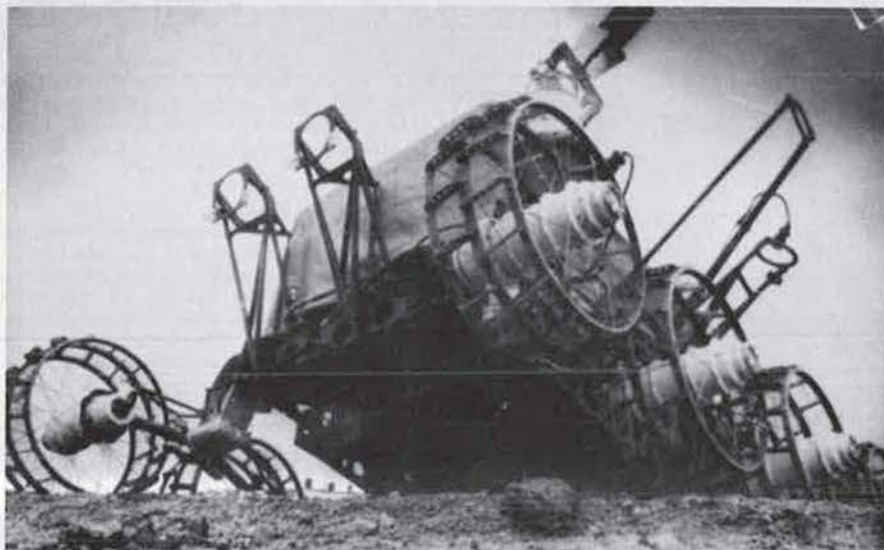
At 1248 GMT, a wheeled vehicle, Lunokhod 1, descended a pair of ramps to become the first man-made mechanical device to rove the surface of the Moon.

The Luna 17 spacecraft is a development of the Luna 16 descent stage, with the tubular instrument section, which formerly encircled the base, repositioned within the structure to make space for the vehicle, and the landing legs lengthened. Ramps, comprising pairs of two-section, folding arms, are fitted to each end, presumably to provide a spare should one set fail or if it was obstructed by a surface feature.

Artist's impression of the projected production version of the Sikorsky S-67 Blackhawk, with armament installed







Powered chassis of Lunokhod 1 (top) under test at "Lunodrome" trials area in the USSR, and moon exploration vehicle (bottom) in assembly and test workshop (Tass)

Lunokhod 1, basically resembling a Victorian bathtub, travels on eight small spoked wheels fitted with wire-mesh tyres, embodying transverse strips of titanium to provide increased grip. Each wheel is individually suspended and driven by its own electric motor. This arrangement permits disconnection and free-wheeling of any wheel should it jam or its motor fail. If necessary, the axles of failed wheels can be disconnected by an explosive device; the vehicle can continue moving with only one wheel operating on each side. Power is obtained by two solar-cell arrays, one on top of the body and the other on the inside of the "lid," which was deployed after the landing.

The vehicle is capable of continuous forward or backward movement at various speeds, but can also be commanded to move short distances, stopping automatically after each stage. As a safety feature it stops automatically if the surface gradient exceeds a certain, unspecified, figure. This overcomes the lag of several seconds in round-trip signals, which requires the vehicle's movement to be anticipated several yards in advance. Two television cameras

are fitted in the front end of the main body; one, with a relatively short focal length, is used for guiding the vehicle and the other, with the longer focal length, for the detailed examination of objects. Other equipment includes an X-ray spectrometer, to study the chemical composition of the lunar surface, and a stamping device for probing rocks. A system of sensors measures the forces acting on the chassis.

On its initial run, Lunokhod 1 travelled some 70 ft (20 m), making several trial turns on the way. Next day it travelled a further 300 ft (96 m) and carried out a number of experiments including, during a lengthy stationary period, radiation tests involving both cosmic rays emanating from the vicinity of the Sun and interstellar X-radiation. On Sunday, 22 November, the vehicle was parked and shut down for the two-week lunar night, having travelled about 650 ft (192 m). On Tuesday, 8 December, it was successfully reactivated and continued its exploratory travels.

Lunokhod is controlled from Earth by a team of five operators, consisting of the commander, driver, engineer, navigator, and

a radio operator; each member has a standby ready to relieve him at any moment.

Luna 17 and Lunokhod 1 represent a technical achievement of the first magnitude, with important implications for the exploration of those planets too inhospitable for manned landings to be attempted.

#### BOEING

THE BOEING COMPANY; Address (Aerospace Group), PO Box 3999, Seattle, Washington 98124, USA

#### BOEING AWACS

The AWACS (Airborne Warning And Control System) aircraft to be developed for USAF service from the mid-1970s will be equipped with extensive sensing, communications, display, and navigational devices.

The primary use of such an aircraft, as deployed by Aerospace Defense Command, will be as a survivable early-warning airborne command-and-control centre for identification, surveillance, and tracking of airborne enemy forces and for the command and control of NORAD (North American Air Defense) forces. Similar aircraft, operated by Tactical Air Command, will be used as airborne command-and-control centres for quick-reaction deployment and tactical operations.

Boeing's Aerospace Group was one of two competitors for the AWACS contract (the other being McDonnell Douglas), and was named as prime contractor and systems integrator for the programme on 8 July 1970. Boeing's submission was based upon the airframe of the Model 707-320 commercial jet transport and, in Phase 1 of the development programme, two of these aircraft will be modified initially for comparative trials with prototype downward-looking radars designed by Hughes Aircraft Company and Westinghouse Electric Corporation. The first flight by one of these aircraft is scheduled to take place in February 1972. Airborne tracking tests (beginning in early 1973) and the complete integration of all avionics and other systems are scheduled to be completed by the end of 1974.

Subject to the successful completion of Phase 1 and the selection of a winning radar (due to take place by late 1972), Phase 2, if approved, will involve full-scale design, development, test, and evaluation and an overall AWACS system demonstration, in which one or more components of each AWACS subsystem will be added to the Phase 1 aircraft with the winning radar. Next will follow five pre-production aircraft, each powered by eight General Electric TF34 turbofan engines in podded underwing pairs.

Phase 3, if approved, will cover the manufacture of production aircraft, of which 42 are due to be built under plans announced in 1970.

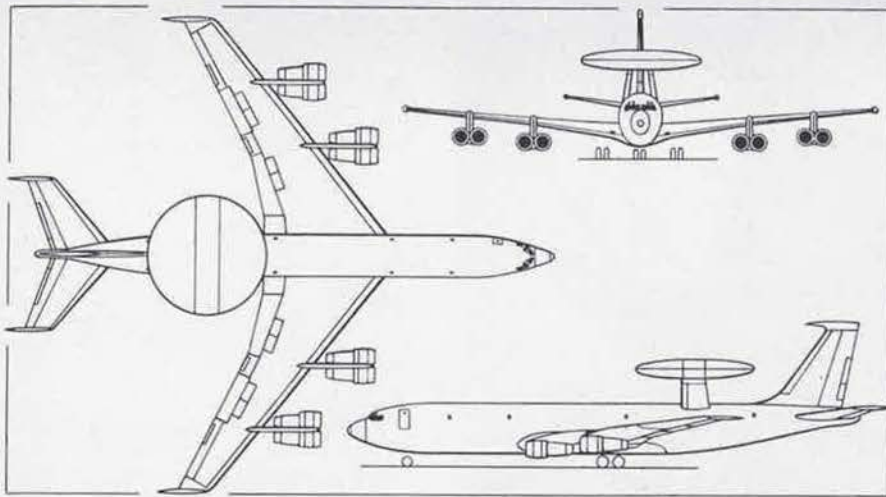
TYPE: Airborne early-warning and command post aircraft.

WINGS, FUSELAGE AND TAIL UNIT: Basically as Boeing 707-320, with strengthened fuselage structure.

POWER PLANT: Prototypes will retain their existing power plants during Phase 1. Pre-production and production aircraft will be powered by eight General Electric TF34 high by-pass ratio turbofan engines, each in the 9,000 lb (4,082 kg) thrust class, installed in pairs in pylon-mounted pods beneath the wings.

ACCOMMODATION: Operational crew of 17 in production version, which may be increased according to mission. Aft of flight deck, from front to rear of fuselage, are





Boeing AWACS (Provisional)

the crew's rest area; communications, data processing, and other equipment bay; multi-purpose systems consoles and mission commander's "operations room"; monitoring and test check-out stations; and radar bay. Aft of the radar bay, in the TAC version only, a special tactical security section will be installed in the rear of the fuselage. Sleeping accommodation in lower aft cargo compartment.

**ELECTRONICS AND EQUIPMENT:** Test aircraft will be fitted with HF, VHF, and UHF communications equipment; production version, with full identification, communication and surveillance systems installed, will carry nearly 75 antennae. Electrical system will include a 60-70 kVA variable-speed, constant-frequency generator for each engine. The distribution centre for mission equipment power and remote electronics is located, together with an APU, in the lower forward cargo compartment. Hughes or Westinghouse (see introductory copy) downward-looking

surveillance radar in rotating circular radome, 30 ft (9.14 m) in diameter, carried on a pylon structure above the rear of the fuselage. This radar will be able to discriminate between "clutter" (signals returned from the ground) and those returned from moving targets, to detect low-flying aircraft beneath the heights covered by ground-based radars. Aircraft with winning prototype radar will be fitted with a prototype airborne computer, complete IFF system and partial display and communications systems for subsequent testing.

**BAC**  
**BRITISH AIRCRAFT CORPORATION,**  
**GUIDED WEAPONS DIVISION; Head**  
**Office, 100 Pall Mall, London SW1, England**

New operational uses of the Swingfire wire-guided anti-tank missile system are

planned, following the latest test firings of a batch of 70 missiles during which a reliability factor of 95 per cent was achieved. Development work has started on adapting the current Swingfire system for mounting on helicopters, on the British Army's new Alvis Striker CVRT (combat vehicle reconnaissance, tracked) and on standard "B" (soft-skinned) vehicles.

**BAC SWINGFIRE**

Design and development of this long-range command-controlled anti-tank weapon system were initiated by Fairey Engineering Ltd, incorporating features of that company's advanced Orange William anti-tank missile, work on which was cancelled in 1959. The first official reference to Swingfire was made on 10 August 1962, when the Minister of Defence announced that this weapon was under development for the British Army as an eventual replacement for the Malkara. British Aircraft Corporation (Guided Weapons) Ltd were appointed prime contractors for the weapon, at their Stevenage and Filton works, on behalf of British Aircraft Corporation (AT) Ltd.

The general appearance of Swingfire is shown in the accompanying illustrations. At the front are the warhead, safety and arming mechanism, followed by the motor. The rear section carries spring-loaded cruciform wings, which fold down against the body when the missile is in its launching box, and houses the autopilot, wire dispenser, and the gimballed motor nozzle (jetavator) by which the missile is steered in flight. The warhead is a hollow charge powerful enough to defeat all known combinations of armour and to destroy the heaviest battle tank out to a range of 13,125 ft (4,000 m).

Swingfire is stored in and launched from a disposable container which hermetically seals it up to the moment of launch. The containers in turn can be housed in armoured bins on the launch vehicle, to ensure protection from small-arms fire and splinter damage in combat. They are stowed in the bins at the optimum launch attitude, with automatic compensation for vehicle tilt. Connection to the system is made by means

Swingfire long-range anti-tank missile at moment of launch from a pallet mounted on a Land-Rover







Swingfire long-range anti-tank missile system installed on a Ferret scout car of the Royal Armoured Corps

of a slide-in socket, with locating entries matching a plug and pegs on the armoured installation.

The missile's name derives from the fact that it has a firing arc of 90° from a fixed launcher, this arc of fire remaining constant at all ranges. Since vehicle installations require neither traversing nor elevating gear, it is easy to install the Swingfire weapon system on a wide variety of vehicles. When it can be mounted on a traversing turret, targets can be engaged through a full 360° field of fire.

Swingfire offers a number of significant advances over other types of long-range wire-guided anti-tank missiles. It can be used in a direct fire rôle or in a separated fire rôle with the operator located more than 160 ft (50 m) from the launch vehicle, which can be concealed behind cover. After launch, the missile is gathered automatically on to the operator's field of view to the target by a programme generator built into the ground equipment. As well as functioning in azimuth, this generator permits engagement over an arc of 20° elevation and 15° depression, so that the missile can be fired over obstacles or around corners into the operator's field of view. Launchings can be made from a closed-down armoured vehicle, giving the crew protection from high explosive, chemical, biological, and radiological effects. The fixed launch angle, irrespective of range or target position, permits rapid switches from one target to another. Possible rate of fire is as high as that of an anti-tank gun, as one launcher can be loaded while the other is being fired, in some vehicle installations.

Swingfire has a velocity control system and is steered into the target by movements of a joystick, which adjust the missile heading in azimuth and elevation by deflecting the thrust of the rocket motor. The latter gives a very slow acceleration at launch. Combined with the vectored-thrust control system, this makes Swingfire highly manoeuvrable during the early launch phase, so that it will hit targets over a direct-fire range of less than 500 ft (150 m) or separated-fire range of 1,000 ft (300 m).

