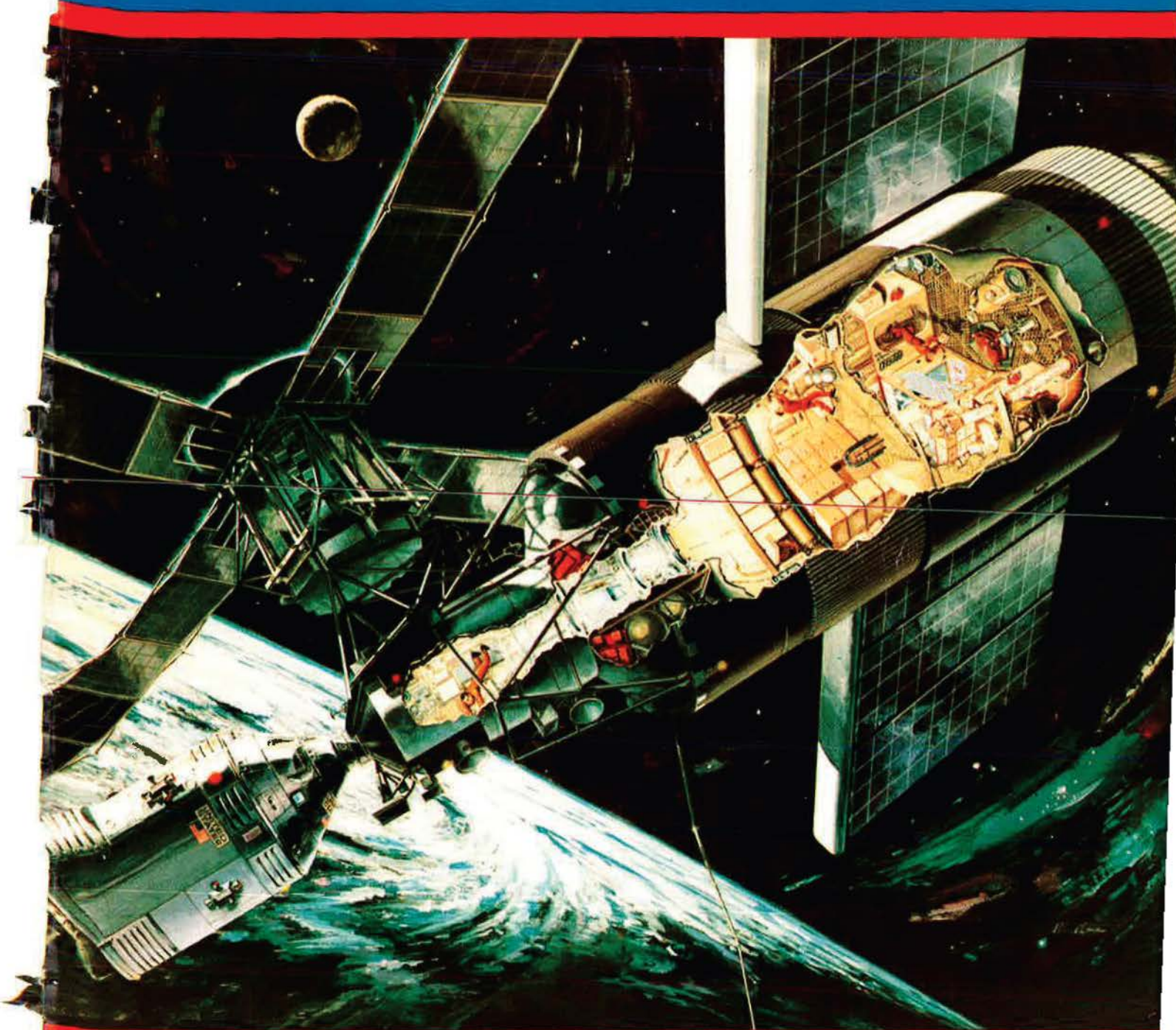


FEBRUARY 1973/\$1

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



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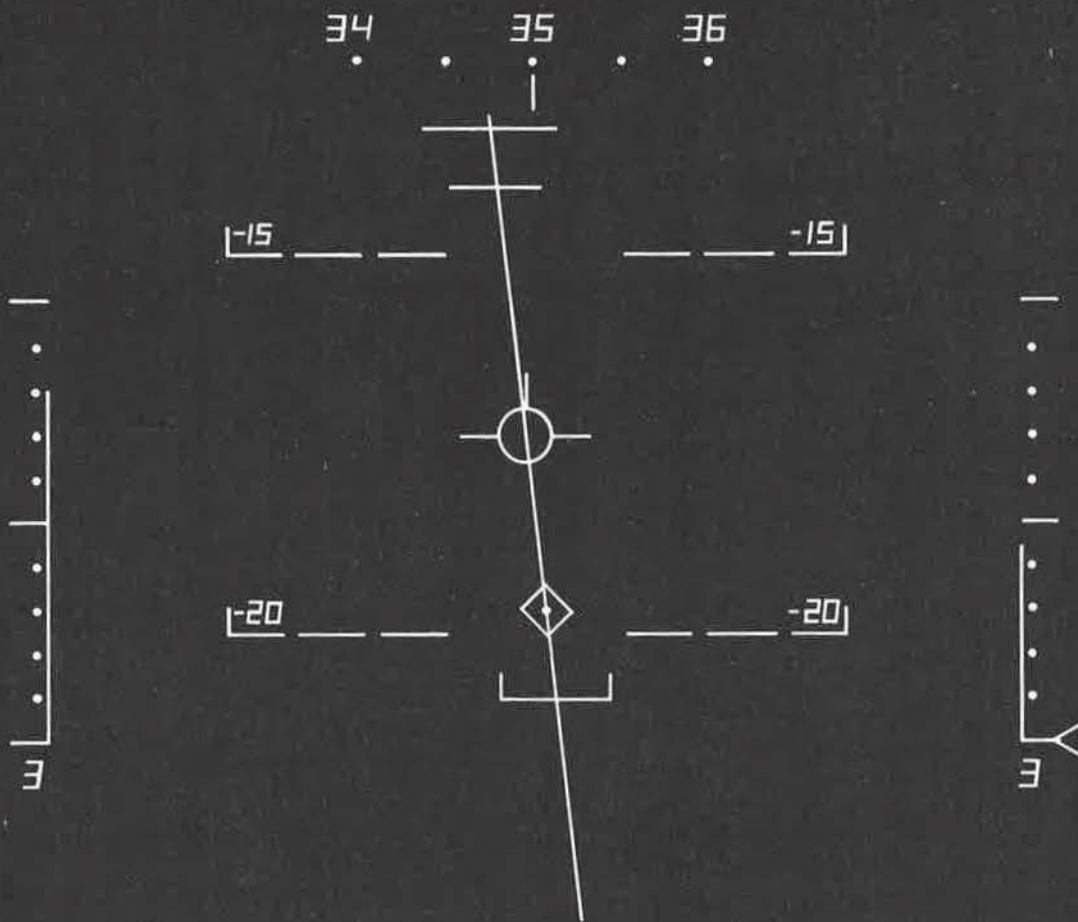
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So when the A-7 prowls at night, enemy ground movement plans go up in smoke.



VOUGHT
AERONAUTICS

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The cover shows a NASA artist's view of the upcoming Skylab in orbit around earth. For details on what the manned space station is designed to accomplish, see the article starting on p. 25.



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The B-52: The Phoenix That Never Was

By John L. Frisbee

EXECUTIVE EDITOR, AIR FORCE MAGAZINE

AS THIS is written, it is too early to say whether Linebacker II, the December bombing campaign against military targets in North Vietnam, reached one of its primary objectives—to persuade the North Vietnamese that a reasonable negotiating position is in their best interests. But at least the North Vietnamese have returned to the negotiating table, probably at the urging of the Soviets, who reportedly have been impressed by President Nixon's tough stance in the face of mounting criticism both here and abroad.

As to the military effectiveness of Linebacker II, there can be no question. The impact of the twelve-day bombing campaign on North Vietnam's ability to renew large-scale offensive operations in the South is judged to have been equal to that of Linebacker I. That earlier bombing campaign in the North lasted from shortly after the start of North Vietnam's invasion of the South at the end of March until October 23—or nearly seven months. Most of those sorties were flown by Air Force and Navy tactical fighters.

The vastly more concentrated, more effective Linebacker II was, of course, a result of the increased use of B-52s, hitting targets largely in the Hanoi-Haiphong area. Against heavily defended area targets, such as railroad yards, airfields, military supply sites, repair depots, and port facilities, there is no substitute for the massed firepower of heavy bombers.

From an operational point of view, the effectiveness of Linebacker II, spearheaded by the B-52s, is not remarkable. There are, however, some remarkable aspects that have been minimized or ignored by most reporters and commentators and by political critics of the effort.

First, the B-52 campaign of December has been touted, by people who obviously did not consult the history of air warfare, as the heaviest bombing attacks on record. That they were not, though a lot of ordnance was dropped in a relatively short period. At the same time, many of these people have lamented what they call the "devastating" destruction and "insufferable" casualties inflicted by the B-52s. How do these judgments on the weight and casualties of Linebacker II, repeated so often that they are widely accepted as fact, stack up?

The exact number of casualties is not known and may never be. Hanoi, not noted for missing any propaganda tricks, has claimed that 1,300 persons were killed and 1,260 wounded. Contrast that to the estimated 135,000 killed in the February 13-14, 1945, attacks on Dresden by 1,300 RAF and AAF bombers.

The remarkable thing is that there were so few casualties in North Vietnam, where many targets were actually within cities or on their outskirts. This is a

tribute to the professionalism of USAF aircrews and the quality of their equipment. And to the policy-makers' and planners' determination to hold casualties and collateral damage to a minimum.

But there is something even more remarkable. Five years ago, few airmen would have believed that the SAM defenses of Hanoi and Haiphong could be penetrated repeatedly by heavy bombers without disastrous losses. More than a decade ago, Nikita Khrushchev asserted that ICBMs and surface-to-air missiles had made the manned bomber obsolete—a bird on the verge of extinction. Apparently that view was shared by President Kennedy and Secretary of Defense McNamara. The notion has gained advocates over the intervening years.