Basic weapon system components carried

by the launch vehicle comprise a periscope, sight and joystick unit, missile selector unit, alignment gauge sighting station, tilt compensating unit, junction box and sequence firing unit, fault locating indicator, programme generator and data store, power supply, and plug-in point for the separation sight. The number of missiles carried depends on the type of vehicle used.

For separated fire, the launch and in-flight control equipment is integrated into a single unit mounted on a short tripod for use by an operator in a prone position. It comprises a sight, right-hand joystick, and left-hand firing button. Alternative open sighting or 10x magnification are available. Elevating and traversing the sight generates signals which are fed by cable to the programme generator.

Swingfire entered service with the British Army in 1969. It equips four Royal Armoured Corps regiments in Germany, with more forming. Standard launch vehicles are a modified FV 432 armoured personnel carrier, redesignated FV 438, which carries

two missiles ready for launch and 12 more stowed, and the FV 712 Ferret Mk 5 scout car which carries four missiles ready to fire and two spares. Swingfire can be installed on a wide variety of other vehicles, including tanks and armoured cars. In addition, a simple palletised version has been developed, with four missiles ready to fire and two spares. This can be fired from unmodified vehicles such as Land-Rovers, or from the ground, and is both air-transportable by fixed-wing aircraft and helicopters and air-droppable. Its total weight is 1,000 lb (454 kg).

Royal Armoured Corps units deploying Swingfire now include the Parachute Squadron and will be joined later this year by armoured reconnaissance regiments. The projected helicopter installation is intended for use on future types such as the Westland WG. 13 Lynx. Phase 1 tests, with four Swingfire launchers and a stabilised sight mounted on a Scout helicopter, were scheduled for completion in the first weeks of this year, and are aimed primarily at proving that the missiles can be fired in an air-to-surface rôle without risk to the helicopter.

#### DIMENSIONS:

Length overall	3 ft 6 in (1.07 m)
Max body diameter	6.7 in (0.17 m)
Wing span	14.7 in (0.37 m)

#### ANAHUAC

FABRICA DE AVIONES ANAHUAC SA;  
Address, Calzada A. López Mateos No 478,  
Aeropuerto Internacional, Mexico 9, DF,  
Mexico

President, Founder and General Administrator:  
Dr Alejandro Elizondo

#### Chief Executives:

Ing Arno Gjumlich (Designer and Chief Engineer)

Capt Marcial Sánchez (Chief Production and Flight Test Pilot)

Arq Alfonso Menchero (Purchasing and Sales Manager)

C.P. Luis Picón (General Comptroller)

This company was formed to initiate in Mexico the development of aircraft suited to the particular needs of agricultural aviation in that country, and takes its name from the former Aztec valley where Mexico City is now situated. Anahuac's first product is a single-seat aircraft known as the TA-70 Tauro, described below.

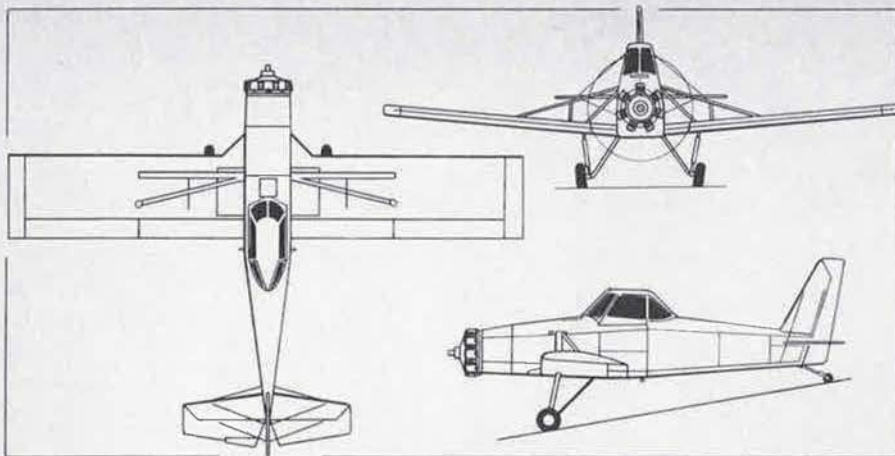
#### ANAHUAC TA-70 TAURO (BULL)

Design of the Tauro was begun in January 1967 by Ing Arno Gjumlich, assisted by Alejandro Betancourt, David Zamora, Rafael

Anahuac TA-70 Tauro agricultural aircraft (300 hp Jacobs R-755-A2M1 engine)







Anahuac Tauro

Vega and Octavio Climent, graduate engineers from the Instituto Politécnico Nacional. Construction of the prototype started in July of that year, and this aircraft (XB-TAX) was flown for the first time on 3 December 1968 by test pilot Marcial Sánchez.

The first production Tauro was flown on 5 June 1970, and the aircraft has been awarded the Mexican DGAC's approved type certificate No. 1. Five production aircraft had been completed by late August 1970. Fly-away factory price, less agricultural equipment, was then quoted as \$23,680.

The description below applies to the standard production version; the Tauro is also available optionally with a 300 hp Lycoming R-630-3B nine-cylinder radial engine and a fixed-pitch or constant-speed propeller.

**TYPE:** Single-seat agricultural aircraft.

**WINGS:** Strut-braced low-wing monoplane.

Wing section US 35-B. Thickness/chord ratio approx 10%. Dihedral 5° from roots. Incidence 2°. No sweepback. Braced by inverted Vee-strut above each wing. All-metal (aluminium) spars, ribs, and leading-edges, covered with Ceconite fabric. Trailing-edge flaps and ailerons of similar construction. No tabs.

**FUSELAGE:** Basic structure of 4130 steel tube, covered with removable aluminium panels, except for Ceconite covering of rear top-decking. Impact-absorbing structure forward of cockpit.

**TAIL UNIT:** Single slightly-sweptback fin

and balanced rudder, and non-swept fixed-incidence tailplane and balanced elevators, of 4130 steel-tube construction with Ceconite covering. Trim-tab on port elevator. Horizontal surfaces wire-braced above and below.

**LANDING GEAR:** Non-retractable tail-wheel type, with Anahuac-designed steel spring and rubber block shock-absorbers on main units, leaf spring on tail unit. Main units have Cleveland 6 x 6.00 wheels with Goodyear 8.50 x 6.00 tyres, pressure 30 lb/sq in (2.1 kg/cm<sup>2</sup>). Cleveland plate-type brakes.

**POWER PLANT:** One 300 hp Jacobs R-755-A2M1 seven-cylinder radial air-cooled engine, driving a Sensenich 5404/MA96K two-blade ground-adjustable metal propeller, diameter 8 ft 0 in (2.44 m). Fuel in two aluminium tanks, one in each wing root, total capacity 37 US gallons (31 Imp gallons; 140 litres). Refuelling point above tank in each wing. Provision for optional auxiliary tank in front fuselage. Oil capacity 5.28 US gallons (4.4 Imp gallons; 20 litres).

**ACCOMMODATION:** Single adjustable seat for pilot in enclosed cockpit, with downward-hinged window-door on each side. Cabin ventilated.

**SYSTEMS:** Electrical system includes 12V Rebat R-35 battery for engine starting.

**ELECTRONICS AND EQUIPMENT:** King VHF radio fitted. No blind-flying instrumentation. Chemical hopper in fuselage, forward of cockpit at CG position, capa-

city 210 US gallons (175 Imp gallons; 795 litres) of liquid or 1,764 lb (800 kg) of dry chemical.

**DIMENSIONS, EXTERNAL:**

Wing span 37 ft 6½ in (11.44 m)  
Wing chord (constant) 5 ft 9¾ in (1.77 m)  
Wing aspect ratio 6.4  
Length overall 26 ft 11¼ in (8.21 m)  
Height overall 7 ft 8 in (2.34 m)  
Tailplane span 11 ft 5¾ in (3.50 m)  
Wheel track 8 ft 2½ in (2.50 m)  
Propeller ground clearance (in flying attitude) 1 ft 0 in (0.30 m)

**DIMENSIONS, INTERNAL:**

Cabin: Max length 3 ft 8 in (1.12 m)  
Max width 2 ft 10 in (0.86 m)  
Max height 4 ft 3 in (1.295 m)  
Floor area 10 sq ft (0.93 m<sup>2</sup>)

**AREAS:**

Wings, gross 217.89 sq ft (20.24 m<sup>2</sup>)  
Ailerons (total) 18.0 sq ft (1.67 m<sup>2</sup>)  
Flaps (total) 18.0 sq ft (1.67 m<sup>2</sup>)  
Fin 11.0 sq ft (1.02 m<sup>2</sup>)  
Rudder 14.0 sq ft (1.30 m<sup>2</sup>)  
Tailplane 16.0 sq ft (1.49 m<sup>2</sup>)  
Elevators, incl tab 15.0 sq ft (1.39 m<sup>2</sup>)

**WEIGHTS AND LOADINGS:**

Weight empty 1,973 lb (895 kg)  
Max T-O and landing weight 3,542 lb (1,606 kg)

Max wing loading 16.28 lb/sq ft (79.5 kg/m<sup>2</sup>)

Max power loading 11.79 lb/hp (5.35 kg/hp)

**PERFORMANCE (at max T-O weight):**

Max level speed at S/L 104 knots (120 mph; 193 km/h)  
Max permissible diving speed 121 knots (140 mph; 225 km/h)  
Max cruising speed at S/L 78 knots (90 mph; 145 km/h)  
Econ cruising speed at 5,000 ft (1,525 m) 74 knots (85 mph; 137 km/h)  
Stalling speed, flaps up 48 knots (55 mph; 89 km/h)  
Stalling speed, flaps down 44 knots (50 mph; 81 km/h)  
Max rate of climb at S/L 500 ft (152 m)/min  
Service ceiling 14,000 ft (4,250 m)  
T-O run 1,150 ft (350 m)  
T-O to 50 ft (15 m) 1,476 ft (450 m)  
Landing from 50 ft (15 m) 1,150 ft (350 m)  
Landing run 820 ft (250 m)  
Range with max fuel 202 nm (233 miles; 375 km)

Anahuac TA-70 Tauro agricultural aircraft (300 hp Jacobs R-755-A2M1 engine)



**BRITTEN-NORMAN**

**BRITTEN-NORMAN LTD;** Head Office, Bembridge Airport, Isle of Wight, England. Sales Office: 26 Dover Street, London W1, England

**BRITTEN-NORMAN BN-2 ISLANDER**

Current production versions of the twin engined Islander light transport are as follows:

**BN-2A Srs 2.** Basic version with 260 hp Lycoming O-540-E4C5 engines. Described in detail in 1970-71 *Jane's*.

**BN-2A-2.** Developed version, for "hot and high" operations, with 300 hp Lycoming IO-540-K1B5 six-cylinder fuel-injection engines. Completed tropical trials during July 1970. Flaps are permanently drooped 6° to improve cruise speed flight attitude at maximum weight, and to shift maximum lift to the inner portion of the wing, thus allowing an increase in both all-up weight and zero-fuel weight without increasing wing bending moment. It is hoped that this will lead eventually to certification at a max T-O weight of 6,500 lb (2,948 kg), without structural modifications. Total fuel capacity





Britten-Norman BN-2A-3 Islander (two 300 hp Lycoming IO-540-K engines)

of the BN-2A-2 is 111.6 Imp gallons (134 US gallons; 507 litres).

Either of the above basic aircraft is available with a so-called "Speedpak" modification, the main feature of which is the incorporation of a 20.8 Imp gallon (25 US gallon; 94.5 litre) additional fuel tank in an extended outer panel on each wing, resulting in a 4 ft 0 in (1.22 m) increase in wing span. Other optional changes include the fitting of wider-chord main landing gear leg fairings, drooped wing leading-edge inboard of the engine nacelles, and improved low-drag engine cowlings. The "Speedpak" is available in kit form for on-site conversion of Islanders already in service. The BN-2A-2 when embodying the Speedpak modifications is known as the BN-2A-3, and has a max fuel capacity of 160.7 Imp gallons (193 US gallons; 727.5 litres). Customer-styled executive interior layouts are available with either power plant, with or without the Speedpak.

One BN-2A Srs 2 aircraft, with original-span wings and O-540 engines, has been fitted with turbochargers developed by Riley-Rajay Corporation of Long Beach, California, and installed to the order of an Islander operator, Jonas Aircraft & Arms Inc. Weights and performance data for this version, where known, are included in the details given below.