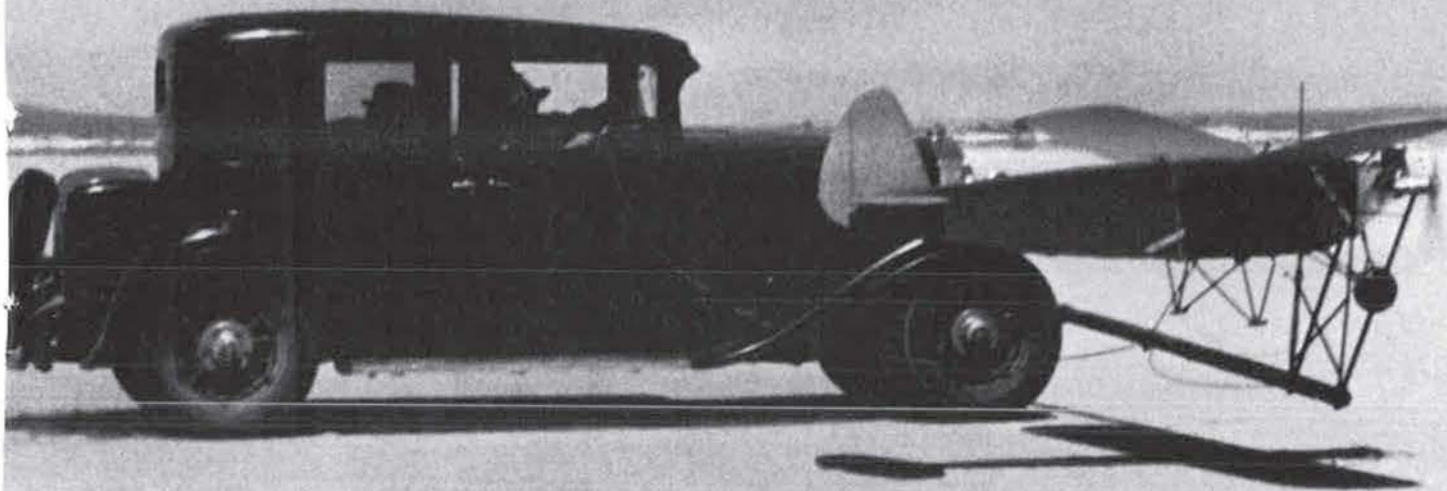
That Hanoi-Haiphong is the most heavily defended area in the history of air war is so obvious that it has become a cliché. Those defenses, not attacked since October 23, were probably at their highest state of operational readiness at the start of Linebacker II. Yet, in 735 B-52 sorties between December 18 and 30, only fifteen B-52s were downed by SAMs—a loss rate of barely more than two percent. The loss rate of F-111s and other tactical fighters was considerably lower than that. Not one B-52 was shot down or—so far as we can determine—damaged by a MIG, although there were several MIG attacks.

During World War II, the average of bombers lost to flak and fighters in both major theaters was one aircraft for each *sixty-four* sorties. That included targets lightly defended or not defended at all—and there were no effective SAMs. Over Hanoi and Haiphong, one B-52 was lost to SAMs for each *forty-nine* sorties. But World War II bomber losses on such heavily defended targets as Berlin, Schweinfurt, Regensburg, and Ploesti (World War II analogs of Hanoi) ranged from ten to thirty percent *on a single mission*.

Skeptics who have downgraded the manned bomber and scoffed at the need for a follow-on B-1, take note. It's a sure bet the Soviets have. SAC's aircrews and their B-52s—the only strategic weapon system tested in a modern SAM/electronic warfare environment—have proved that they can penetrate SAM and fighter defenses and hit their targets. That is the essence of deterring both nuclear and large-scale conventional war.

It's not a bad idea to keep in mind the performance of the B-52s during Linebacker II—and the far greater operational clout of the B-1 that must replace the aging B-52s—as we watch our numerical superiority in land- and sea-based missiles trickle down the drain.

The bomber is not a Phoenix that has risen from the ashes of its obsolescence. It was never obsolete. ■



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target system. So far we've built 65,000 vehicles.

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More. That about says it. In RPV: Expect more from Northrop.



MQM-74/CHUKAR. The first low-cost jet-powered drone.

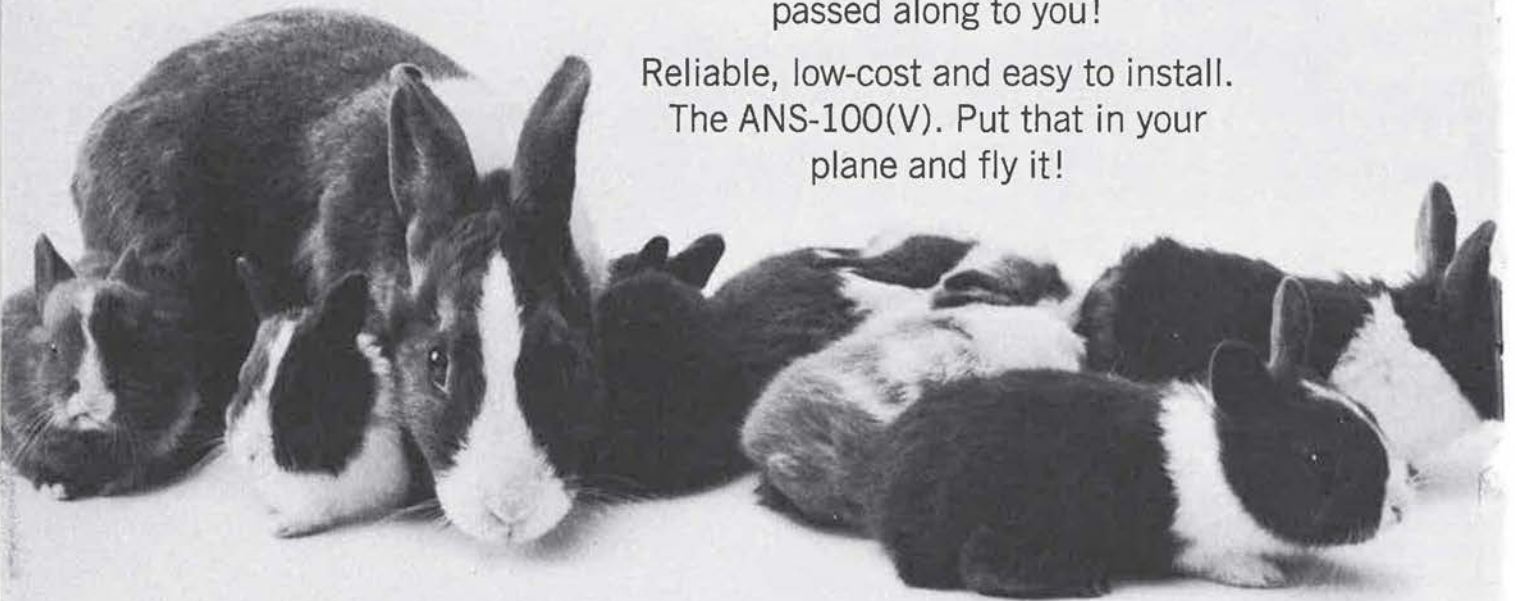
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Retirement Policy Changes

Gentlemen: Please convey my appreciation and congratulations to Maj. Robert W. Hunter on an outstanding article in the December '72 issue, entitled "What's in Prospect for Military Retirement." As Major Hunter points out, the military nondisability retirement system is about to undergo a revision; some revision is inevitable. Because of the natural human propensity to oppose change—good as well as bad—I believe that an adequate explanation of the proposed changes to all service members is essential to ensure their understanding of Department of Defense actions and to alleviate the concern that I know they will express.

The article summarizes the conceptual framework in which the recommendations of the DoD Study Group were made. The recommendations themselves must be placed in this framework if they are to be understood and accepted. Only in this framework are the recommendations meaningful. Major Hunter has treaded successfully the thin line between overemphasizing the recommendations and underemphasizing the context in which they were developed and will be implemented.

The article indicates a depth of understanding of the proposed recommendations that is exceptionally difficult to obtain in the short amount of time Major Hunter had in which to meet the publication deadline. Other articles of the same quality will ease considerably the task of explaining the new system to all personnel on active duty. With such articles, members will have less trouble keeping—as Major Hunter so well puts it—their "minds open."

LT. GEN. LEO E. BENADE, USA
Deputy Assistant Secretary of
Defense
Washington, D. C.

A Leader by Example

Gentlemen: I was deeply shocked by the items on page 125 of the December issue and page 22 of the October issue [concerning the death of Lt. Gen. George Simler and Capt. Gil Gillespie in an air crash].

Nine years ago, during the overseas deployment of VMA-242, I served a period of TDY as officer in charge of a detachment of six A-4C aircraft at Kadena AFB [Okinawa]. Besides the primary purpose of weapons requalification for the aircrews, we had brought with us one aircraft that had been modified for radar weapons delivery (blind bombing). Our bombing system needed debugging, calibration, and IFR certification on an instrumented range, all of which required technical assistance, support facilities, and tactical indoctrination far beyond the humble capabilities of our wing.

At that time, the 18th TFW, the F-105 wing that was the principal tenant at Kadena, was trained, equipped, and fully capable in all-weather radar weapons delivery. Accordingly, I had come armed with a letter of introduction to the commander, which I delivered together with my request for the assistance we needed. The commander of the 18th was then Col. George Simler, and he made available to us everything we asked for and more than we expected. The fact of the matter is that without the help he provided, we could not have successfully concluded our project.

The lesson I learned, and which George Simler personified, is that all of us in our separate uniforms (and how intractably separate some of them are) are serving the same great country. I have since seen this principle understood and practiced by Air Force commanders as a matter of policy. It is one of the things that is right with the United States Air Force.

George Simler also personified a principle I learned in Preflight School, and to which I am totally committed, and that is: Leadership by Example. This, too, is a principle I have seen understood and practiced by Air Force commanders as a matter of policy; and it, too, is one of the things that is right with the United States Air Force.

Over the years that I have shared duty, mission, air base, club, or whatever with Air Force units and personnel, I have put to qualified Air Force officers this ques-

tion: How is it that, despite the administrative outrages the Air Force (like all large organizations) perpetrates, you manage to retain, develop, and usefully employ better qualified senior officers in greater numbers than the other services? I have not received a complete answer to this question, and maybe this is something your readers and correspondents might be challenged to answer. Whatever the answer is, it is something the United States Air Force has been doing right, and, therefore, something which, amid all the cries for change, should not be changed.

Whenever a senior commander is killed in the cockpit, we hear again the dreary Greek Chorus of lesser men reciting the same bankrupt litany: "What is a general doing flying an airplane?" Well, I'll tell you what he's doing: he's up front where he belongs, leading by example, which isn't just the best way . . . it's the *only* way. Unhappily, the price of leadership by example is the risk, and every so often somebody loses. When it's somebody like George Simler, we all lose, because we have all too few like him.

But how much worse for America if we'd never had him at all? Or never expected to have another like him?

What a man like George Simler leaves behind is the *right* he lived by. He leaves it to the rest of us to keep faith with and to measure up to it.