**DIMENSIONS, EXTERNAL:**

Wing span:  
without Speedpak 49 ft 0 in (14.93 m)  
with Speedpak 53 ft 0 in (16.15 m)

**AREAS:**

Wings, gross:  
without Speedpak 325 sq ft (30.19 m<sup>2</sup>)  
with Speedpak 337 sq ft (31.25 m<sup>2</sup>)

**WEIGHTS AND LOADINGS:**

Basic weight empty, equipped:  
2A Srs 2, no Speedpak 3,588 lb (1,727 kg)  
2A-2 3,738 lb (1,695 kg)  
2A-3 3,815 lb (1,730 kg)  
Rajay 3,668 lb (1,664 kg)

Basic operating weight:  
2A Srs 2, no Speedpak 4,122 lb (1,870 kg)  
2A-2 (VFR) 4,175 lb (1,893 kg)  
2A-2 (IFR) 4,386 lb (1,989 kg)  
2A-3 (VFR) 4,252 lb (1,928 kg)  
2A-3 (IFR) 4,463 lb (2,024 kg)

Max disposable load\*:

\*increased by 90 lb (41 kg) in all-freight models

2A-2 (VFR) 1,825 lb (827 kg)  
2A-2 (IFR) 1,614 lb (732 kg)  
2A-3 (VFR) 1,748 lb (792 kg)  
2A-3 (IFR) 1,537 lb (697 kg)

Max fuel load:  
2A-2 804 lb (364 kg)  
2A-3 1,158 lb (525 kg)

Max T-O weight (all models) 6,300 lb (2,858 kg)

Max zero-fuel weight (BCAR):  
2A Srs 2 without Speedpak, Rajay 6,000 lb (2,722 kg)  
2A-2 6,150 lb (2,789 kg)  
2A-3 6,080 lb (2,757 kg)

Max zero-fuel weight (FAR):  
2A Srs 2 without Speedpak, Rajay 5,800 lb (2,631 kg)  
2A-2 5,950 lb (2,698 kg)  
2A-3 6,030 lb (2,735 kg)

Max wing loading:  
without Speedpak 19.4 lb/sq ft (94.7 kg/m<sup>2</sup>)  
with Speedpak 18.7 lb/sq ft (91.3 kg/m<sup>2</sup>)

Max power loading:  
260 hp 12.1 lb/hp (5.49 kg/hp)  
300 hp 10.5 lb/hp (4.77 kg/hp)

**PERFORMANCE (at max T-O weight, ISA):**

Max level speed at S/L:  
2A Srs 2 147 knots (170 mph; 273 km/h)

Max permissible diving speed (all models) 182 knots (210 mph; 335 km/h)

Cruising speed (75% power):  
2A Srs 2, no Speedpak, at 7,000 ft (2,135 m) 139 knots (160 mph; 257 km/h)  
2A-2 at 10,000 ft (3,050 m) 146 knots (168 mph; 270 km/h)  
Rajay at 7,000 ft (2,135 m) 147 knots (170 mph; 273 km/h)

Cruising speed (67% power):  
2A Srs 2, no Speedpak, at 9,000 ft (2,750 m) 137 knots (158 mph; 254 km/h)

Cruising speed (65% power):  
2A-2 at 20,000 ft (6,100 m) 160 knots (185 mph; 297 km/h)

Cruising speed (59% power):  
2A Srs 2, no Speedpak, at 13,000 ft (3,960 m) 133 knots (153 mph; 246 km/h)

Stalling speed, flaps up:  
2A Srs 2, no Speedpak 50 knots (57 mph; 92 km/h)

Stalling speed, flaps down:  
2A Srs 2, no Speedpak 43 knots (49 mph; 79 km/h)

Max rate of climb at S/L:  
2A Srs 2, no Speedpak 1,050 ft (320 m)/min  
2A-2 1,450 ft (442 m)/min  
2A-3 1,475 ft (450 m)/min

Rate of climb at S/L, one engine out:  
2A Srs 2, no Speedpak 190 ft (58 m)/min  
2A-2 260 ft (79 m)/min  
2A-3 285 ft (87 m)/min

Absolute ceiling:  
2A Srs 2, no Speedpak 16,200 ft (4,940 m)  
2A-2 22,000 ft (6,700 m)  
2A-3 23,000 ft (7,010 m)

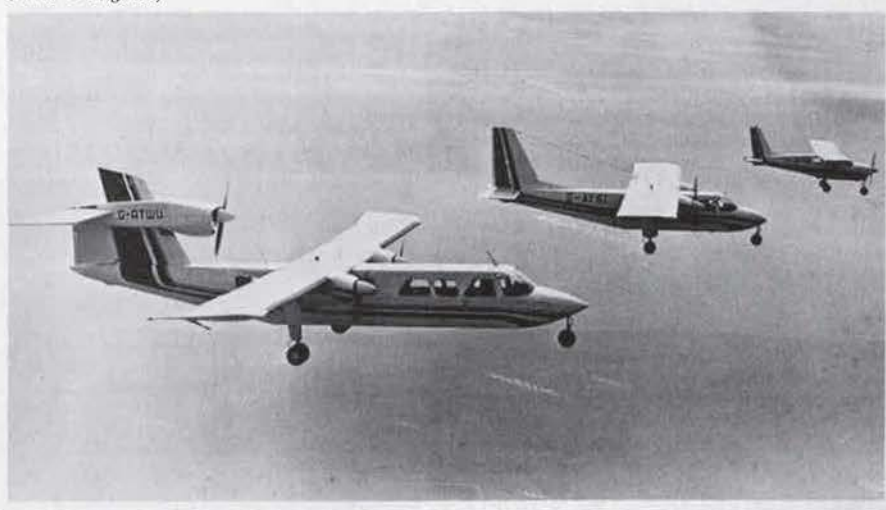
Service ceiling:  
2A Srs 2, no Speedpak 14,600 ft (4,450 m)  
2A-2 21,400 ft (6,525 m)  
2A-3 22,400 ft (6,825 m)  
Rajay 27,000 ft (8,230 m)

Service ceiling, one engine out:  
2A Srs 2, no Speedpak 5,600 ft (1,700 m)  
2A-2 7,800 ft (2,375 m)  
2A-3 8,900 ft (2,700 m)  
Rajay 12,500 ft (3,810 m)

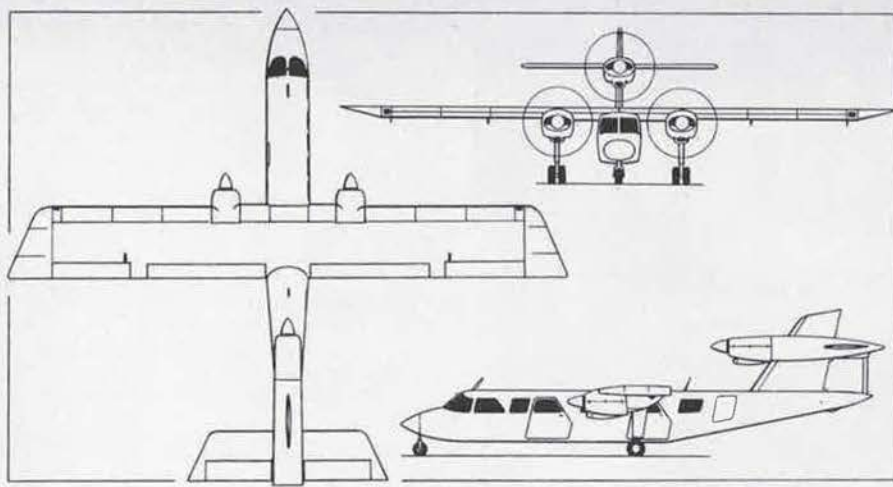
T-O run at S/L:  
2A Srs 2 without Speedpak, Rajay 560 ft (171 m)

2A-2, 2A-3 504 ft (153 m)  
T-O run at 10,000 ft (3,050 m):  
2A Srs 2, no Speedpak 1,065 ft (324 m)  
2A-2, 2A-3 895 ft (272 m)

Foreground, Britten-Norman BN-2 Islander Mk III (three 260 hp Lycoming O-540-E engines)







Islander Mk III

Rajay	640 ft (195 m)
T-O to 50 ft (15 m) at S/L:	
2A Srs 2 without Speedpak, Rajay	1,090 ft (332 m)
2A-2, 2A-3	990 ft (301 m)
T-O to 50 ft (15 m) at	
10,000 ft (3,050 m):	
2A Srs 2, no Speedpak	2,090 ft (637 m)
2A-2, 2A-3	1,760 ft (536 m)
Rajay	1,220 ft (371 m)
Landing from 50 ft (15 m):	
all models	960 ft (293 m)
Landing from 50 ft (15 m) at 10,000 ft (3,050 m):	
all models	1,340 ft (408 m)
Landing run at S/L:	
all models	450 ft (137 m)
Landing run at 10,000 ft (3,050 m):	
all models	627 ft (191 m)
Range with max fuel (75% power at 7,000 ft = 2,135 m):	
2A Srs 2, no Speedpak	667 nm (768 miles; 1,236 km)
2A Srs 2 with Speedpak	941 nm (1,084 miles; 1,744 km)
Range with max fuel (67% power at 9,000 ft = 2,750 m):	
2A Srs 2, no Speedpak	734 nm (846 miles; 1,361 km)
2A Srs 2 with Speedpak	1,038 nm (1,195 miles; 1,922 km)
Range with max fuel (59% power at 13,000 ft = 3,960 m, no reserves):	
2A Srs 2, no Speedpak	810 nm (933 miles; 1,501 km)
2A Srs 2 with Speedpak	1,143 nm (1,317 miles; 2,119 km)
IFR stage length at 136 knots (157 mph; 252 km/h) at 7,000 ft (2,135 m), with reserves:	
2A-2 with max payload	330 nm (380 miles; 610 km)
2A-3 with max payload	243 nm (280 miles; 450 km)
2A-2 with max fuel	390 nm (450 miles; 725 km)
2A-3 with max fuel	600 nm (690 miles; 1,110 km)

### BRITTEN-NORMAN BN-2 ISLANDER Mk III

In the Autumn of 1970 Britten-Norman introduced an enlarged development of the twin-engined Islander, having a third engine mounted at the rear and a lengthened fuselage seating up to 17 persons. This version is known as the Islander Mk III.

The prototype Mk III was produced by converting the second prototype of the twin-engined Islander (G-ATWU), adding a 7 ft 6 in (2.29 m) length of parallel-section fuselage forward of the wing, reinforcing the

rear fuselage, and fitting a new main landing gear with larger wheels and tyres. The tail unit was modified to act as a mount for the third engine. This aircraft made its first flight on 11 September 1970, appearing in public for the first time at the SBAC Display at Farnborough later the same day. Additional fin area was added above the rear engine subsequent to the first flight. The description below applies to this aircraft.

This prototype has since been dismantled and its fuselage used for structural testing. By the end of 1970 construction had begun of three pre-production Mk IIIs (by converting standard Islander airframes from the current production line), and the first of these was due to fly early in 1971.

Certification and delivery of production Mk III Islanders is anticipated by the Summer of 1971. These will have their own separate production line, but will have more than 75 per cent commonality of structure with the twin-engined version.

**TYPE:** Three-engined feeder-line transport.  
**WINGS:** Cantilever high-wing monoplane. NACA 23012 wing section. No dihedral. Incidence 2°. No sweepback. Conventional riveted two-spar torsion-box structure in one piece, using aluminium-clad aluminium alloys. Increases in skin gauges and spar laminates compared with twin-engined versions. Flared-up wingtips of Britten-Norman design, with raked tips. Slotted ailerons and electrically-operated single-slotted permanently-drooped flaps of metal construction. Ground-adjustable tab on starboard aileron. BTR-Goodrich pneumatic de-icing boots optional.

**FUSELAGE:** Conventional riveted four-longeron semi-monocoque structure of pressed frames and stringers and metal skin, using L72 aluminium-clad aluminium alloys. Some reinforcement of fuselage aft of wing to support weight of rear engine.

**TAIL UNIT:** Cantilever structure, with low aspect ratio main fin which also acts as mount for the third engine. Fixed-incidence tailplane, similar in construction to that of twin-engined Islander but with raked tips. Trim-tab in rudder. Fin area extended above engine after initial test flights.

**LANDING GEAR:** Non-retractable tricycle type, with twin wheels on each main unit and single steerable nose-wheel. Cantilever main legs mounted aft of rear spar. Similar to landing gear of twin-engined version, but with larger wheels and tyres.

**POWER PLANT:** Three 260 hp Lycoming O-540-E six-cylinder horizontally-opposed air-cooled engines, each driving a Hartzell two-blade feathering constant-speed metal propeller, diameter 6 ft 8 in (2.03 m).

**ACCOMMODATION:** Up to 17 persons, including pilot, in pairs on bench seats. Access to all seats provided by four forward-opening and one rearward-opening car-type doors, two on port side and three on starboard side. Baggage area at rear of cabin.