So let's not let him down, and let's not let America down. Let's not change what's *right* with the Air Force.

COL. JOHN M. VERDI, USMCR
(RET.)

Santa Ana, Calif.

C-130 Airlifters

Gentlemen: The article in your November '72 issue, "Air Drop at An Loc," by John L. Frisbee, was received by the C-130 airlifters of the Tactical Air Command with great exultation and appreciation for a story that "told it like it really was." Mr. Frisbee's description of the professionalism displayed by the TAC aircrews was

Airmail

commendable, notwithstanding his excellent depiction of AWADS and its growth potential in support of the tactical mission.

This article should go a long way in informing the public that the colorful "trash carriers" of past conflicts have been replaced by young airmen dedicated to the use of highly sophisticated, self-contained radars and computers when providing aerial resupply to the besieged ground forces under an intense combat environment.

. . . my sincere personal appreciation for recording so accurately the heroic deeds of the TAC airlifters when meeting the challenge . . . at An Loc last spring.

BRIG. GEN. EUGENE W. GAUCH, JR.
Commander
Hq. 834th Air Division (TAC)
Little Rock AFB, Ark.

Guard and Reserve Coverage

Gentlemen: Major Hunter's November '72 article, "Employer Support of the Guard and the Reserve," brings out many valid points on both sides. Having been there, I can state that my present federal job is *de facto* jeopardized by my Ready Reserve status, especially as to promotion opportunity.

I just saw a well-qualified GS-11 get passed over for a twelve because his boss resented his being away on man-days as an Army Reservist (lieutenant colonel). [The question] "Why pick a man who plays soldier half the time?" legitimately enters the mind of an executive with a recently RIFed staff, a hiring freeze, and a geometrically expanding work load.

I recommend that AFA press for President Nixon to issue an Executive Order directing the federal bureaucracy to encourage participation, and positively forbidding supervisors and agencies to discriminate in promotion, normal progression, and releases for man-day projects. Further, complaint channels (like those for racial problems) should be set up. This is a proper project for AFA. It would help all the services' missions.

I also like Major Hunter's article "Comfort Silver." Combat comps are great for morale and reinforce

what [I was told in my] first AFROTC class—"The most important concept I want you to grasp in the next four years is a sense of mission."

Three SEA tours validated this. I and most Vietnam vets in the AFRes and ANG are both shocked and frightened by two glaring evils: equipment stripping by the regular AF (witness the recent loss of A-37s and C-130s to the VNAF), and, worse, the tendency of many senior Reservists to regard the programs for their social, recreational, political, financial, and retirement value.

I believe that too much AIR FORCE Magazine coverage of Reservists is directed toward political/morale activities of officers long past combat usefulness. Why not focus on the troops ready to fight? Examples are ANG ADC units on alert, TAC troops in Turkey, and Associate crews in SEA. I believe the best recruiting method is to appeal to the deeply ingrained competitive instinct in our culture. You'll note that the best units are those with a hard, challenging mission.

Also, although I don't believe Father McLaughlin's statistics on casualties, I do believe in the rest of that article ["War in Vietnam—The Myths and the Realities," November '72].

NAME WITHHELD

POW Newspaper

Gentlemen: . . . your [July 1972] articles on the POW WOW newspaper in Stalag Luft I, written by Prof. F. T. Gaumer, has resulted in our receiving five more original issues of the clandestine paper from Col. Wayne C. Bogard, USAF (Ret.), who was in POW camp with me. We certainly thank you. ROYAL D. FREY, Curator
Air Force Museum
Wright-Patterson AFB, Ohio

UNIT REUNIONS

11th Bombardment Group (H)

The 1973 National Reunion of the 11th Bombardment Group (H) Association will be held in Milwaukee, Wis., July 26-29. For further information contact

Robert E. May
P.O. Box 11
Perrysburg, Ohio 43551

8th Tac Fighter Wing

The annual reunion of the 8th Tactical Fighter Wing will be held March 2-4,

at the Sheraton-Park Hotel, in Washington, D. C. For further information call or write

Lt. Col. Carly L. Broadway
OJCS/J-3 (EUMEAF Division)
The Pentagon
Washington, D. C. 20301
Phone: 202 OX 5-7903/7909
or
Lt. Col. R. L. Markey
1111 19th St. (AF/SAGF)
Arlington, Va. 22209
Phone: 202 OX 4-8571

62d Troop Carrier Sqdn.

The 62d TC Squadron is planning a 30-plus-year reunion in Denver in late 1973 or 1974. A limited gathering in Kansas City in '71 stirred old memories and fostered plans for a longer and larger meeting. Of some 500 squadron members, only 124 have been found again. All WW II members of the 62d are requested to send name and address to

David E. Mondt
Box 155
Boone, Iowa 50036

AC-130A/E Gunships

The first annual AC-130A/E Gunship reunion will be held in the summer of 1974, in Las Vegas, Nev. All former Spectres, Sandys, and Jolly Greens are encouraged and cordially invited to attend. Expect a flyer early in 1973, confirming specific dates and hotel, along with a request for reservations. Request names and current addresses be forwarded ASAP to

16th Special Operations Sqdn.
Reunion Committee
APO San Francisco 96304

366th Fighter Group

A group of us want to observe the 30th anniversary of the activation of the 366th Fighter Group with a reunion in Pittsburgh, Pa., in September '73. All former members please send your name and address to

Harry C. Hayes
125 West St.
Black River, N. Y. 13612

34th Bomb Group

Any information pertaining to a reunion to be held by the 34th Bomb Group, 391st Squadron, will be appreciated.

James A. Carpousis
Department of Physical Education
Northwest Area Elementary School
West Douglas and Clinton Sts.
Reading, Pa. 19601

388th Bombardment Group (H)

The 1973 reunion of the 388th Bombardment Group (H) Association will be held in New Orleans, La., date to be selected later. In '74 the Association will again meet in England. Anyone who served with the outfit during WW II and not on the mailing list contact

Edward J. Huntzinger
863 Maple St.
Perrysburg, Ohio 43551

SCIENCE/SCOPE

A reliable lightweight, low-cost radar for air-superiority fighter planes is being developed by Hughes in a multimillion-dollar company-funded program. Initially, the system is to be designed for Northrop's P-530. It will have a look-up, look-down, clutter-free display capability. Designed for air-to-air and air-to-ground missions, it will provide the fire control function for the Cobra's guns, missiles, rockets, and bombs. Special emphasis is being placed on minimum maintenance.

A new electronics fabrication technique sandwiches a very thin dielectric supporting an etched stripline center conductor between two thin air-filled sheet metal ground planes stamped in a configuration that assures optimal support and bonding to the dielectric sheet and suppresses undesired parallel plate radiation modes. Used for the corporate feed of large antenna systems, air-filled strip transmission line has proved superior to dielectric-filled stripline in experiments recently completed by Hughes engineers. Air-filled stripline has better electrical characteristics and is lighter in weight and considerably less expensive to produce.

An AWG-9 Phoenix weapon control system, normally used for launching missiles from the Navy's F-14 Tomcat fighter, has been installed and tested in a shipboard defense role aboard the USNS Wheeling, where it successfully detected and tracked multiple targets at both high and low altitudes from the ship's deck. In multiple target tests, five aircraft were flown in the target area and successfully tracked. The Hughes-built AWG-9 system is unique in its ability to acquire and track more than 20 targets at the same time, launch up to six Phoenix missiles, and guide them simultaneously.

Improved coatings for shipboard electronic masthead equipment, such as whip antennas, rotary joint radar antennas, and waveguides, were described recently by Hughes scientists. The harsh marine environment -- moisture, sun, rain, ice, wind-driven sand and salt spray, and hot, sulphur-laden stack gases -- soon penetrates currently used protective coatings, but the four-coat epoxy-polyamide paint system recommended by Hughes is designed to protect masthead equipment for an estimated five years.

The Army's Advanced Attack Helicopter (AAH) program has designated the Hughes-built TOW anti-tank missile as primary armament. Hughes is offering major helicopter prime contractors competing for the award complete fire-control system integration for both missile and gun, gunner's and pilot's night vision equipment, laser target designator, and total ground support.

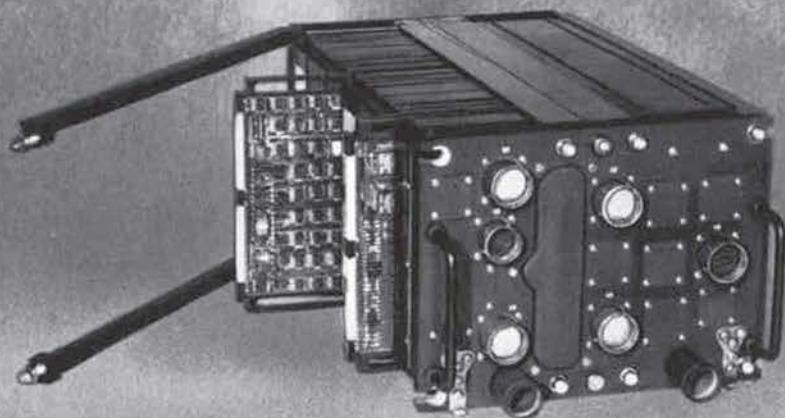
The government of Iran has made its second major purchase of Hughes-built TOW anti-tank missiles from the U.S. Army Missile Command, Huntsville, Ala. Iran plans to deploy TOW with armored infantry, helicopter, and infantry units. The Netherlands, West Germany, and Italy have also chosen TOW, and several other countries are evaluating it for both ground and helicopter applications.

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Also, the SKC-2000 offers you large machine architecture that includes floating point arithmetic to insure high order language efficiency. A powerful support software package that includes simulator, assembler, and JOVIAL compiler. And a powerful short instruction set that promotes memory efficiency.

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AEROSPACE & MARINE SYSTEMS

Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

Panmunjom to Paris

WASHINGTON, D. C., JANUARY 5

The 93d Congress is in session, and there is no requirement for any more speculation on its temper. The press and the television tubes are groaning with prognostication, a great deal of it from people with questionable qualifications, and this is not confined to what we now call the media.

Only a day ago, on a local television station, a member of the House of Representatives, a Republican who has been here since 1967, expressed the opinion that Congress will cut off support for the war in Vietnam, quickly, before our readers get this issue of AIR FORCE Magazine. This man further charged that Richard M. Nixon ordered Henry Kissinger to declare "peace is at hand" last October 26 in order to win votes in the November election. This Congressman held forth for nearly thirty minutes in a castigation of our recent conduct in the war, finding crass brutality, conspiracy, and administrative irresponsibility in the executive branch of the government.

Well, his congressional biography shows that he was born in early 1938, which means he was a toddler at the time of World War II and a kid with a baseball glove when the late Harry Truman sent Americans off to fight in Korea. He probably has read that bombers killed more than 100,000 persons in Dresden and that Hiroshima was wiped off the earth. Neither of these things would have happened if Hitler had not tried to conquer Europe and Tokyo had not sent raiders to Pearl Harbor. There would have been no bloodshed in Korea if the Communists had not decided to challenge the determination of the United States and the United Nations.

The pattern has been repeated in Vietnam. We have figures at hand indicating the North Vietnamese have killed or wounded 1,300,000 South Vietnamese civilians, which probably includes the thousands they buried alive at Hué in 1968. Nearly 10,000,000 have been made homeless by North Vietnamese military action. They have invaded and devastated large parts of South Vietnam, Laos, and Cambodia.

None of these facts was mentioned by the young Congressman, much less condemned. They are equally absent from the spate of editorial rhetoric pouring out of the nation's press this month. Yet all of these distressed people, in Congress and out, now speak of our nation's plight in terms of moral standards, condemning those of the United States, and condoning those of the enemy.

There is legitimate reason to believe that what we have learned from negotiations in the past also should be of use in this hour of pain. The men who closed the book on World War II never anticipated the requirement for the Berlin Airlift or the international indecency of the Berlin Wall. Maybe provisions should

have been included in the peace to make these outrages impossible. In coming to terms with the North Vietnamese, new and different pitfalls must be avoided. Even Korea had its *Pueblo* incident.

We are intrigued by the absence of any reference to Panmunjom in the millions of words of commentary coming forth on Dr. Kissinger's efforts in Paris. The Congressman is not old enough to remember it; the editorial writers should find it in the record. Negotiations to end the war in Korea started in the summer of 1951. As in Vietnam, the fighting went on as talks got under way. The word from Panmunjom, in November, was that there was hope for an early armistice. Some thought peace was at hand. But there was discord, much of it about prisoners of war.

Panmunjom dragged on. Dwight D. Eisenhower was elected President of the United States in November of 1952, about a year after hopes for an early armistice started to fade. According to the official Army history of the war, the new President, like Harry Truman, wanted an honorable armistice. He wrote later that he let the Communists know that if it was not forthcoming "we intended to move decisively without inhibition in our use of weapons, and would no longer be responsible for confining hostilities to the Korean peninsula." The deadlock at Panmunjom continued. By spring, the pace of the battle was stepped up. The armistice was signed on July 27, 1953. That was about two years after the talks started.

Any committee of Congress can find, easily, a number of retired general officers who would accept an invitation to testify about their frustrating, at times maddening, efforts to make sense of the Communist stance during the Panmunjom conclave. A few years from now, Henry Kissinger can give what amounts to



—Wide World Photos

The Chaplain leads the House in prayer as 93d Congress goes into session. The war in Vietnam, winding down for many months, still stands as a major factor in coming debates. Powers of the President also will be an issue.

Airpower in the News

a repeat performance. On the basis of this chapter in the history of the Korean War, it is not unreasonable to give Dr. Kissinger more credit than he is allowed these days by his critics in Congress and the press.

The peace effort aside, the new Congress promises to give President Nixon more than moderate trouble if the Paris peace talks are not productive, and swiftly. If Paris is not another Panmunjom, the chief executive can be home free, and the decision of the electorate last November justified. But if Paris is Panmunjom, and if Mike Mansfield, Senate Democratic leader, carries out his threat to act if "peace by negotiation" is not realized, there will be new problems. The outcome at Paris is the most important single factor in relations of the White House with Capitol Hill.

Probably most vital, if Paris is Panmunjom, the Defense Department budget faces new jeopardy, and the enemy knows it. There is already firm information that military installations and personnel face cuts. And that Elliot L. Richardson, the new Defense Secretary, has a talent in management that will facilitate the changes to come. Within a couple of weeks, the Administration will uncover the Fiscal 1974 defense budget, expected to total more than \$80 billion, up about \$4 billion from Fiscal 1973. Most of this money is scheduled to pay for manpower. Of weapon systems already on the track, the only one that will get close scrutiny is the Navy's Trident missile submarine project. Another Navy matter, that of the F-14 fighter and the financial plight of its manufacturer, Grumman Aircraft Corp., is certain to get an adequate airing. The political pressures in this area are considerable.

The draft is scheduled to expire on June 30, and the Pentagon is due to have plans ready for conversion to an all-volunteer force by that time. The House Armed Services Committee, it is rumored, may try to give the President authority to reinstitute the draft whether he wants it or not.

Somehow, it is hard to dodge the indications that the 93d Congress is the one that will come to grips with the fact that the Defense Department's part of the federal budget is not where real savings can be made. It is the Appropriations Committees of both houses and the Senate Finance Committee where the critical debates will take place. Social programs, whose costs have skyrocketed in recent years, will get new attention.

The election results being what they are, neither Congress nor the White House has a mandate. At the moment, it looks as if there is an inevitable bitter conflict ahead. Peace in Vietnam, if Paris is not Panmunjom, can change all that.

The Lavelle Case, Again

The House Armed Services Investigating Subcommittee has published a report on its findings in the matter of alleged unauthorized bombing raids in North Vietnam. The conclusions are less critical of Gen. John D. Lavelle, former Commander of the Seventh Air Force, than they are of the system and

the Defense Department. The General, in fact, comes out as something of a hero.

For the Pentagon's hierarchy, there is a stern rebuff for the fact that the committee was denied access to information—specifically, the text of the Rules of Engagement—that the Congressmen considered essential to their investigation. The report says the law of probabilities suggests that General Lavelle is not a man who would do things certain to bring him dishonor and disgrace, and:

"It is not necessary to catalogue all of the probabilities which might be examined; but they extend from possible tacit approval of General Lavelle's actions by his superiors, to possible civilian direction of the bombings. Vigorous denials by those who possibly were involved could neither be corroborated nor refuted without a review of all relevant documentary evidence. Such a review, however, was impossible when the Department of Defense refused to make that evidence available to the subcommittee. How much of that evidence might still be available is questionable, for the incredible secrecy with which some DoD representatives have surrounded this case suggests that the files may have been thoroughly sanitized."

Then, there is an implication:

"It has been suggested by DoD that, at least initially, the secrecy which it imposed in this case was imposed to protect General Lavelle from embarrassment. But having just summarily relieved him of his command, reduced him in rank, and caused him to retire, it is difficult to understand how either the Air Force or DoD could have added to the General's embarrassment. Therefore, one might be excused for entertaining an uneasy feeling that someone other than General Lavelle could be receiving the benefits of this secrecy."

The House hearings were held last June 12 and were partially covered in this space in the August issue of AIR FORCE Magazine. There was an executive session held that afternoon, the transcript of which was released with the report, after deletions were made by the Defense Department. It is a revealing document, ignored, for the most part, by the same newspapers that made a cause célèbre out of the Lavelle case. It was in the closed meeting that the subcommittee got some of its most important information. This left the group with the conclusion that General Lavelle must bear responsibility for false reports filed in connection with at least four strikes. But, the report adds quickly, the subcommittee understands how this happened in an atmosphere where the enemy had a license to throw the first punch.

The General testified that after the North Vietnamese netted their GCI radars with their SAM missiles, it was reasonable to assume the enemy defense system was always activated. The rules of engagement said sites could be attacked only when activated. It was General Lavelle's opinion that the SAMs were activated any time he had pilots over North Vietnam. He also told of an instance in which a reconnaissance photo showed a clear road intersection. Another photo, taken twenty minutes later, revealed a missile on a launcher, ready to go, in the same intersection. That would give the Seventh Air Force considerably less than twenty minutes to find out, the hard way, that the rules of engagement had been activated, too. Under these circumstances, it seemed sensible to carry out planned strikes.

The point was brought out that an enemy MIG fighter, or the GCI directing it to a target, could be hit if the MIG was "hostile." The subcommittee had some interest in whether or not there is such a thing as a friendly MIG over North Vietnam, but there was no satisfactory answer. General Lavelle related an incident in which a MIG fired three missiles at a flight of B-52 bombers, and missed. "This bothered me," he said, because he had inadequate radar coverage of the field where the MIG took off. The following testimony was heavily censored for security reasons, but the message comes through that he took steps to get the required information—with what he called "quick check recce"—and used it one night when both B-52s and an RC-135 with twenty people aboard were threatened. There was a strike, and it was successful. An enemy radar was put out of action. To General Lavelle this was protective reaction. Under the rules of engagement, it was not.

There has been considerable discussion, particularly at later hearings held by the Senate Armed Services Committee, on the knowledgability of Gen. Creighton W. Abrams with regard to the unauthorized raids. General Abrams was the US commander in Vietnam,

and now is Army Chief of Staff (see "Airpower in the News," November '72).

In the House transcript, General Lavelle testifies that "General Abrams was aware of this air defense buildup. He was aware that in preparation for this invasion they had brought down [censored] missile sites into this area. He was aware they had netted their radars with the missiles. He was aware that there was a radar-guided and electro-optically guided . . . triple A down there. He was aware that I told him in that kind of environment if we are going to get these targets, we have to plan—we can't go in and hope to get them.

"Now, as far as his being aware of each one specifically, I don't think so. As to his having knowledge of any of the reports, that is way below the detail he would get in on. I am positive he had no knowledge of any reports."

Did this mean his superior in Saigon or anywhere else knew he was giving approval to missions not authorized by the rules of engagement?

"Some of these strikes my superior absolutely knew," the General replied. "I just don't want to say . . . he knew all of them." ■

The Wayward Press

Jack Anderson, the nationally syndicated columnist, recently had a feature article in *Parade*, the Sunday magazine distributed by newspapers all across the country. It was titled, "The Privileges of Rank in the Pentagon."

Here is a typical paragraph.

In the Pentagon's private dining room, Army generals dine royally in leather-cushioned chairs. The day we visited, their menu included salmon croquettes and bearnaise sauce, braised lean ribs of beef, Portuguese skinless and boneless sardines, chilled clams, Mexican omelettes, asparagus spears, sherry and chocolate snowballs. The portions were generous. The price per meal: \$1. (Nearby, on the same floor, in the public dining room, GIs pay \$1.20 for a hot pastrami sandwich served with cole slaw, potato chips and a pickle slice.)

The management of the Pentagon food service, in response to a query, had no excuse to offer for the upholstery on the chairs or the prosaic menu. It was disclosed that there is no \$1 lunch in the Flag Officers Dining Room, such as Anderson described. The price quoted for a hot pastrami sandwich is the one paid

by flag officers and executives. A G.I. can buy the same sandwich in one of the cafeterias for eighty cents. All of the foods listed by Anderson as served to the generals and admirals are not on the menu, and certainly not all included in any one lunch.