#### DIMENSIONS, EXTERNAL:

Wing span	53 ft 0 in (16.15 m)
Length overall	43 ft 9 in (13.34 m)
Tailplane span	21 ft 3 in (6.48 m)

#### DIMENSIONS, INTERNAL:

Baggage area:	
with 17 seats occupied	33 cu ft (0.93 m <sup>3</sup> )
with 16 seats occupied	65 cu ft (1.84 m <sup>3</sup> )

#### WEIGHTS:

Weight empty, equipped	5,020 lb (2,277 kg)
Max T-O weight	9,000 lb (4,082 kg)
Max zero-fuel weight	8,700 lb (3,946 kg)

#### PERFORMANCE (at max T-O weight):

Max level speed at S/L	166 knots (192 mph; 309 km/h) TAS
Cruising speed (75% power) at 6,500 ft (1,980 m)	160 knots (185 mph; 297 km/h) TAS
Cruising speed (67% power)	156 knots (180 mph; 290 km/h) TAS
Cruising speed (59% power) at 13,000 ft (3,960 m)	152 knots (175 mph; 281 km/h) TAS
Service ceiling, one engine out:	
ISA	10,900 ft (3,320 m)
ISA + 30°C	9,700 ft (2,955 m)
T-O to 50 ft (15 m), ISA at S/L	1,420 ft (433 m)
Landing from 50 ft (15 m), ISA at S/L	1,600 ft (488 m)
VFR range with 3,000 lb (1,360 kg) payload (59% power)	347 nm (400 miles; 644 km)
Max VFR range, conditions as above	868 nm (1,000 miles; 1,610 km)
IFR range with 3,000 lb (1,360 kg) payload (67% power), 10% reserves and 45 min hold	174 nm (200 miles; 322 km)
Max IFR range, conditions as above	651 nm (750 miles; 1,207 km)

Britten-Norman BN-2 Islander Mk III (three 260 hp Lycoming O-540-E engines)





## A Summing Up

*Pieces of the Action*, by Vannevar Bush, William Morrow and Co., New York, 1970. 336 pages. \$8.95.

A lot has happened in the past sixty years. So says Vannevar Bush, aged eighty. He should know, for "it has been my good fortune to have a piece of the action here and there in varied circumstances." Consider the variety and increasing importance of his activities over sixty adult years: Teacher at Tufts University, Dean of the School of Engineering at MIT, President of the Carnegie Institution, guiding genius in the mobilization of US science in World War II, servant and adviser of US Presidents beginning with Hoover, defender of the American way, inventor, philosopher, raconteur. It is from these vantage points that Bush has written about some of his "pieces of the action."

Much of the volume, certainly a most important part, is about how civilian scientists and military officers learned to work together, devising the new weaponry needed for victory in WW II . . . radar, rockets, the proximity fuze, "the bomb," and so on. Bush strings together a host of wonderful yarns, sometimes about why and how things happened, sometimes about why and how they were held up "by a top brass, old-fashioned technically."

Then, Bush sums it all up with an economy of words that surely reflects his Yankee lineage: "The officers found that 'scientists' could bring together subtle physics and chemistry, but could also do it in an exceedingly practical and hard-boiled manner. The 'scientists' found that the officers had something which was new to them and admirable—utter loyalty, the ability to operate smoothly in a rigid system, and the art of command." In this context, Bush emphasizes the imperative that, in times of peace and half peace/half war, as well as all-out conflict, there must be continuing, close, and cordial collaboration between the military and the scientists.

What about the future? Bush is optimistic, his hopes based partly on facts, partly on intuition: "I knew that [as World War II neared its end] civilization faced an utterly new era, and I felt that it might as well face it

squarely. I knew that nerve gases, delivered in a dozen different ways, could be as terrible as an A-bomb. And I had no illusions about the potential power of biological warfare. When science became really applied to warfare, which occurred only during World War II, it presented humanity with two alternatives. Either it could refrain, formally or informally, from use of weapons of mass destruction—not only the bomb but also gases and bacteria and viruses—or it could thrust itself back into the dark ages. Over twenty years have passed, and the world has understood and has thus far refrained. If for no other reason I would justify the use of the bomb at Hiroshima and Nagasaki because it was the only way in which the dilemma could be presented with adequate impact on world consciousness. Can the stalemate continue until the world becomes more sane? I think it can. . . ."

There is so much more between the covers of *Pieces of the Action* to delight and interest the reader, it is impossible in a brief review to do more than a partial and skeletal listing:

There is, of course, a chapter of thoughts and theories on teaching that Bush has gathered over the decades; he describes teachers he has judged good (with names) or bad (anonymously).

Inventors and inventions naturally enough receive close attention because Bush himself has long been a working inventor. Citing chapter and verse, he says we need to encourage these innovators; overhauling the patent-protection machinery would be one way, in his opinion.

Then he considers the steam engine and other powerplants for automotive use. In the process, he fondly recalls admirable qualities of the Stanley Steamer he used in 1915 when courting the girl who has been Mrs. Bush ever since. As for the US automobile industry, he judges that for the past half century it has been "half asleep and incapable of effective innovative cerebration. . . ."

There is, finally, a long chapter about great men Bush has known and about their qualities of leadership. Hoover and Eisenhower, he rates as great Presidents. Of Truman, he writes, "he was a real statesman," and that he had "great courage." Kennedy

was "as skilled a man politically as this country has produced" and, in death, was "mourned more sincerely than any man since Lincoln." Of all Presidents he knew and served, the one who stands tallest was "Roosevelt, who, whatever else might be said, led us out of the wilderness."

*Pieces of the Action* stands as a wonderfully garrulous, passionate, love letter to life itself, written in appreciation of sixty years of high adventure and rich accomplishment. Bush had to be a very wise and gentle man, ripe and rich in years, to be its author.

—Reviewed by Walter T. Bonney. Mr. Bonney is Director of Information for the Aerospace Corp. and the author of *The Heritage of Kitty Hawk*, published by W. W. Norton in 1962.

## RAF vs. Luftwaffe

*Duel of Eagles*, by Peter Townsend. Simon & Schuster, New York, 1970. 435 pages with index, glossary, and bibliography. \$9.95.

Peter Townsend, World War II hero and fighter ace, sketches the birth and growth of the RAF and Luftwaffe from 1917 to their "duel" in 1940 by writing what amounts to brief biographies of dozens of people. Some of these people are important historically; most are not. The episodes and vignettes, spliced together in newsreel fashion, seriously weaken the book; sandwiching anecdotes about German plumbers between paragraphs of equal length concerning momentous RAF and Luftwaffe developments destroys its fabric.

Townsend, furthermore, is uncritical of his sources, and uses no documentation. He accepts everything the Luftwaffe's Field Marshal Erhard Milch told him in interview. Milch is a perfect example of the "If-Hitler-had-only-listened-to-me" school. General Nielsen, in his superb monograph on the Luftwaffe General Staff, produced documentary evidence of Milch's self-serving fabrications.

Townsend writes that French Commander Gamelin refused to permit the RAF to bomb invading German troops in May 1940—because Gamelin wanted to "avoid a bombing war"! The author dates serious invasion



## Airman's Bookshelf

planning by the German Navy in May 1940. This is earlier than any mention in the *German Naval Diary*. All these allegations—and there are many more—are in variance with major sources. The serious student has no way to judge his material; thus the book is of little value to historians.

Townsend's analysis is frequently faulty, too. He lays sole blame for the humiliation at Munich on the parlous state of the RAF in 1938. He blames Goering alone for the Wehrmacht's failure to crush the British at Dunkirk.

Although the defects in organization and treatment harm the book, there are good features. Townsend's analysis of the Battle of Britain is often excellent. He brilliantly dissects Goering's leadership, finding it wanting in strategic judgment. Best of all, Townsend dramatically vents the heat within RAF Fighter Command. He tells of the backbiting and perversity that led some to disobey orders and others to be summarily and brutally fired after winning victory. Townsend supports Air Chief Marshal Sir Hugh Dowding, who headed RAF Fighter Command during the Battle of Britain, and Air Vice Marshal Sir Keith Park, Commander of No. 11 Fighter Group, with trenchant arguments. He depicts convincingly the sound and fury of combat.

If you want a book that gives the flavor of fighting, the smell of cordite and death, this is a fine work. But if you want a scholarly and interestingly

written account of the Battle of Britain, try Telford Taylor's *The Breaking Wave*.

—Reviewed by Capt. Alan L. Gropman. Captain Gropman is a member of the Department of History at the USAF Academy.

### Propaganda About Propaganda

*The Pentagon Propaganda Machine*, by Sen. J. W. Fulbright. Liveright, New York, 1970. 166 pages. \$4.95.

Senator Fulbright's views of the military are well known. He does not trust the military. He thinks they are death-lovers and want to make war, not love. He believes in the diabolism theory that the military are in a conspiracy to get us involved in more wars and they have fabricated a vast propaganda machine to influence the American mind.

That's the theme of the nonbook he has brought out in his name. It's not a book but an editorial elaboration of some Senate speeches he gave in December 1969, which were based largely on data and textual material provided by the propaganda organs he denounces.

Mr. Fulbright calls the book an "instructional manual." It's hardly that. It's a dull recitation of the bureaucratic operations of the Defense Department's public affairs offices and agencies, but not a manual for setting up a propaganda machine.

I've lived inside and on the rumble seat of that propaganda machine for some twenty-four years. If that is what the machine is for—if it is a machine—then it is not doing the job. The Army Chorus or the Air Force's breathtaking "Thunderbird" team are

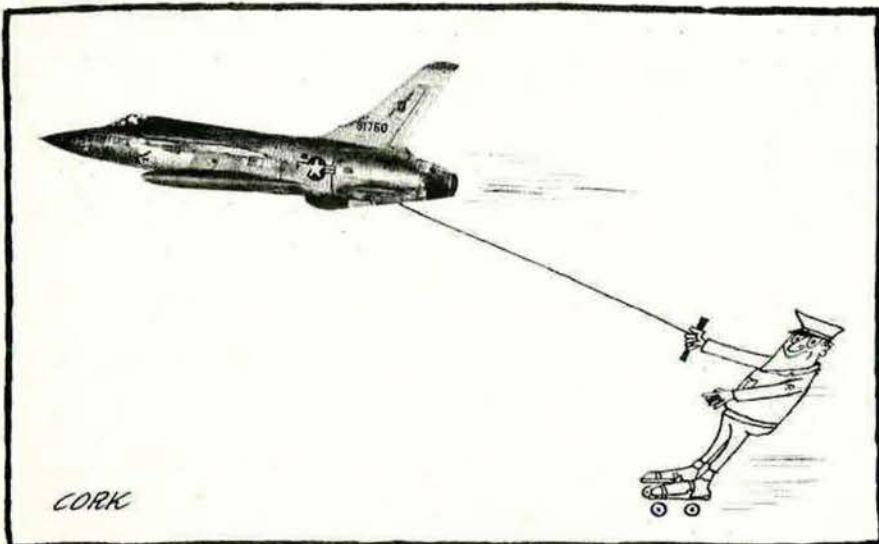
not my idea of propaganda drum-beaters. Nor is the Defense Department's public affairs office. Has the eminent Senator ever looked at the Pentagon's press-release rack or sat in on the 11:00 a.m. daily press briefing?

The Senator does have a point when he complains about military junkets for VIPs to aircraft carriers or to military bases, or about the so-called national strategy seminars. These publicity junkets do smack of selling lots in Florida or Arizona. But it might not be a bad idea for military men—sometimes isolated from civilian communities in the US by long overseas duty or by living on remote military bases—to rub shoulders and ideas with civilian leaders, even with Senator Fulbright himself. I never sensed that I was being subconsciously propagandized at a strategy seminar, but maybe that's because I have learned from long years in the Pentagon to watch out for a snow job.

Senator Fulbright has been around Washington long enough to know that any institution—political or otherwise—has pride in accomplishment and ambition to grow. If it is proud and believes it has a right to exist and a mission in life, it will want to brag a little bit, to strut a little bit. It's human nature to promote the institution, its works, and its ambitions. The Senator, however, sees some sinister motive in the Army's plan to publicize its Sentinel ABM system in the "Starbird" memorandum with its elaborate public-relations program. The Army's error was in overplanning and overdoing the publicity annex. It showed some poor judgment by public-relations officers who were imitating the methods of big industry and congressional or presidential political campaigns.

Mr. Fulbright repeatedly backs away from outright accusation of the military as coup-makers, planning to overthrow the civilians. Yet underlying the entire series of speeches is the infantile diabolism about the men on horseback.

"Although I cannot conceive of a single top-ranking officer in any of the armed services who today would consider an attempt to overturn our constitutional government . . . militarism as a philosophy poses a distinct threat to our democracy," the Senator said. "At the minimum, it represents a dangerously constricted but highly influential point of view when focused on our foreign relations. It is a viewpoint that by its nature takes little account of political and moral complexities, even less of social and economic factors, and almost no account of human and psychological considerations."





Under whose bed has the Senator been looking? He is seeing devils that don't hide out at the Pentagon, unless the Senator has been drawing horns and tails on the Joint Chiefs and coloring them red.