At other points, Anderson, who is rated as a big muckety-muck in newspaper circles, has a number of errors in his article.

He says the Pentagon "maintains special rented limousines for congressional chairmen." This is not true. He says rented limousines are used to take officers to football games and inaugural events. The Defense Department insists this does not take place. After implying that the taxpayers buy the wardrobes of flag officers, he declares that "taxpayers spend a fortune just cleaning the clothes of their generals and admirals." Officers, of course, pay for their own clothes and pay their own dry-cleaning bills.

Anderson finds that generals and admirals "dwell in lavish quarters," none more impressive than the homes at Fort Myer, near the Pentagon. As a matter of fact, the provision of quarters or a quarters allowance is as old as the Republic and fixed by an act of Congress. In the Washington area, they are not lavish. Many

were built in the 1930s, some dating back to the Civil War.

The Anderson article is illustrated and the caption material keeps pace well with the standards of accuracy set by the author. One caption says a second Cadillac is kept available for the Defense Secretary, in case something goes wrong with the first one. This is not true. There is a leased sedan, not a limousine, maintained as an auxiliary car. It is not for emergency use, but to carry the Secretary when security conditions make it prudent to avoid an official car. The Secretary of Defense is a member of the cabinet; in the event of a national crisis, he might be the most important member of the cabinet.

Another caption depicts "Pentagon elite in leather-cushioned chairs" in a dining room. The room photographed is not a private mess. It is the same room used almost daily by the Pentagon press corps and other members of the public. The caption says a meal costs \$1, which is incorrect.

Anderson, recognized by his peers as an "investigative reporter," has been awarded the Pulitzer Prize and is lionized at luncheons by such prestigious organizations as the National Press Club.

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE



—Wide World Photos

The wreckage of a B-52 bomber, above, lies scattered about a mile from U-Tapao Airfield in Thailand after it crashed on approach. Four of its crew were killed and two injured. The aircraft was hit on a mission over North Vietnam, where fifteen of the big bombers were lost during the December bombing campaign, Linebacker II. A radiophoto, right, broadcast from Hanoi and picked up in Tokyo depicts a SAM ground-to-air missile site and its crew with what appears to be part of a destroyed B-52. For an editorial concerning the effectiveness of the bombing campaign, see p. 4.



—Wide World Photos

WASHINGTON, D. C., JAN. 15

It remains for future historians to analyze the wisdom of the recent bombing campaign in Vietnam north of the 20th parallel.

It can be expected that controversy will long rage over President Nixon's decision to initiate the action and whether or not the sought-after *political* objectives—if attained—were worth the cost.

At this juncture, however, one aspect of the bombing of targets in the North seems clear: from a strictly *military* point of view the bombing campaign was a success, despite the losses of aircraft and men and much to the surprise of critics of US airpower.

For the rationale underlying this conclusion, see the editorial by Executive Editor John L. Frisbee on page 4.



On December 22, an earthquake of major magnitude all but leveled the Nicaraguan capital city of Managua, killing thousands and leaving most of the rest of the pop-

ulation without homes, food, or water.

Thirty-three hours later, the first US Air Force relief aircraft had landed at nearby Las Mercedes airport, bringing in a team of Air Force personnel to set up contingency control operations for the massive airlift that was to follow.

Soon, Military Airlift Command C-5s and C-141s were landing regularly, unloading nearly 2,000,000 pounds of emergency supplies in the first two days of the operation alone. All six MAC wings participated in the relief effort. They brought in everything from a complete hospital unit from Fort Hood, Tex., to water-purification gear from the Canal Zone. Some 400 US citizens were evacuated aboard return flights.

Involved in the Managua relief operation were MAC personnel and aircraft from Dover AFB, Del., Charleston AFB, S. C., McGuire AFB, N. J., Travis AFB, Calif., McChord AFB, Wash., and Norton AFB, Calif.

So experienced has the Air Force

become in reacting to natural disasters that such large-scale undertakings as the Nicaraguan relief effort are looked upon logistically as almost routine.



There is a very gracious and interesting lady now living in the city of Taipei to whom some of our readers may owe their lives.

She is Charline Chable Ferrera, known as the "French Lady" in the Republic of China, where she is in business designing high-fashion clothing. During World War II in France, Charline saved thirty-two Allied personnel by hiding them from the Germans and helping them to escape.

In an interview with Andrew Headland, Jr., of *Pacific Stars and Stripes*, Charline described how she was denounced to the Germans by a fellow countryman and was taken into custody while trying to flee across the Pyrenees into Spain. It all ended happily, however, when the Spanish Maquis broke her out of a Toulouse prison during a raid.

She spent the last several months of the war hiding in a Paris sanctuary provided by the French underground.

But the time spent in jail in Toulouse was not the first imprisonment suffered by Charline. Earlier, she had been jailed on suspicion of having sheltered US airmen at her country estate, some thirty miles from Paris.

For her courageous service, Charline was awarded the Freedom Medal, the US's highest civilian award for bravery and one of the few bestowed on a foreign national. The award, signed by General Eisenhower on behalf of President Truman, hangs in her study in Taipei.

Charline is noted for other than her war work and current design ability. She was champion high diver of France in 1934 and is a noted linguist, speaking eight languages.

Charline's fondest wish is to hear from those Allied airmen whose paths crossed hers so briefly but significantly back in the war years. Her address:

Miss Charline Ferrera
No. 9 Lane 25
Shuand Chen G Street
Taipei, Taiwan



Passengers traveling around the country by commercial airliner these days are being subjected to unprecedented security procedures.

Directed by the President, the new "emergency" rules imposed by the FAA are intended to stem the wave of skyjackings that have plagued the airlines over the past several years.



With battle streamers as a dramatic backdrop, the Joint Chiefs of Staff pose for a portrait. They are, from left, Gen. Creighton W. Abrams of the US Army; the Air Force's Gen. John D. Ryan; the Navy's Adm. Thomas H. Moorer, who is currently Chairman of the JCS; Adm. Elmo R. Zumwalt, the Navy's colorful and controversial head man; and Gen. Robert E. Cushman, who occupies the top Leatherneck slot as Commandant of the US Marine Corps. General Abrams, who previously commanded all US forces in Southeast Asia, was confirmed as Army Chief of Staff by the Senate on October 12, 1972.

They call for airport operators to station armed local law-enforcement officers at passenger checkpoints during boarding and reboarding by passengers.

Also, all passengers must undergo electronic screening as a condition to boarding. As well, all carry-on items accessible to passengers during the flight must be inspected before the passengers may board.

All 531 of the nation's airports that serve scheduled air carriers are affected by the new rules, plus "all foreign airports at which passengers board scheduled US carrier flights." At these points it is expected that the foreign governments will provide law-enforcement support similar to that given foreign carriers operating in the US. "If this expectation is not met," the FAA said, "the burden for arranging such support will fall on the individual carrier."

The Department of Transportation, responsible for assuring compliance of airline and airport operators with the security regulations, has purchased 1,100 walk-through and 1,185 hand-held detectors and is prepared to acquire enough additional screening devices to equip all airports, it said.

Retired Air Force Lt. Gen. Benjamin O. Davis, Jr., who heads up DOT's airline security program, said that the new breed of hijackers are "unequaled in their ruthlessness. . . . Where a simple screening of passengers might have deterred hijackers in the earlier stages of this period of aerial piracy, we now must be ready to forcefully stop them at the boarding gate."

In a related matter, the Air Line Pilots Association (ALPA) passed a resolution calling for the elimination of overseas hijacker sanctuaries and the implementation of a stringent program to combat hijacking effectively in the "immediate future." It threatened to cease airline service in the face of further air piracy and said it would also seek the cooperation of the International Federation of Air Line Pilots Associations to attain its goals.



The C-5 transport, the subject of a great flap of controversy as to cost and performance when the first of these giant aircraft went operational three years ago, has earned an "outstanding performance" evaluation by the Air Force.

"The facts are there," said Gen. Paul K. Carlton, MAC Commander.



USAF has selected Fairchild Industries' A-10A to meet its requirement for an A-X close-support aircraft. The company will build an initial order of ten for R&D purposes.

Aerospace World

"We've given the plane a job to do, and she's performed it admirably. The praise of the crews who fly her attests to an enviable record. We in MAC are pleased with her accomplishments. She flies cargo that no other mode of transportation can carry. Our airlift force of the '70s truly gives the United States a strategic mobility unsurpassed by any nation," General Carlton declared.

In pure airlift capability, the C-5's muscle is awesome. Recent jobs: hauling the Skylab mobile lab for a test during Apollo-17; carrying the 62,000-pound Atlas/Centaur launch vehicle, the first time the first-stage booster and the upper-stage booster have been transported aboard the same aircraft; airlifting

targets, launched four missiles, and guided them simultaneously to "hits," the first four-missile firing ever attempted.

The Phoenix system, designed to fire six missiles at one time, is being tested aboard the Navy's new F-14 Tomcat at Point Mugu, Calif.

In a related activity in December, an AWG-9 Phoenix weapon control system was tested aboard a ship and "successfully performed the shipboard fire-control mission," Hughes Aircraft Co., developer of the system, said.

The test included high- and low-altitude tracking of multiple targets. The system is designed to track up to twenty targets simultaneously.

Also at Point Mugu, a "Harpoon" antiship missile developed by McDonnell Douglas for the Navy scored a bull's-eye late in December in its first test launch against a target ship. Fired from a P-3 Orion aircraft, the Harpoon



Maj. John E. Mantei, of the 4750th Test Squadron, Tyndall AFB, Fla., has been instrumental in testing a computing gunsight that has made it feasible to mount a Gatling gun in the F-106's missile bay.

bility of mounting a 20-mm Gatling gun in the missile bay of the F-106 Delta Dart. The entire enterprise—dubbed "Project Six Shooter"—hinged on the ability of a team of military and civilian experts to design and build an effective computing gunsight.

First test firings using the new gunsight began late last summer over the Gulf of Mexico and were the responsibility of the Air Defense Weapons Center, Tyndall AFB, Fla.

Maj. John E. Mantei, of the 4750th Test Squadron, flew twenty-seven missions with the new gunsight and reports that results were highly satisfactory. "A total of eight fiber-glass aerial tow targets, theoretically not designed to be destroyed by 20-mm ammunition, were shot out of the sky," the Major explained.

The high-water mark of the program, however, came when Major Mantei blasted a highly maneuverable, free-wheeling Firebee drone. Chasing its target through a series of four-G turns, the F-106, at speeds up to 500 knots, finally cornered the Firebee in a tight turn and destroyed it. It was the first gun kill of the elusive Firebee in an air-to-air chase.