—Reviewed by Lloyd Norman. Mr. Norman has been Newsweek's Pentagon correspondent since 1958. Earlier he covered defense affairs in Washington for the Chicago Tribune.

## Contemporary Warfare

*The Fourth Dimension of Warfare, Volume I: Intelligence, Subversion, Resistance.* Edited by Michael Elliott-Bateman. Praeger, New York, 1970. 175 pages. \$6.50.

This book richly deserves to be read because of the clarity of its insight concerning the nature of contemporary war. It is composed of nine related essays drawing heavily on operational experience and recounted in superbly dry British style.

The premise is that since conflict is the normal state of society (only 230 years of complete peace have been recorded since 1496 B.C.) the study of war in its subtlety is normal. Further, the nature of conflict/war is as changeable as the ingenuity of man, while formal military organizations tend to be relatively rigid. When the organized military cannot resolve conflict, it spills into new areas. The

current example is called "people's war," but not long ago it was termed "resistance," and the British gained considerable experience fomenting it in many complex political arenas.

The book opens, interestingly enough, with a discussion of the Jewish resistance movement from A.D. 6 to A.D. 73. Parallels are drawn concerning the difficulties facing moderates trying to cope with rebels who are armed with an emotional ideology. In the words of Agrippa, as he vainly attempted to dissuade his countrymen from revolt, "Do you really suppose that you are going to war with Egyptians or Arabs?"

Special Operations are defined, and the point made that, during World War II, "a few dozen men in grubby raincoats" using less than a Mosquito load of plastic explosive accomplished approximately the same useful destruction in occupied France as did the RAF Bomber Command. In order for such operations to be successful the necessity for intelligence is examined. The reasons for nations involved in serious hostilities to control their news media are explained, as well as the effect that internal politics may have upon the shape of military information.

The establishment of the Special Operations Executive, or SOE, the agency that created and coordinated World War II resistance movements in occupied countries, is recounted. The limiting factor for special operations was air-drop capability for agent and materiel delivery. Since excessive

security measures precluded the RAF from knowing why SOE desired control of a portion of their precious resources, they were initially grudging in their support.

The experiences of several SOE agents in occupied France are told in very un-James Bond-like fashion. (It is sad that a generation of Americans is growing up with a perception of the US and its allies as the "occupation" rather than the "resistance." The re-subjugation of Europe by tyranny, however, is too great a price to pay for their enlightenment.)

Finally, the point is made that, due to the asymmetry of forces required to cope with massive resistance in purely material terms, it behooves us to break the Communists' near monopoly on low-level political expertise. The disproportionate successes of such political soldiers as Lawrence, Wingate, and Grivas are examples of achievement that owe little to technology.

Indeed, if, at the upper end of the hostility spectrum, technology appears capable only of deterring the holocaust, would it not seem reasonable to develop other skills to attain other objectives?

The authors of *The Fourth Dimension of Warfare* construct a convincing argument in the affirmative based on hard-won practical experience.

—Reviewed by Maj. Richard L. Kuiper. Major Kuiper is a member of the USAF Academy Department of Political Science.

## New Books in Brief

*Negotiations and Statecraft: A Selection of Readings*, compiled under the direction of Dorothy Fosdick, Staff Director of the Senate Subcommittee on National Security and International Relations. An offbeat collection of readings—ranging from Aesop to Thucydides and from Lewis Carroll to Henry Kissinger—that are subtly, directly, or humorously relevant to contemporary international affairs. This sixty-page booklet may be the best thirty-cent buy ever offered by the GPO. US Government Printing Office, Washington, D.C., 1970.

*The Almanac of World Military Power*, by Col. T. N. Dupuy, US Army (Ret.), and Associates. Surveys the military posture of every country in the world. The *Almanac* is organized by regions with a summary of the military geography, strategic significance, alliances, and recent events of the region, followed by a section on the defense structure and problems of each country within it. T. N. Dupuy Associates, Dunn Loring, Va., 1970. 338 pages. \$19.95.

*Brassey's Annual: The Armed Forces Year-Book*, Maj. Gen. J. L. Moulton (ed). This is the eighty-first volume of the Annual. It presents a year-end review of a wide range of defense problems and achievements, in twenty

essays contributed by military writers of several countries. Also included is a bibliography of military books published in 1969–70. Praeger, N.Y., 1970. 312 pages. \$16.50.

*Milestones of the Air: Jane's 100 Significant Aircraft*, by J. W. R. Taylor and H. F. King. Mr. Taylor, editor of *Jane's All the World's Aircraft*, has selected the hundred most significant aircraft built since the Wright Flyer. Each represents a technical or operational milestone, or a spectacular advance in design or performance. Mr. King's text explains each selection, and is contained in a format similar to that of *Jane's All the World's Aircraft*. This fascinating book contains hundreds of photographs and drawings. McGraw-Hill, N.Y., 1971. 158 pages. \$10.

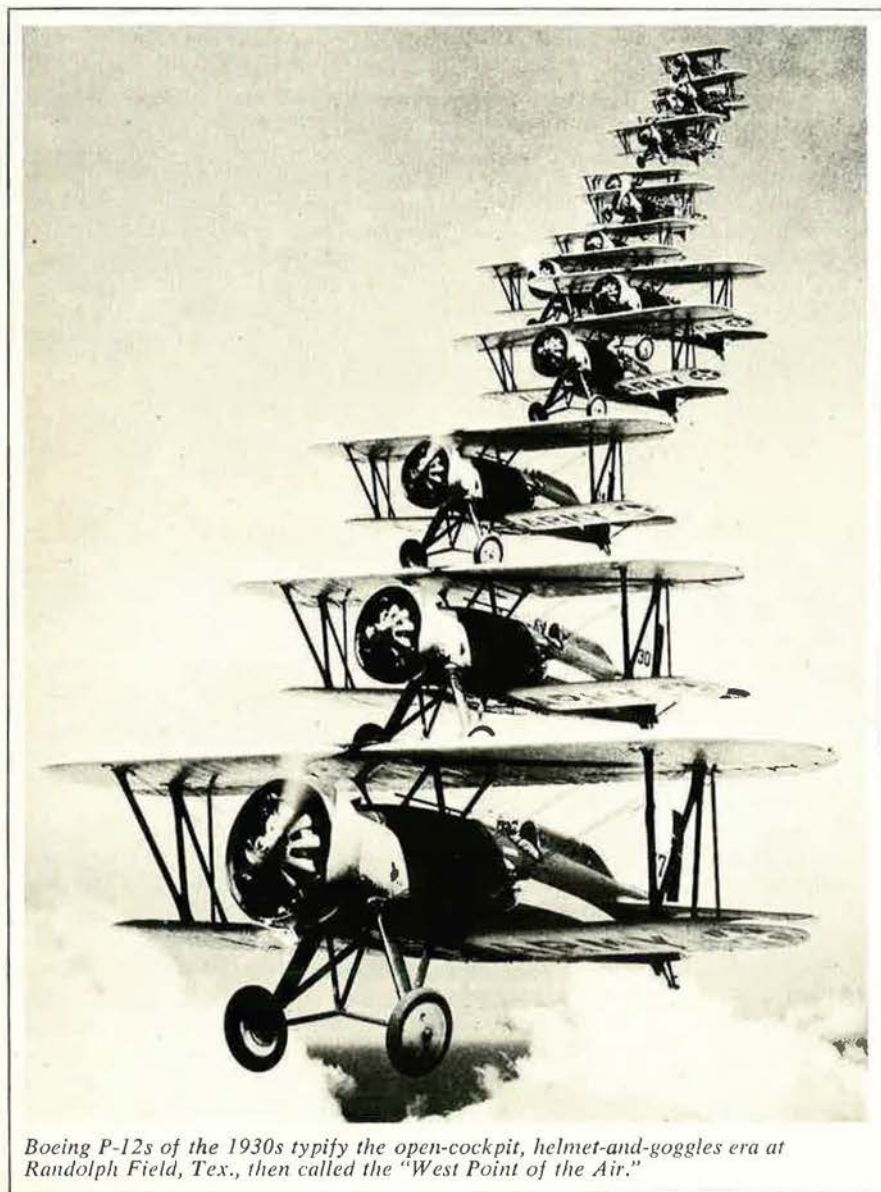
Two new titles in Ballantine's Illustrated History of World War II were published in December 1970: *Barrage: The Guns in Action*, by Ian V. Hogg is about the artillery on both sides and all fronts; *Battle of the Reichswald*, by Peter Elstob analyzes and describes the war in Europe, including the rivalries of Montgomery and Patton, from the liberation of Paris to V-E Day. Both of these soft-covered books maintain the high standard of the series, produced in cooperation with the Imperial War Museum, London. Ballantine Books, N.Y., 1970. 159 pages. \$1 each.



Decades ago, a little white adobe building with red tile roof served as the gateway to a new and magic world for fledgling flyers just arrived at the "West Point of the Air"

# Randolph Field... A Reflection

By 1st Lt. Kirk McManus,  
Texas Air National Guard



*Boeing P-12s of the 1930s typify the open-cockpit, helmet-and-goggles era at Randolph Field, Tex., then called the "West Point of the Air."*

Now there is nothing. No building, no grove of trees, no stone monument, not even a break in the landscape. Walking there today, a stranger would not ask, "What was this?" or, "What happened here?" He would continue on, unaware that he had passed a place revered by many.

I remember it from when I was a boy, long before I had ever visited it. But I had seen the movies and read the books about the training of Army flyers. The story never changed, for the reality it reflected never changed. Young men dreamed of being pilots. Their dream came alive when they joined the Army and were sent to Randolph Field. In one scene, the young men were eager civilians, looking out the train windows at the Texas countryside. Next, they lined up outside the railroad station and marched into Randolph.

I was immersed in that dream. To me and to thousands of boys raised



on the same movies and books, there was only one place to learn to fly—at Randolph. I saw myself stepping off that train to begin a new life in the world of flight. Among my contemporaries it was the only dream.

When a teen-ager, I moved to San Antonio. Within a week the memory of my dream drew me to Randolph, and I was stunned to find it all so familiar. This was no movie set. Everything was there as I already knew it. The books were not imagination. Reality was before me and soaring overhead.

Just west of the base, trains rolled down from the north, around a slight bend. High embankments hid them momentarily, just before they crossed Cibolo Creek. Then they broke onto the plains, passed the front gate, and slowed to a stop outside the base at a tiny building marked "Randolph Field."

It was a white adobe building with a red tile roof. On one side, a highway; on the other, the tracks. The building blended so well with the countryside that people on the highway seldom noticed it. But to those of us who rode that train—in real life, in the movies, or only in our hopes—it was the end of being earthbound and the beginning of flight. It was the door through which we must pass to win our wings. There, Hollywood pilots began mock heroic adventures. There, Army pilots began real, heroic adventures.

Randolph Field Station saw the hopeful and the hopeless. It saw those who were passing by on their way to greatness, and those whom no one would remember. It saw only one dream.



*The trains from the north rolled around a slight bend. High embankments hid them momentarily, before they crossed Cibolo Creek. Then they broke onto the plains, passed the front gate, and slowed to a stop at a tiny building marked "Randolph Field."*

Many times it saw that dream end sadly, for when a hopeful washed out, he went back to the little station to wait for a ride to somewhere else. Anywhere else. Nowhere else as magical as Randolph.

When I became a pilot, I missed going to Randolph. During my training, I had only one occasion to fly into the field. Leaving, I had time for only one quick, downward glance at the railroad station, that tiny symbol of promise. I whipped over the red tiles while concentrating on the airspeed indicator—waiting for 300 knots to disengage the afterburners, turn into the night, and streak for west Texas. The Air Force has changed since the busy days of Randolph Field Station.

Changed, too, is the way the hopefuls arrive, and the little station had been abandoned long before I became a student. Yet it remained as the figurative entrance to the base, as the beginning of new opportunity, as the cornerstone of the dream.

I do not know the economics of railroads or the politics of historical societies, but I always felt that someone should have posted an histori-

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*The author is a fighter pilot in the Texas Air National Guard. A graduate of the University of Texas, he is now doing graduate work in playwriting at Trinity University, San Antonio, Tex.*

---

cal marker on Randolph Field Station. If there is a reason to nurture the past, it is to remind us who went before, and what happened that led us to where we are.

That was what the tiny station on the Texas plains did for me. Both as a boy, challenged by the forever that lay before me, and as a military pilot, confident in my professionalism, I could gaze at the simple building by the tracks and feel the excitement of a road never before traveled, the mystery of a door yet unopened, and the destiny of a promise to keep in a new, more thrilling world. To me, that seemed worth holding onto.

But last year someone knocked down the little station and carried away the rocks, even to the last bit of white dust. It was an enchanted dust, and now there is nothing. ■



By Don Steele

AFA AFFAIRS EDITOR

**Gen. Bruce K. Holloway**, Commander in Chief of the Strategic Air Command, was guest speaker at a recent dinner meeting of AFA's **Central Florida Chapter** in the McCoy AFB Officers' Open Mess.