According to Major Mantei, "The gunsight we tested is unique and has future potential way beyond present gunsight concepts. It enables the pilot to aim accurately



Col. Thomas E. Clifford straps into an F-4 Phantom prior to a mission. A native of Washington, D. C., Colonel Clifford commands the 52d Tactical Fighter Wing, Spangdahlem Air Base, Germany. He is the only black wing commander in USAF.

the heaviest payload ever recorded—two M-48 tanks weighing a total 196,000 pounds.

Within a year of leaving the production line, one C-5 logged more than 1,800 air hours during 347 flights. This work load included twenty-two round trips to SEA and twenty-seven to Europe.



In late December, the Navy's F-14 Phoenix weapon system tracked four separate jet drone

levelled off at low altitude and at subsonic speed picked up its target via the missile's active radar seeker. The 1,100-pound missile is powered by a turbojet engine (built by Teledyne CAE), after a solid-propellant booster is used during the first part of its flight.



For its part, the Air Force has also met with some notable success on the gunnery range.

It has demonstrated the feasi-

Aerospace World

at a target under any conditions. It greatly increases the flexibility of armament for the F-106."



Eradication of the parasitic screwworm in various areas of the Caribbean may not sound like such a great accomplishment, but the economic implications could be enormous.

Known mostly in tropical areas, the screwworm fly lays its eggs in or on warm-blooded animals and is responsible for the destruction of millions of dollars worth of meat animals each year. It can also harm man.

Working with Department of Agriculture veterinarians, personnel and aircraft of the 1st Special Operations Wing, Hurlburt Field, Fla., engaged in a civic-action project that brought about the total demise of the parasite throughout the Virgin Islands and reduced incidence of the pest in Puerto Rico and neighboring islands.

The technique used during the project was to disperse specially bred sterile screwworm flies, which stop the natural reproduction cycle by mating with fertile native flies. The resulting eggs will not hatch; the females mate only once.

The sterile flies, developed at Mission, Tex., by the USDA, were flown by 1st Special Operations Wing C-123 aircraft under controlled conditions to Ramey AFB,

Puerto Rico. They then were transferred to the wing's U-10 aircraft for dispersal over the test areas. A subsequent USDA survey indicated that the Virgin Islands were completely free of the pest.



The Air Force has designated two lightweight fighter prototype aircraft as the YF-16 (General Dynamics) and the YF-17 (Northrop Corp.). Last April, each company received a contract to build two prototypes (*see p. 46 for details*).

The YF-16 is powered by a single Pratt & Whitney F100 turbofan engine, has an under-fuselage inlet, single vertical tail, and forebody strakes. The YF-17 is powered by two General Electric YJ101 turbojet engines, has a twin tail, highly sweptwing leading-edge extensions, and underwing side fuselage inlets. Both aircraft are slated to fly in early 1974.

The prototypes are being built to determine the feasibility of developing a small, lightweight, low-cost fighter; evaluate advanced technologies and design concepts; determine aircraft capability; and establish operational utility. No production commitment has been made.



Attendance at USAFE's Race Relations Awareness Seminars passed the 10,000 mark in mid-December.

The seminars, mandatory for all military personnel and conducted during duty hours at bases throughout USAFE, were initiated in January 1972. The twenty-hour

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Col. Jack B. Gross, USAFR (Ret.), who is AFA's long-time Treasurer, is presented the Legion of Merit by Air Force Secretary Robert C. Seamans, Jr., as USAF Chief of Staff Gen. John D. Ryan looks on. The award is for "outstanding services" while serving with Headquarters Command and the Air Reserve Personnel Center.

course includes sessions containing both formal instruction and open discussion, with each class mixed as to race, sex, age, and grade to assure a variety of viewpoints.

The curriculum consists of information exploring the nature of prejudice, contemporary social problems in the military, minority-group history, and methods to enhance the communication process.

Completing the course in December was Lt. Gen. Jammie H. Philpott, who took over as USAFE Vice Commander in September. "I felt that I was already sensitive to the racial problems facing all Americans, but participation in this seminar has given me new insight into the task we face in overcoming many years of insensitivity and injustice—a task in which I think the military should lead the nation," the General said.



Were the Wright brothers mistakenly credited as being the first to fly heavier-than-air craft?

The Pilot, a magazine published by the Aircraft Owners and Pilots Association (AOPA), is the latest to herald "growing evidence" that several people flew before the event at Kitty Hawk.

The Pilot cites evidence that Richard Pearse, a New Zealand farmer, made numerous flights up to 150 yards at treetop level at least a year before the Wright brothers' flight. On March 31, 1903, some ten months before Kitty Hawk, Pearse made a controlled flight of two and a half circuits of a small field before numerous witnesses, the magazine claims.

The Pilot also says that six years before the Wrights' first flight, W. D. Custead, a railroad ticket agent in central Texas, flew a powered aircraft a distance of five miles. Supposedly, Waco, Tex., newspapers in 1897 documented the event. The plane was said to be powered by an engine built by Gustave Whitehead of Bridgeport, Conn., who himself was to have flown an improved version of the plane there in August 1901.

R P W ?

What's more, *The Pilot* suggests, the first to fly a heavier-than-air craft was a German immigrant, Jacob Brodbeck, who accomplished the feat *thirty-eight years* before the Wrights. His aircraft, of spring-powered design, was said to have climbed to treetop level before the power ran out and the aircraft was destroyed in the ensuing crash. Brodbeck emerged unhurt.



The Canadian Armed Forces has positively identified the wreckage of a Hurricane fighter that crashed in dense forest near Chicoutimi, Quebec, twenty-nine years ago.

The remains of the pilot, Sgt. Raymond W. Bailey of the Royal Air Force, were found in the aircraft.

On November 15, 1943, the World War II fighter took off from a Royal Canadian Air Force airfield as part of a five-plane formation on a training flight. As the flight entered a heavy snowfall soon after, the Hurricane flown by

Sergeant Bailey disappeared. Eventually, the four other aircraft landed safely and initiated a search. Records show that some fifty planes flew a total of 400 hours during the search but were hampered by snowstorms in the area.

On December 8, 1972, a bulldozer doing road work uncovered the ill-fated aircraft.



NEWS NOTES—Air Force Academy Cadet First Class Frank G. Klotz is one of thirty-two Americans to receive a Rhodes Scholarship. He is the sixteenth Academy cadet to be so honored.

Boeing and McDonnell Douglas have been authorized by DoD to initiate Phase II of the AMST program (see April '72 issue, p. 34). Under Phase II, each will build and test two prototype aircraft, to be evaluated against mission requirements.

The first world hot air balloon-ing championships will be held February 11-17, 1973, in Albuquerque, N. M. Some 100 balloons

are expected and seventeen nations will be represented.

Dr. Rocco A. Petrone, Director of the Apollo Program at NASA Headquarters, has taken over as Director of NASA's Marshall Space Flight Center, Huntsville, Ala., succeeding Dr. Eberhard Rees, who retired January 19.

A direct communications link between the US and the Soviet Union via satellite is being planned. Harris-Intertype Corp., which builds advanced electronic communications and data-handling systems, has been given a US Army Satellite Communications Agency contract to build a ground terminal near Washington, D. C., and maintain it. The Soviets will build a counterpart ground station near Moscow.

Died: Andrei Nikolayevich Tupolev, eighty-four, in Moscow in December. Tupolev was one of a handful of designers who dominated developments in Soviet aviation for the past fifty years. The TU-144, the first supersonic transport to fly, is a product of his design bureau. ■

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Airman's Bookshelf

The Führer's Psychiatrist

The Mind of Adolf Hitler: The Secret Wartime Report, by Walter C. Langer. Basic Books, New York, N. Y., 1972. 280 pages. \$10.00.

A large number of Americans, particularly young Americans, do not know as much as they should about Adolf Hitler. It is possible that this book, a psychological report written for Gen. "Wild Bill" Donovan of the World War II Office of Strategic Services, will tell them more than necessary. But it is fascinating reading, an application of psychoanalytic insight to warfare. It was classified secret for almost twenty-five years, although the reason for this is not made clear. It may be because many sources are identified.

There are a few of us, ancients of at least three score years, who remember Hitler and even had the experience of living in Germany while he ran the country. This reporter is one of them. On returning from a sojourn in Berlin and Munich in the middle '30s, it was astounding to find a substantial number of US citizens who saw no threat and counseled that "we can do business with Hitler."

The concept was ridiculous, and Dr. Langer's book tells why. In a new introduction, prepared for this first public edition, the author says the assignment was completed too late. It was produced in 1943. Had it been compiled years earlier, say 1933 or 1934, "there might not have been a Munich." The date of the Munich pact was 1938. Had the facts been known to millions of Americans who never saw Hitler, we also could have been better prepared for the debacle that stretched from 1939 to 1945.

The facts Dr. Langer was able to assemble showed how mad the Führer was and how he got that way. The projections of this psychoanalysis proved accurate: The author predicted Hitler's personal isolation would increase, that his rages would continue as his mental

abilities deteriorated. Dr. Langer surveyed the possible ways in which this evil man could meet his end and concluded that suicide "is the most plausible outcome." It was suicide.

There are six major chapters in the book, covering everything from Hitler as he viewed himself and as others saw him to the psychoanalysis itself. Inevitably, the man's sexual idiosyncrasies get a lot of attention. There also is examination of his rages, his anti-Semitism, his longing for immortality, and his fears. At the end of World War I, Hitler was exposed to a slight attack of mustard gas. He spent weeks in the hospital behaving as though he were blind and speechless. Both were the result of simple hysteria. It was while he thought he was blind and mute that he had a vision of liberating the Germans and was convinced that Providence had chosen him for this mission.

There are other books young Americans must read with this one to understand the Hitler phenomenon. It could flourish only in the political and socioeconomic atmosphere of its day. In different atmospheres, which may develop at any time, there are different fanatics who will flourish and menace our free society.

—Reviewed by Claude Witze.
Mr. Witze is a Senior Editor
of AIR FORCE Magazine.

American Foreign Policy

A New Isolationism: Threat or Promise? by Robert W. Tucker. Universe Books, New York, N. Y., 1972. 127 pages. \$6.00; paperback, \$2.25.

The Johns Hopkins faculty has in recent years widened the field of view of our foreign policy options. In 1967, George Liska argued in *Imperial America* that the United States, a dominant power that had won the Cold War, should consider an imperial policy reminiscent of Rome's glory. In 1972, Robert Tucker argues in *A New Isolationism* that the United States, a power of limited influence in a muted Cold

War that no one has won, should consider an isolationist policy reflecting our heritage.

Liska's analysis has been refuted by recent events; the adoption of his proposal now appears beyond the pale of possibility. Tucker's analysis reflects those events; his proposal brings isolationism back into the pale for consideration. Both have done an admirable job of questioning the conventional wisdom.