The General, speaking to an audience of more than 300, including high-level military and civilian dignitaries, concluded his speech on "Facts and Myths About the Military Establishment" by saying, "One way or another, in the competition of life—on a backyard scale, or a municipal ward scale, or in Wall Street, on the cotton market, in the asphalt jungle, in the Vietnamese jungle, or in the United Nations: He who slackens his efforts, or his guard, or his wits, comes out second best—and, generally speaking, the higher the level and the bigger the stakes, the greater is the tragedy."

In his brief remarks, AFA National President **George D. Hardy** praised the Strategic Air Command for its role in keeping America free.

Chapter President **Martin H. Harris**, who is also a member of AFA's Board of Directors, was Master of Ceremonies. AFA National Chaplain **Robert D. Coward** delivered the invocation, and **Maj. Gen. Edward Suarez**, USAF (Ret.), Chapter Vice President, introduced General Holloway.

Among the many dignitaries, including some twenty general officers, who attended the banquet were: **Gen. Curtis E. LeMay**, USAF (Ret.), former USAF Chief of Staff; **Air Vice Marshal Ruthven Wade**, Air Officer Commanding No. 1 (Bomber) Group of the RAF's Strike Command; **Lt. Gen. David C. Jones**, Commander, Second Air Force, Barksdale AFB, La.; **Lt. Gen. Paul K. Carlton**, Commander, Fifteenth Air Force, March AFB, Calif.; **Lt. Gen. William Irvine**, USAF (Ret.); **Air Commodore Colin W. Coulthard**, RAF, Air Attaché at the British Embassy, Orlando Mayor **Carl Langford**; **Lester C. Curl**, Vice President for AFA's Southeast Region; and Florida AFA President **Taylor Drysdale**.

During the program, the **Mathis Trophy** was on display for the first time. The Trophy, sponsored by the

Air Force Association, is named for Lt. Jack Mathis, a B-17 bombardier and Medal of Honor recipient who died at his bombsight in a raid over Vegesack, Germany, during World War II. President Hardy officially presented the trophy to SAC during the Bombing Competition awards ceremony at McCoy AFB, Fla., the

day SAC Bombing Competition. The booth served as a service area for many of the activities being conducted, as an AFA recruiting booth, and as a MIA/POW booth, at which more than 2,000 signatures were obtained on POW letters individually addressed and mailed to Hanoi.

We're proud of the Central Florida



*Gen. Bruce K. Holloway, guest of honor and speaker at Central Florida Chapter's recent dinner meeting, is flanked by AFA leaders, from left, Les Curl, AFA President George Hardy, Taylor Drysdale, Maj. Gen. Edward Suarez (Ret.), and Martin Harris.*



*Members of the Nation's Capital Chapter pose with the familiar Air Force Academy Chapel and the Rocky Mountains as a background. ADC conducted a tour of military facilities in the area for community leaders from Washington, Baltimore, and Richmond.*

day after the Chapter's banquet. The trophy was accepted for SAC by General Holloway and will be presented annually to the top bomber unit, based on combined bombing and navigation results during the competition.

In addition to sponsoring the banquet, the **Central Florida Chapter** sponsored and manned a booth in the Competition Hangar during the seven-

Chapter's fine programming record and pleased to recognize it as AFA's "Unit of the Month" for February.

\* \* \*

A group of some thirty-eight civic and AFA leaders from **Washington, D.C., Arlington and Richmond, Va., and Baltimore, Md.**, recently visited the **Colorado Springs, Colo.**, facilities of the **North American Air Defense**



# Air Force Association

## SILVER ANNIVERSARY MEDALS



struck in  
**Solid Palladium\***  
and  
**Solid Sterling Silver**

From Kitty Hawk to Tranquility Base, Americans of courage, dedication and foresight have built and maintained our country's preeminent role in mankind's conquest of flight.

The Wright brothers and Billy Mitchell; Doolittle, Spaatz, and Arnold; Glenn, White, and Armstrong—names representing thousands of American airmen whose efforts and achievements have helped bring honor and freedom to our skies. In this crucial quarter century past, the Air Force Association has stood with the vanguard of Americans who nurture, protect, and support the continued growth of United States aerospace power.

Twenty-five years ago, a group of air-war veterans, responding to General "Hap" Arnold's call for an "independent civilian organization" to act as spokesman for airpower, chartered the Air Force Association "to educate its own members and the public at large in the proper development of air power."

AFA's independent character has been emphasized by its adherence to civilian leadership. Throughout its growth to a membership of 105,000 and some 240 chapters, AFA has served its country well.

At its first national convention in 1947, AFA's president, General Jimmy Doolittle, could proudly say: "No organization did more to achieve a co-equal and autonomous Air Force."

In his keynote address at the same occasion, General Eisenhower observed: "... this group . . . will devote itself to our defense needs . . . as it keeps always in view the

potential usefulness of the airplane in bringing the world closer together in purpose as well as in time . . ."

AFA has demonstrated clearly that private citizens can work together effectively in the national interest. In the 50's, not forgetting the speed with which the airplane brings progress and change, AFA was again among the leading spokesmen for the development of America's aerospace program and in 1959, Life magazine hailed the AFA sponsored World Congress of Flight as the "world's greatest air-space show."

The results of AFA activity in the fields of military pay and living conditions, prisoner of war treatment, and civilian application of Air Force vocational training techniques speak for themselves.

The foresight of General Arnold and those who brought AFA through those 25 years has withstood the test of time. Silver Anniversary President Hardy summed up AFA's past contributions and its future potential when he said:

"Because our nation has been strong, we have been able to deter the general war that could destroy civilization. Because we have been strong, there is at least a measure of hope for rational arms control agreements. Because we have been strong, we have a society, admittedly imperfect and in need of many reforms, but all the same, intact. To help maintain the strength required to protect that society is the unashamed purpose of the Air Force Association now and in the future."

A limited edition commemorative medal has been commissioned to honor the Silver Anniversary of the Air Force Association and its dedication to American achievement in the aerospace field.

These serially numbered, deep relief medals and medallions will be struck in solid palladium\* and in sterling silver by The International Mint whose master engravers created the personal presentation medals for each Apollo flight crew.

The obverse design of the heavy gauge, jeweler's antique finish medal depicts the Air Force Association wings as interpreted by the well-known medallist designer, Donald Struhar, whose work includes the International Mint "History of America's Men in Space" and commemorative art for the United States Air Force Academy.

The finely detailed reverse design bearing the legend "Power for Freedom", recreates the World Congress of Flight symbol over an arc of 25 stars.

To insure the limited edition status of this medallion tribute to the Air Force Association, The International Mint will restrict the serially numbered commemorative issues to the following mintages:

<b>SOLID PALLADIUM*</b>	
2½" Medallion	25
39mm Medal	250

<b>SOLID STERLING SILVER</b>	
2½" Medallion	2,500
29mm Medal	10,000

Those wishing to subscribe to all four issues or to both sizes in either palladium or sterling will receive matched serially numbered sets. These sets and the 2½" medallion will be housed in handsome desk-top collector displays. Subscribers to the 39mm medals will receive a specially designed Clear-View holder which allows display of both sides of the medal without requiring its removal.

Subscription details are included in the limited edition subscription form below. Since applications will be handled in strict rotation, may we suggest you act now so as to ensure acquisition of this unique medallion tribute to the Air Force Association.

\* A rare, lustrous, silver-white metal approximately equivalent in value to 24K Gold.

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### Air Force Association Silver Anniversary Medal

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_____	Set(s) of Sterling Silver issues	\$ 45.	_____
_____	2½" Palladium issue(s)	\$1000.	_____
_____	39mm Palladium issue(s)	\$ 150.	_____
_____	2½" Sterling Silver issue(s)	\$ 35.	_____
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I understand that all orders will be handled in strict rotation and that my check will be refunded promptly should this edition be over-subscribed.

The International Mint will begin shipment in March, 1971.

NOTE: As a convenience to subscribers, The International Mint will embed your medals in clear lucite vertical wedges for use as desk ornaments. Add \$5.00 for each 39mm medal and \$8.00 for each 2½" medallion.

The International Mint, Inc. is a wholly-owned subsidiary of The Robbins Company Medallists since 1892. It is not affiliated with the U.S. Mint or any other government agency.

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## AFA News

Command (NORAD), the Aerospace Defense Command (ADC), and the Air Force Academy.

The tour was sponsored by AFA's Nation's Capital Chapter and conducted by the Aerospace Defense Command.

The group was welcomed to Colorado Springs with a reception sponsored by AFA's Colorado Springs Chapter. A tour of NORAD's Cheyenne Mountain complex; a tour of the Air Force Academy; a dinner hosted by Maj. Gen. Arthur G. Salisbury, Chief of Staff, ADC; and a briefing on the functions and responsibilities of ADC rounded out a most enjoyable and informative tour.

\* \* \*

"The national decisions we make now on the nature and capability of

the military structure will determine in the future whether or not we have indeed prepared the nation."

Speaking at the Alamo, Tex., Chapter's recent dinner meeting, Lt. Gen. George B. Simler, Commander of the Air Training Command, emphasized the importance of national military preparedness and the grave responsibilities the public, Congress, and the executive branch have in making the right decisions.

He expressed his concern that the crucial nature of preparedness and the setting of sufficient force requirements are so little apparent to the general public, who are the real "stockholders." "It thus becomes incumbent upon management to report to the stockholders in a form and language they will understand. It should be a straightforward, understandable report, presented in a fashion that will get public attention," he said.

Using numerous references to support his concern over the problem of public understanding, the General pointed out that the differing views on the sufficiency of preparedness are not

Lt. Gen. Albert Clark, Superintendent of the Air Force Academy, was the guest speaker.

Among the many notable guests were Gen. Benjamin Chidlaw, USAF (Ret.); Lt. Gen. Thomas McGehee, Commander, Aerospace Defense Command; Lt. Gen. Thomas Moorman, who retired as Academy Superintendent last July 31; Maj. Gen. Michael Ingelido, Commander, 14th Aerospace Force; Maj. Gen. Horace A. Hanes, Vice Commander, Aerospace Defense Command; Maj. Gen. Roger Kuhlman, representing the Commander in Chief, NORAD; and Col. Philip Rand, Commander, 4600th Air Base Wing, Ent AFB, Colo.

\* \* \*

An overflow audience attended the December dinner meeting of the Jerry Waterman Chapter at MacDill AFB, Fla., to welcome Lt. Gen. Benjamin O. Davis, Jr., USAF (Ret.), back to MacDill, the scene, a year ago, of his retirement, and to hear his speech on the federal government's program to curtail aircraft hijacking.

General Davis, former Deputy Com-



Commander of the Air Training Command, Gen. George B. Simler, admires Stetson presented him by the Alamo Chapter President, Dorr Newton.



Maj. Gen. Arthur G. Salisbury, Chief of Staff of ADC, with, from left, Wilmer Goodrich, Jr., Richmond Chapter; Robert J. Schissel, President of the Nation's Capital Chapter; and Everett J. Burlando, Vice President of the Northern Virginia Chapter, during a dinner the General hosted for a group of visiting civic leaders (see story).



Mrs. John Love, wife of the Colorado Governor, serves USAF birthday cake to, from left, Lt. Gen. Clark, Mayor McCleary, and Mr. Shoop (see story).

unalterably opposed but can be reconciled by debate before the greatest of all democratic forums—the American public and its Congress.

More than 350 Alamo Chapter members and guests attended the dinner, held at the Randolph AFB Officers' Open Mess on Pearl Harbor Day, December 7.

\* \* \*

More than 600, including military and civic leaders, and AFA members and guests, celebrated the twenty-third anniversary of the Air Force at a luncheon sponsored by AFA's Colorado Springs Chapter and held in the Broadmoor Hotel's International Center.

mander in Chief of the US Strike Command with headquarters at MacDill, now is director of civil-aviation security in the Department of Transportation in Washington, D.C.

One of the highlights of the meeting was a formal announcement of the change in name of the Chapter, which was chartered in 1946 as the Florida West Coast Chapter—the first AFA unit to be formed in the Sunshine State. It has been renamed in honor of its founder, Jerry Waterman, a pioneer airman, Tampa business executive, and former AFA Regional Vice President, who died last March at the age of eighty-six.

Another highlight was the first local

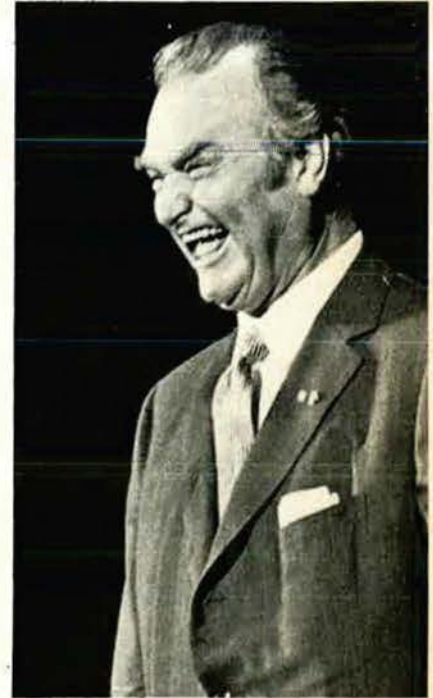


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Now, in a special offer for Air Force Association members, you can relive this exciting and entertaining event in a 2-record stereo LP album called "Proudly They Came." The 80-minute package of entertainment and inspiration is narrated by Jimmy Stewart and brings you the highlights of this unforgettable event... A \$6.98 value, you as an AFA member can have this two - record album for \$5.99 ... a special savings of nearly \$1.00.

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SPECIAL NOTE: A royalty from the net proceeds from the sale of each album will be paid to the Honor America Day Committee to help support a continuation of its work.



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# AFA's 25th CONVENTION AND Washington, D. C.



*AFA's 1971 Annual National Convention and Aerospace Briefings & Displays, highlighting AFA's Silver Anniversary, will be held at the Sheraton-Park and Shoreham Hotels, Washington, D.C., September 20-23. All reservation requests for rooms and suites should be sent directly to the Sheraton-Park Hotel or Shoreham Hotel Reservation Office. Be sure to refer to AFA's Annual Convention when making your reservation requests, otherwise your request will not be accepted by the Sheraton-Park or Shoreham Hotels.*

*The Sheraton-Park Hotel's address is: 2660 Woodley Road, N.W., Washington, D.C. 20008; and the Shoreham's address is: 2500 Calvert St., N.W., Washington, D.C. 20008.*

*AFA's National Convention activities will include luncheons for the Secretary of the Air Force and the Air Force Chief of Staff, a Silver Anniversary Reception, and AFA's 25th Anniversary Reception and Dinner Dance. The National Convention will also feature AFA's Business Sessions, Seminars, and several other activities, including a reception in honor of AFA's Chapter Officers and Official Convention Delegates, the Annual Outstanding Airmen Dinner, and the Chief Executives Buffet Reception.*



## SCHEDULE OF EVENTS

### Sunday, September 19

12:00 NN Registration Desk Open

### Monday, September 20

8:00 AM Registration Desk Open  
 9:20 AM Opening Ceremony & Awards  
 2:30 PM 1st AFA Business Session  
 7:00 PM AFA President's Reception  
 For Chapter Officers and  
 Convention Delegates

### Tuesday, September 21

8:00 AM Registration Desk Open  
 8:30 AM 2d AFA Business Session  
 9:00 AM Briefings & Displays Open  
 11:45 AM AF Chief of Staff Reception  
 12:00 NN Briefing Participants  
 Buffet Luncheon  
 12:30 PM AF Chief of Staff Luncheon  
 2:30 PM Air Force Reserve and Air National  
 Guard Seminar  
 6:00 PM AFA's Silver Anniversary Reception

### Wednesday, September 22

8:00 AM Registration Desk Open  
 9:00 AM Briefings & Displays Open  
 9:00 AM Air Force Symposium  
 11:45 AM AF Secretary's Reception  
 12:00 NN Briefing Participants  
 Buffet Luncheon  
 12:30 PM AF Secretary's Luncheon  
 4:00 PM Briefing Participants  
 Reception  
 7:00 PM AFA's 25th Anniversary Reception  
 8:00 PM AFA's 25th Anniversary Dinner Dance

### Thursday, September 23

9:00 AM Briefings & Displays Open  
 12:00 NN Briefing Participants  
 Buffet Luncheon  
 4:00 PM Briefing Participants  
 Reception

## ADJOURNMENT



# Anniversary AEROSPACE BRIEFINGS AND DISPLAYS

September 20-21-22-23

## AEROSPACE/DEFENSE COMPANIES TO PRESENT NEWEST HARDWARE

Some 50 companies will present the latest aerospace/defense hardware at the 1970 Aerospace Development Briefings and Displays, to be held in conjunction with AFA's 25th Anniversary National Convention at the Sheraton-Park Hotel in Washington, September 20-23.

The Briefings and Displays combine the presentation of equipment with company briefings in the booth to key military, government, and industry personnel. Morning attendees are assembled into parties of 20 persons each and are escorted from briefing to briefing on schedule. Afternoon attendees may select any of the presentations offered in any order of preference.

Last year, 5,764 persons participated in the Briefings and Displays, including 227 General Officers and Admirals and 535 Colonels and Naval Captains. The Secretary and Chief of Staff of the Air Force were honored at a reception in the display area, attended by some 2,000 guests.

Since this year's Convention marks the 25th anniversary of the Air Force Association, the largest attendance to date is expected at the Briefings and Displays. The Briefing concept was developed by AFA in 1964 and has been widely acclaimed for its ability to guarantee exhibitors an audience in their booth on schedule.

Much of the booth space has already been reserved. Companies desiring to participate in the Briefing and Display program should contact AFA as quickly as possible. A minimum of 300 square feet of space is required to conduct briefings; no minimum is required to display only.

### TO RESERVE BRIEFING/DISPLAY SPACE, WRITE OR CALL:

AFA BRIEFING & DISPLAY OFFICE

Attn: Ralph V. Whitener

1717 K St., NW, Suite 1107

Washington, D.C. 20036

Telephone: (202) 833-9440





## AFA News

showing of a new film, "I Am a Prisoner of War," provided by Mrs. Liz Robinson, wife of a POW in North Vietnam. All Tampa Bay area



At Jerry Waterman Chapter program, from left: Scholin, Mrs. Bragin, Mrs. Essrig, Gen. Davis, Bocoock, Mrs. Luna.



Fresno Mayor Wills gives AF Week Proclamation to Brig. Gen. Cassidy. Seated are Brig. Gen. James and Mr. Withers; standing, Sam Boghosian.

MIA/POW wives and parents were invited to the dinner.

Elections were held during the meeting, and Col. Dale G. Bocoock, USAF (Ret.), a local banker, was elected to succeed Allan R. Scholin as Chapter President. Other officers elected to serve with Colonel Bocoock in 1971 are Hal Fulmer, Vice President; Bob Brown, Treasurer; and Mrs. Bridget Porter, Secretary.

Distinguished guests included George Bean, Director, Hillsborough County (Tampa) Aviation Authority; Lt. Gen. James V. Edmundson, Deputy Commander in Chief, Strike Command;

Lt. Gen. Richard M. Montgomery, USAF (Ret.); Brig. Gen. Kenneth L. Tallman, Commander, 836th Air Division (TAC); Col. Travis McNeil, Commander, 1st Tactical Fighter Wing; and all seven directors or deputy directors of Strike Command's staff directorates.

\* \* \*

The Fresno, Calif., Chapter's Sixth Annual Air Force Honors Night Banquet and Awards Ceremony, recently

In his address, General James said, "It is time for people to start sticking with the country instead of tearing it down." Young people are impressionable, General James said, and colleges and the country must "win this battle for the minds." He went on to say, "It is not the intent of the people of this country to have the minds of its young won over by a radical breed. We have met this challenge before in our history, and I am confident we will



Lt. Col. Dean S. Gausche, Professor of Aerospace Studies at UCLA, was honored at a dinner sponsored by the Santa Monica Chapter on his recent retirement from USAF. From left: LeRoy Prinz, Vera Wright, Col. Gausche, and Chapter President Milton Feir.



At a recent Olmsted, Pa., Chapter meeting were, from the left, Col. Dwight E. Mason USAF, a student at the US Army War College; Chapter President Tobias Schindler Mrs. Konrad Trautman, POW wife and guest of honor; and Air Commodore Colin W Coulthard, RAF, British Air Attaché and guest speaker at the meeting.

held to observe the twenty-third anniversary of the Air Force and to salute the Air University and the AFROTC, provided the formal occasion for the Chapter to give public recognition to outstanding individuals from the City of Fresno, local Air Force units, and the Chapter.

Brig. Gen. Daniel "Chappie" James, Jr., USAF, Deputy Assistant Secretary of Defense for Public Affairs, was the principal speaker. Jack Withers, a member of AFA's Board of Directors and a Past President of the California AFA, was master of ceremonies.

meet it again. Thinking people will tolerate a situation only so long, and then they will turn on it. We are about to do this."

On the subject of the release of Vietnam prisoners of war by both sides, the General hailed President Nixon's proposal to the North Vietnamese as a "crystallization" of US policies. He predicted the proposal would lead to the "beginning of meaningful negotiations with the other side."

Cadet Capt. Randolph Onitsuka, of the Fresno State College AFROTC unit, received the Fresno Chapter's



"Man of the Year" award. Other awards and citations went to outstanding members of the USAF, AF Reserve, Air National Guard, AF Recruiting Service, AFROTC, Civil Air Patrol, and the Fresno Chamber of Commerce Military Affairs Committee.

Three MIA/POW wives, Mrs. **Stephen P. Hanson**, national president, Families of American Prisoners in Southeast Asia, and Mrs. **John B. McKamey** and Mrs. **Theodore F. Kopkman**, and five veterans of the conflict in Southeast Asia, **Col. C. Hamilton, Jr.**, Commander, 93d Bomb Wing (SAC), Castle AFB; **Lt. Col. Alastair W. Thompson**, USAF, Professor of Aerospace Studies at Fresno State College; **Maj. Malcolm Davison, Jr.**, USAF, F-4 Phantom pilot; **Lt. William S. Lucido**, ANG, F-102 pilot; and **Lt. William Asselin**, USA, helicopter pilot, were guests of honor at the banquet.

Among the many dignitaries attending were **Congressman B. F. Sisk**, who introduced General James; Fresno Mayor **Ted C. Wills**, Honorary Chairman; Assemblymen **George Zenvovich** and **Ernest Mobley**; City Councilman **P. J. Camaroda**; **Maj. Gen. Glenn C. Ames**, Commanding General, California Military Forces; **Maj. Gen. George W. Edmonds**, Chief of Staff, California ANG and Honorary Military Chairman; **Brig. Gen. Alex Talmant**, Commander, 47th Air Division (SAC); **Brig. Gen. B. B. Cassidy**, Commandant, AFROTC (AU), Maxwell AFB, Ala.; **Brig. Gen. Jack Motes**, Asst. Adjutant General (Air), California National Guard; **Col. Milton R. Graham**, Commander, 144th AD Wing, CANG; and **Capt. J. M. Tully, Jr.**, USN, Commander, Fleet Air, LeMoore Naval Air Station.

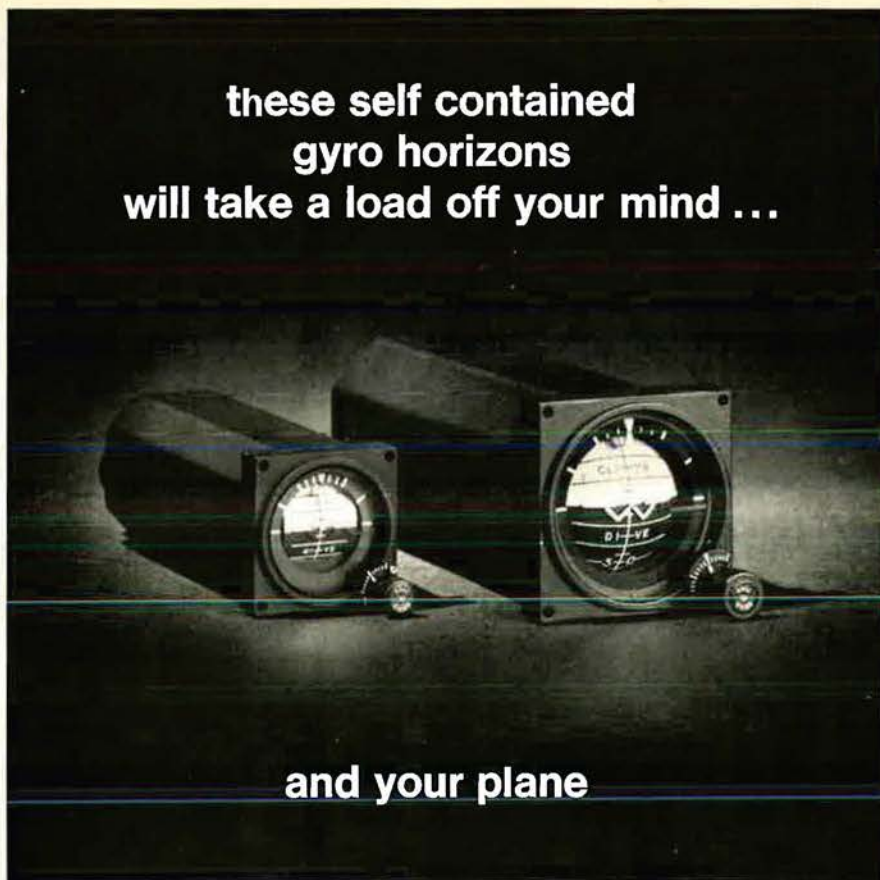
AFA leaders attending included **Will Bergstrom**, Vice President for AFA's Far West Region; AFA National Director **Robert S. Lawson**, Chairman of the California AFA Executive Committee; and **L. Eugene deVisscher**, California AFA President.