Tucker shows us that we have blindly rejected "isolationism" and silenced those that recommend retrenchment as "isolationists." For Tucker, isolationism, defined as the refusal to enter *certain* relationships (alliances) and to undertake *certain* actions (interventions), is appropriate at particular junctures in the development of the nation and the international system. He argues that we have arrived at such a juncture. According to Tucker, the United States today has no intrinsic interest in any area of the world, save Europe, and no strategic interest, even in Europe.

The only direct threat to the United States is instability in the US/Soviet strategic balance, which would not be affected by even the worst outcome of isolationism: proliferation, or loss of non-US territory to hostile forces. Threats to Europe could and would be handled by Europeans. Without intrinsically or strategically valuable areas to protect, the deterrent defense of still other areas to demonstrate capability and will becomes meaningless. Tucker feels that a new isolationism is in keeping with US traditions, might achieve its objectives at a more reasonable cost than other policies, and could find acceptance with the American people.

I disagree. It is not clear that Europe is the only area of intrinsic interest to the United States today. For example, the energy crisis plus ecological concern about substitutes for fossil fuel may increase US dependence on the Arab world, while historical, political, and emotional ties may maintain our involvement in the survival of Israel.

Europeans may well react to our

withdrawal by less, rather than more, defense effort in their own behalf. Access to basing still has subtle impact on the quantitative strategic balance, and access to resources may have far-reaching impact on the qualitative balance in the future. Stability is *not* automatic; reasonable hedges are demanded of the prudent statesman. I would hope that recent events have taught us to pursue a course between isolationism and imperialism, that of a mature and selective practitioner of power politics.

One may agree or disagree with Dr. Tucker's analysis and prescription. All would have to agree, however, that he has done us a service by forcing the ongoing foreign policy debate to examine its underpinnings and widen its field of view.

—Reviewed by Maj. Frank B. Horton III, Department of Political Science, USAF Academy.

Of Diplomatic Maneuvers

Ashes of Victory: World War II and Its Aftermath, by Quincy Howe. Simon and Schuster, New York, N. Y., 1972. 542 pages. \$12.50.

John Brooks, a staff contributor to *The New Yorker*, is quoted on the dust jacket of this book as writing that "It will be my standard reference text on the Second World War." If so, Mr. Brooks will have a difficult time finding out how, where, and by whom the war was actually fought. Of political and diplomatic maneuverings from Munich to the recent visit of the President to Peking, he will find plenty, perhaps in some cases more than he wants.

This account of World War II and its aftermath is told almost entirely at the level of FDR, Churchill, Mussolini, Hitler, De Gaulle, Chiang Kai-shek, and Hirohito in the first part, and of Truman, Eisenhower, Khrushchev, Adenauer, and Mao Tse-tung in the latter part. At the next lower level we follow the trials and trails of Ribbentrop, Stettinius, Harriman, Eden, Dulles, and Molotov. And finally, at the third level, we find on occasion Generals MacArthur, Marshall, Rommel, Rundstedt, and Tojo. Below that the soldiers, sailors, and airmen who fought the war are lost in the mists of obscurity—and neglect.

Journalist first and historian only by avocation, Quincy Howe, longtime editor of *The Living Age* and

founding editor of *Atlas*, has borrowed his theme from Thucydides, stressing throughout the essential irony of history that men's hopes, fears, and intentions bear little relation to the eventual outcome of great wars. Where Thucydides began his tale with the affairs of Epidamnus and Potidaea, followed by the Congress of the Peloponnesian Confederacy at Lacedaemon, Howe begins with the "congress" at Munich and moves steadily onward at his own lofty level through the series of wartime conferences and decisions from Arcadia to Casablanca, Quebec, Moscow, Teheran, Yalta, Potsdam, and on to Geneva and Peking. At that level his history is well informed and provocative, taking advantage as it does of the latest and best available scholarship. Complaints, if there are any, will center on his imperial tone and purple prose: Ribbentrop is a "pipsqueak," Dulles "sanctimonious" and "fumbling," while Hitler alternately "whines," "rants," and "connives."

Unlike Thucydides, however, who remembered to have us follow the disastrous retreat of the Athenians from Syracuse, Howe has little interest in the military aspects of the war. Sailors will find only two fleeting references to the Battle of the Atlantic, and assiduous airmen will find Arnold mentioned twice, Spaatz never.

The theme is implicit in the title and is repeated throughout as when he writes that "from the ashes of both defeat and victory rose China's eternal phoenix, the bird of paradox." In Howe's view, however, China has no special claim to the bird of paradox.

Interesting and provocative, yes; exasperating, now and then; definitive and all-encompassing, no. Worth \$12.50? Only to devotees.

—Reviewed by Maj. David MacIsaac, Department of History, USAF Academy.

New Books in Brief

Aerial Photography: The Story of Aerial Mapping and Reconnaissance, by Grover Heiman. The main emphasis in this book is on the use of aircraft and photography as instruments of military and national power, and how the waging of war has changed more radically and more rapidly than ever before in history as photography and aeronautics have become increasingly sophisticated. Part of the Air Force Academy Series. Macmillan Co.,

New York, N. Y., 1972. 180 pages with index and bibliography. \$5.95.

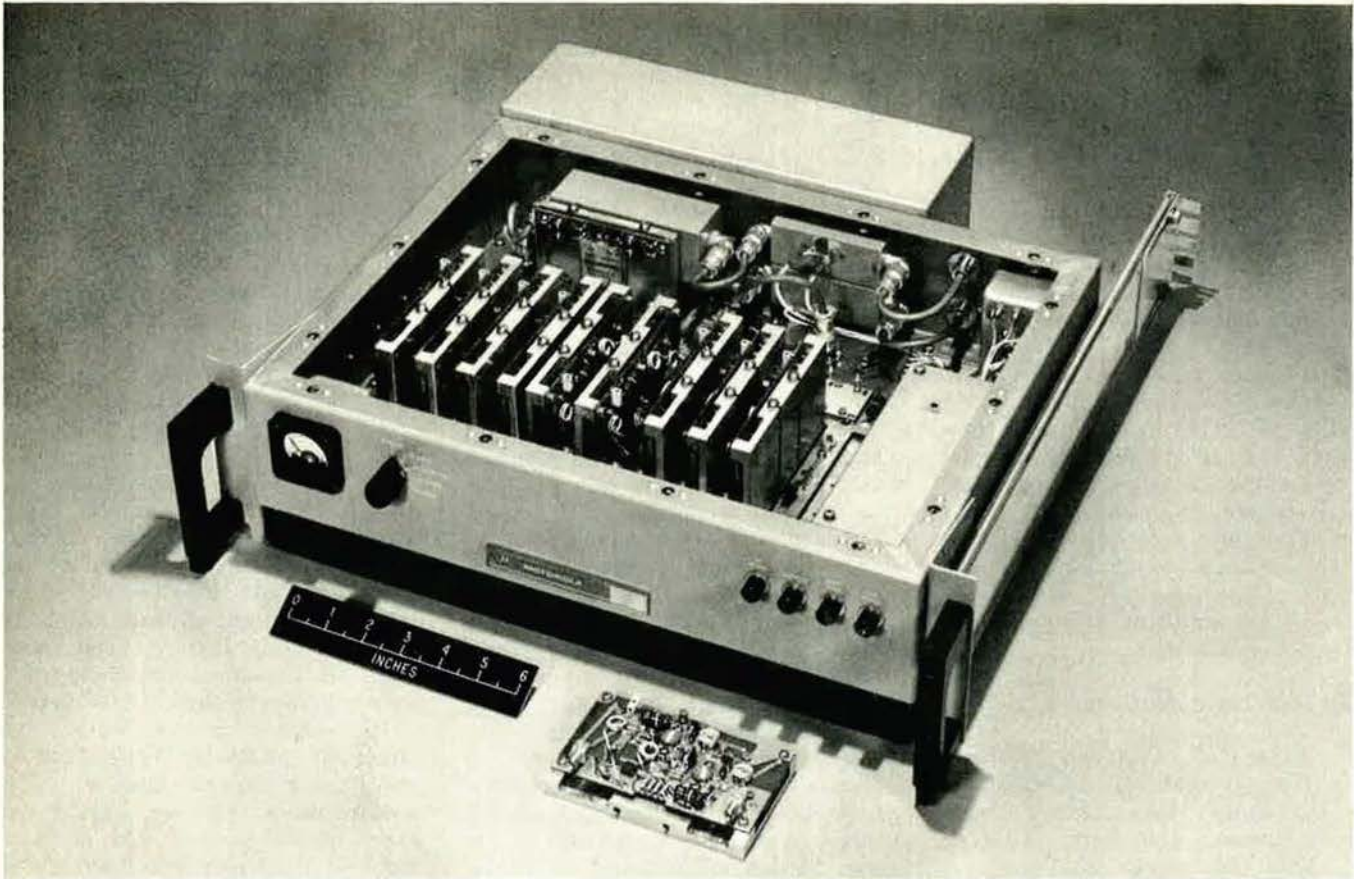
The New Astronomies, by Ben Bova. Mr. Bova first traces man's fascination with the stars from prehistory up to the new era of sophisticated instrumentation; then he pieces together current breakthroughs in astronomy and the instruments that have made these discoveries possible. Written for the layman with a minimum of technical knowledge, the book can also be enjoyed by young adult readers. St. Martin's Press, New York, N. Y., 1972. 214 pages with index and bibliography. \$7.95.

Mr. Piper and His Cubs, by Devon Francis. William T. Piper knew nothing about the aircraft business or flying. However, he parlayed a four-hundred dollar investment in an aircraft company into a family fortune. The name Piper has become a household word as his flying machines have served as the nursery for four out of five American pilots in World War II and have given peacetime wings to men in ninety nations. This is the story of the growth and development of the lightplane industry in the US and use of its products throughout the world. Iowa State University Press, Ames, Iowa, 1973. 256 pages with index. \$7.95.

The War of 1812, by John K. Mahon. Detailed narrative of the military operations in the War of 1812, both on land and on water. Mahon treats the war as a part of the social history of the time, and it becomes clear that this was a good example of how *not* to use war as an instrument of national policy. University of Florida Press, Gainesville, Fla., 1972. 476 pages with index and bibliography. \$12.50.

Two more books in a series of *Navies of the Second World War* are *British Submarines* and *British Battleships and Aircraft Carriers*. Handbooks that present a unique and comprehensive description of Britain's navy—the former about its submarine designs, with complete war program of construction; the latter about its capital ships and aircraft carriers, with special attention given to wartime alterations. Doubleday, New York, N. Y., 1972. 152 and 160 pages, respectively. \$4.95 each.