A surprise guest was **Capt. Daniel James, III**, General James's son, who recently returned from Vietnam after flying more than 400 missions as a forward air controller (see page 35).

\* \* \*

**IN SYMPATHY** . . . AFA extends its deepest sympathy to the family and friends of **Charlie Powell** of Mobile, Ala., who died on December 1. Charlie was well known for the humor, which always seemed to come at the right time, he injected in Convention business sessions. Charlie had attended every AFA National Convention since the first one in Columbus, Ohio, in

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1947, and, during the convention in Houston, Tex., had the unprecedented honor and distinction of being appointed a "Delegate at Large" with all rights and privileges pertaining thereto, by Jess Larson, Chairman of the business sessions. Charlie was a dedicated, hard-working AFAer, and will be missed by all of his friends in the Mobile Chapter and throughout AFA.

**COMING EVENTS** . . . **Iron Gate Chapter's** Eighth Annual Air Force Salute, Americana Hotel, New York City, March 26 . . . **California AFA**

**Convention**, Pasadena, March 26-28 . . . **Florida AFA Convention**, Orlando, April 30-May 2 . . . **San Bernardino Chapter's** Third Annual AFA Charity Golf Tournament, March AFB and Norton AFB, May 21-22 . . . AFA's Dinner honoring the **Outstanding Squadron at the Air Force Academy**, The Broadmoor, Colorado Springs, Colo., June 5 . . . AFA's Twenty-fifth Anniversary **National Convention**, Sheraton-Park Hotel, Washington, D.C., September 20-23. ■



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MEMBER & SPOUSE

ENTIRE FAMILY

### WHAT IS AFA EXTRA INCOME HOSPITAL INSURANCE?

For every day you (or members of your family, if you have elected family coverage) are hospitalized AFA sends you money for up to 365 days . . . money you can use as you wish, without restrictions of any kind.

### WHO IS ELIGIBLE?

Any United States citizen under the age of 60 who is or becomes a member of the Air Force Association is eligible to apply for AFA Extra Income Hospital Insurance for himself, his spouse, and unmarried children more than 14 days and less than 21 years of age.

### HOW ARE BENEFITS PAID?

Once AFA receives verification that hospitalization has taken place, you will receive a benefit check within seven days with additional checks thereafter on a weekly basis upon AFA receiving certification of your continued hospitalization.

**FIRST TIME OFFERED  
TO ACTIVE DUTY  
MILITARY PERSONNEL**

### HOW MUCH EXTRA INCOME DO YOU NEED? CHOOSE THE BENEFIT AMOUNT YOU REQUIRE FROM THIS FLEXIBLE GROUP PLAN!

1. You are the key to family finances. How much extra money would your family need if you were hospitalized? Check Plans A-1 and AA-1.
2. Does part of the family income depend on a working spouse? Would a cook, or maid or housekeeper be needed during a wife's hospitalization? How much would this, and other expenses cost? Check Plans A-2 and AA-2.
3. If you have a family, you should consider providing extra income for children's hospitalization. Accidents involving whole families do happen, especially with military families living around the world. Check Plans A-3 and AA-3.

And remember: Benefits are paid up to 365 days of hospital confinement for each accident or sickness for each insured person while the patient is under the care of a legally qualified Doctor of Medicine.

### WHY DO YOU NEED EXTRA INCOME HOSPITAL INSURANCE?

#### Hospital costs for Non Military Families are climbing out of sight!

In 1966, according to the American Hospital Association, average total cost per hospital admission was \$380.39 — up 412% in just 20 years.

Average 1966 cost per hospital day, over an average hospitalization of 7.9 days, was \$48.15 — a figure which includes only basic costs.

And costs are going higher. Other authorities estimate that average cost per hospital day may reach \$100 by 1980.

Would your present hospital benefits begin to cover this cost? Do they even cover today's costs?

#### Military Families Can Have Severe Money Losses Caused By Hospitalization

Military families as well as civilian families can be financially hurt by the indirect expenses of hospitalization and serious illness.

Even if every cent of direct hospital cost is covered by government benefits (or hospital insurance) there may be hundreds or thousands of dollars in indirect losses. For example:

Loss of income, especially when more than one member of the family works

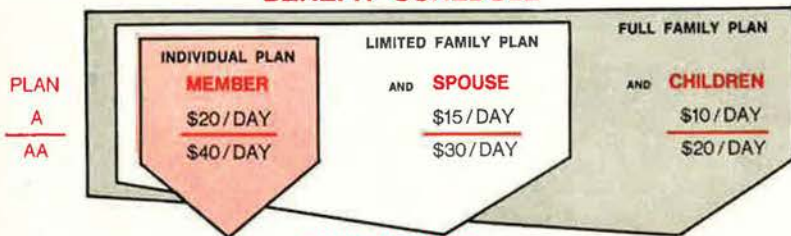
Extra travel expense (sometimes for long distances) for other family members

Cost of housekeeper or "sitters"

Special diets, sometimes for long periods

Expense of special home care.

### BENEFIT SCHEDULE



### COST SCHEDULE

Member's Age	INDIVIDUAL PLAN PLAN A-1		LIMITED FAMILY PLAN PLAN A-2		FULL FAMILY PLAN PLAN A-3	
	Annual	Semi-Annual	Annual	Semi-Annual	Annual	Semi-Annual
Under 40	\$ 29.00	\$15.50	\$ 59.00	\$ 30.50	\$ 74.00	\$ 38.00
40-49	\$ 37.00	\$19.50	\$ 72.00	\$ 37.00	\$ 86.00	\$ 44.00
50-59	\$ 53.00	\$27.50	\$103.00	\$ 52.50	\$118.00	\$ 60.00
60-64	\$ 76.00	\$39.00	\$147.00	\$ 74.50	\$162.00	\$ 82.00

Member's Age	INDIVIDUAL PLAN PLAN AA-1		LIMITED FAMILY PLAN PLAN AA-2		FULL FAMILY PLAN PLAN AA-3	
	Annual	Semi-Annual	Annual	Semi-Annual	Annual	Semi-Annual
Under 40	\$ 54.00	\$28.00	\$107.00	\$ 54.50	\$134.00	\$ 68.00
40-49	\$ 68.00	\$35.00	\$132.00	\$ 67.00	\$159.00	\$ 80.50
50-59	\$100.00	\$51.00	\$195.00	\$ 98.50	\$222.00	\$112.00
60-64	\$147.00	\$74.50	\$284.00	\$143.00	\$312.00	\$157.00

**AFA EXTRA INCOME HOSPITAL INSURANCE PROVIDES THIS MONEY. BENEFITS ARE PAID DIRECTLY TO YOU — AND YOU USE THIS MONEY TO BEST SUIT YOUR NEEDS.**



# HOSPITAL INSURANCE

**Pays CASH benefits up to \$40 per hospital day for each insured person!**

**All AFA members — military and civilian — and their families are eligible.**

**OTHER BENEFITS**

Protected AFA members may continue their coverage at the low, group rate to Age 65, or until they become eligible for Medicare, whichever is earlier. Hospitalization for all sicknesses and accidents is covered, except for a few standard exceptions listed under "Exclusions."

**LIMITATIONS**

Hospital confinements separated by less than three months for the same or related conditions will be considered continuations of the same confinement.

Coverage will continue through the life of the master policy unless terminated for whichever of the following reasons occurs first for the protected person: (a) attains age 65; or (b) becomes eligible for Medicare; or (c) AFA membership dues are due and unpaid; or (d) a premium payment is due and unpaid. For dependents, coverage will continue through the life of the master policy unless terminated for whichever of the following reasons occurs first: (a) such dependent ceases to be an eligible dependent; or (b) the protected person's insurance terminates hereunder; or (c) the dependent spouse either attains age 65 or becomes eligible for Medicare; or (d) any required dependent premium payment is due and unpaid.

**EXCLUSIONS**

The plan does not cover losses resulting from (1) declared or undeclared war or act of war; (2) service in the armed forces of a country other than the United States; (3) acts of intentional self destruction or attempted suicide while sane or insane; (4) pregnancy (including childbirth or resulting complications); (5) confinement in any institution primarily operated as a home for the aged or engaged in the care of drug addicts or alcoholics; (6) illnesses for which the insured has received medical treatment or advice or has taken prescribed drugs or medicines within 12 months prior to the effective date of his insurance. Coverage for such pre-existing illnesses will begin after 12 consecutive months during which he is covered under the policy and receives no such medical treatment or advice and takes no such prescribed drugs or medicine; (7) hospital confinement commencing prior to the date the protected person or eligible dependent becomes insured under this policy.

**HOW TO APPLY**

Fill out the attached application and mail it to AFA with your first premium payment. You may elect to pay premiums either annually or semi-annually.

## APPLICATION

### AFA EXTRA INCOME HOSPITAL INSURANCE

*Underwritten by Mutual of Omaha Insurance Co. Omaha, Nebraska*

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_ CURRENT AGE \_\_\_\_\_ HEIGHT \_\_\_\_\_ WEIGHT \_\_\_\_\_ SEX \_\_\_\_\_

**PLAN OF INSURANCE**

**MEMBER ONLY**

- PLAN A-1
- PLAN AA-1

**MEMBER & SPOUSE**

- PLAN A-2
- PLAN AA-2

**MEMBER SPOUSE & CHILDREN**

- PLAN A-3
- PLAN AA-3

**METHOD OF PAYMENT**     Annual     Semi-Annual

This insurance coverage may only be issued to AFA members. Please check the appropriate box:

- I am currently an AFA member.
- I enclose \$7 for annual AFA dues (includes subscription (\$6) to to AIR FORCE/SPACE DIGEST).

I enclose my initial premium in the amount of \$\_\_\_\_\_ (Refer to premium table to determine correct premium amount.)

Please complete this section only if you are requesting coverage for dependents (Limited Family or Family Plan) and list only those persons for whom you are requesting coverage.

FULL NAME	RELATIONSHIP TO AFA MEMBER	SEX	DATE OF BIRTH
	WIFE (HUSBAND)		
	child		
	child		
	child		
	child		
	child		
	child		

In applying for this insurance coverage, I understand and agree that:

1. coverage shall become effective on the last day of the calendar month during which my application together with the proper premium amount is mailed to AFA.
2. only hospital confinements commencing after the effective date of insurance are covered, and
3. any condition for which I or any of my eligible dependents received medical treatment or advice or have taken prescribed drugs or medicine within twelve months prior to effective date of the insurance coverage will not be covered until the expiration of twelve consecutive months of insurance coverage without medical treatment or advice or having taken prescribed drugs or medicine for such condition.

DATE \_\_\_\_\_ SIGNATURE \_\_\_\_\_

Application must be accompanied by check or money order. Send remittance to:

**INSURANCE DIVISION, AFA, 1750 PENNSYLVANIA AVE., N.W., WASHINGTON, D.C. 20006**



Bob Stevens'

# "There I was..."

THINGS PICKED UP WITH OUR FIRST JETS—



THE MISSILE AGE WAS MET WITH MIXED EMOTIONS—



IN 1946, WHEN AFA WAS BORN, THE AAF NEARLY DIED. THERE WAS A MASS EXODUS OF WWII-WEARY TROOPS.



ONE MIGHT SAY KOREA BROKE IN A HURRY.



HAPPY BIRTHDAY AFA *the Goonys*

AND THEN THERE WAS -AND IS - 'NAM':



Bob Stevens





**The World Leader  
in TACAN  
Salutes**



**On Their 25th Anniversary**

***Hoffman will soon be delivering its Microtacan  
for the U.S.A.F. / McDonnell Douglas F-15A . . .***

***. . . adding to the list of weapon systems which rely on Hoffman  
for Tactical Air Navigation Systems (TACAN). The list includes:  
C-5A, F-14A, A-4, P-3C, S-3A, F-4K/M, JAGUAR, AV-8A, HARRIER,  
A-7, HA-200, FAA's SABRELINERS and RU-21. You name it . . .  
if it's a new aircraft it's probably Hoffman MICROTACAN equipped.***

**Hoffman / ELECTRONICS  
CORPORATION**  
EL MONTE, CALIFORNIA - U.S.A.



# The Phantom: fighter choice of nine Free World nations.

The Phantom is the first-line fighter choice of nine nations of the Free World. In its new lightweight configuration, the F-4E Phantom, with its 20mm rapid-fire nose gun, has no equal as an area defense air superiority fighter. □ Its two powerful engines provide superb acceleration to speeds in excess of Mach 2. □ Phantom performance and maneuverability are a matter of record in the world's record books, in combat, and with two U.S. military aerobatic demonstration teams. □ Weigh all the factors. Pound for pound, capability for capability, the lightweight F-4E leaves all the others far behind.

**MCDONNELL DOUGLAS**