—BY CATHERINE BRATZ



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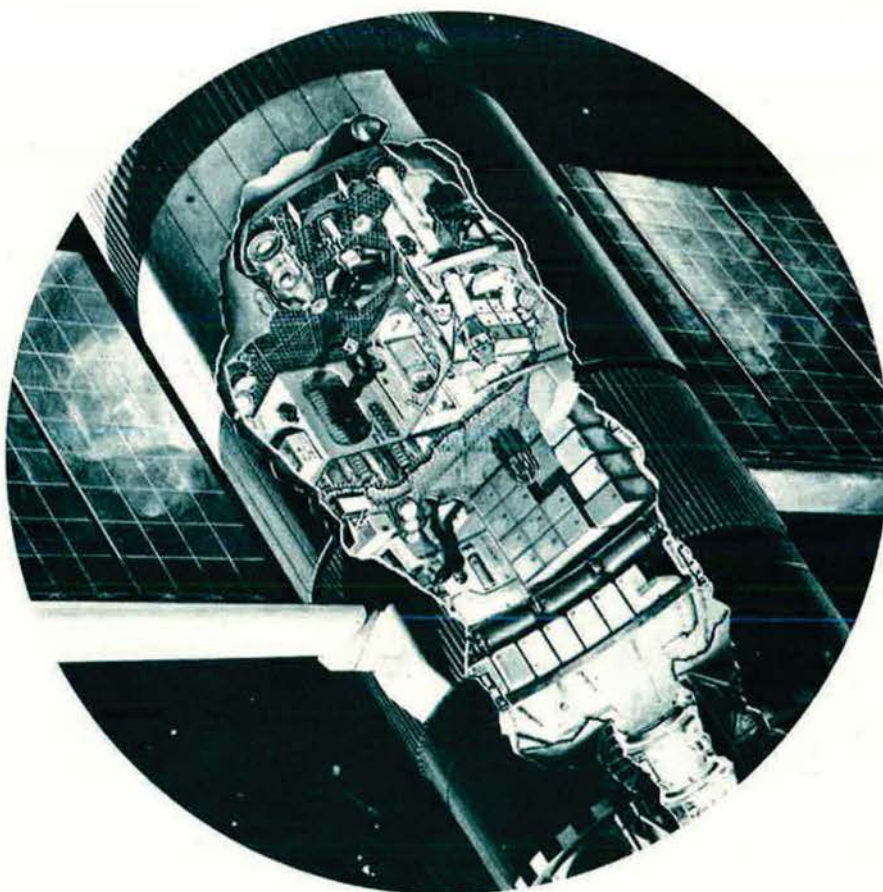
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MOTOROLA

Almost exactly twelve years from the day that Alan B. Shepard became the first American to enter space, the United States is scheduled to launch the world's first truly habitable space station. This epochal NASA program will put man to work in space aboard a commodious and well-equipped laboratory and test his ability to function productively over long periods by operating a congeries of scientific instruments . . .

SKYLAB OPENS THE AGE OF SPACE EXPLOITATION

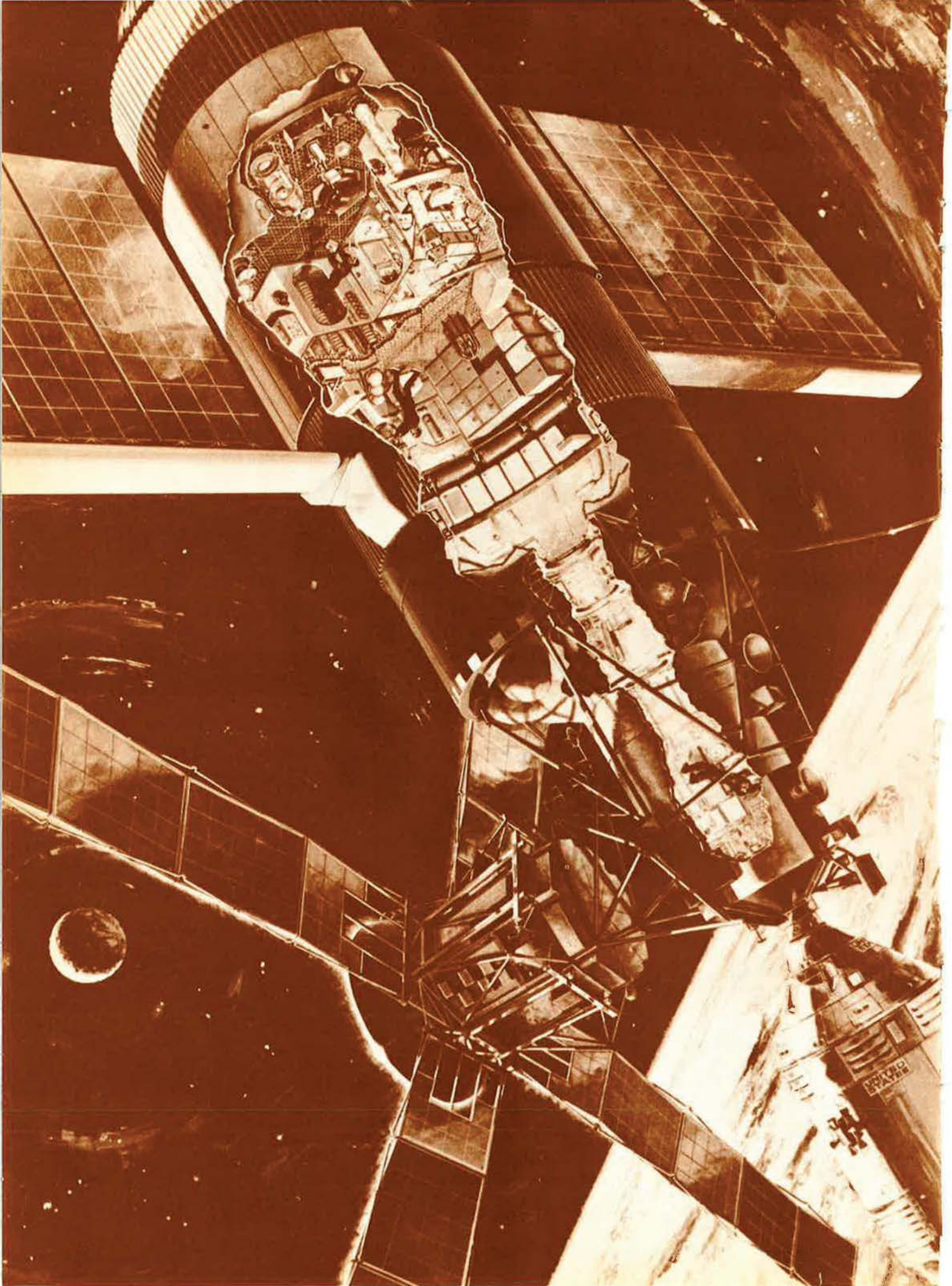


By Edgar Ulsamer SENIOR EDITOR, AIR FORCE MAGAZINE

APOLLO-17, the last and most productive of America's great moon voyages, closed a chapter in the US space program that began with Sputnik and ended with the nation's supremacy in manned spaceflight clearly established. The next chapter in the US space program will center on a shift in locale and objectives: the exploitation of near-earth space to benefit man on earth in many and varied ways, from resource planning to space manufacturing and national defense.

The first manned system specifically designed to *exploit*, rather than *explore*, space is Skylab. Skylab is a two-story space station about thirty

times the size of the Apollo space module. It will serve alternating crews of scientist-astronauts over relatively long periods of time as both a truly "livable" home and a scientific workshop. While the Skylab program is oriented toward basic scientific objectives, its importance to national security is significant. It will establish man's capacity to live and work in space over long periods and test his ability to observe the earth's surface systematically and in great detail. NASA, as well as the Department of Defense, expects the Skylab program to establish, in a precise scientific and medical sense, whether man "can be certified



for prolonged working assignments in space," without such aids as artificial gravity.

Misslon Profiles

NASA's program director William C. Schneider told AIR FORCE Magazine that Skylab, really a cluster of modified space vehicles collected from previous space programs and joined together, is scheduled for launch on April 30, 1973, at about 12:30 p.m. from the Kennedy Space Center in Florida. Total weight of the space station and the Saturn V, which serves as the launch vehicle, will exceed 6,200,000 pounds, and the assembly will be more than 333 feet high. The space station is to be placed in a 233.5-nautical-mile, circular orbit, inclined fifty degrees toward the earth's equator. Thus, Skylab will pass over all areas of the globe within 3,450 miles north and south of the equator, including forty-nine of the fifty United States, missing only Alaska. It will circle the earth at five miles per second, or once every ninety-three minutes. Although Skylab will not be inhabited for anywhere near that long, it will stay in space for up to nine years before the earth's gravitational pull causes it to reenter the atmosphere and burn up.

Once in orbit, Skylab's attitude control system will place the space station in proper position relative to the sun and the earth. At the same time, all the life-support systems, such as pressurization, heating, and lighting will be started up. The third category of actions to be taken during the initial, unmanned phase of the Skylab program involves deploying a sophisticated telescope system and the space station's power source—its solar-cell panels. The telescope, called the Apollo Telescope Mount, is a man-operated solar observatory located outside the habitable portion of Skylab. On the Telescope Mount four forty-five-foot wings of solar-cell panels will spread out like a windmill. Other solar panels are mounted on the cluster's main structure, the Orbital Workshop.

About twenty-four hours after the permanent elements of Skylab are launched, the first Skylab crew, a team of three scientifically trained astronauts, will take off from the Kennedy Space Center in a modified Apollo Command and Service Module (CSM), with a Saturn IB serving as the launch vehicle. The CSM will go into a parking orbit, ranging from eighty to 120 nautical miles above the earth.

Skylab, the world's first manned orbital scientific space station, is an extension of NASA's Mercury, Gemini, and Apollo space programs.

Using the Command and Service Module's propulsion system, the astronauts will maneuver their spacecraft to the altitude of Skylab, a process expected to require about five orbits, and then rendezvous and dock. They will enter the Skylab space station through a docking adapter and an airlock module, and prepare the space station for habitation by turning on lights, fans, and other systems. Twenty hours after liftoff their "day" will be done and they will go to sleep. From then on they will be on a sixteen-hour-a-day schedule. Most of the nonsleeping hours will be devoted to work, but every seventh day will be a day of rest.

Twenty-four days after liftoff, two crew members will leave the space station through the airlock for extravehicular activities (EVA), during which they will retrieve film from the Apollo Telescope Mount. On the twenty-eighth day, the astronauts will enter the Command and Service Module, separate the Module from Skylab, deorbit, and splash down in the Pacific in the manner of the Apollo crews.

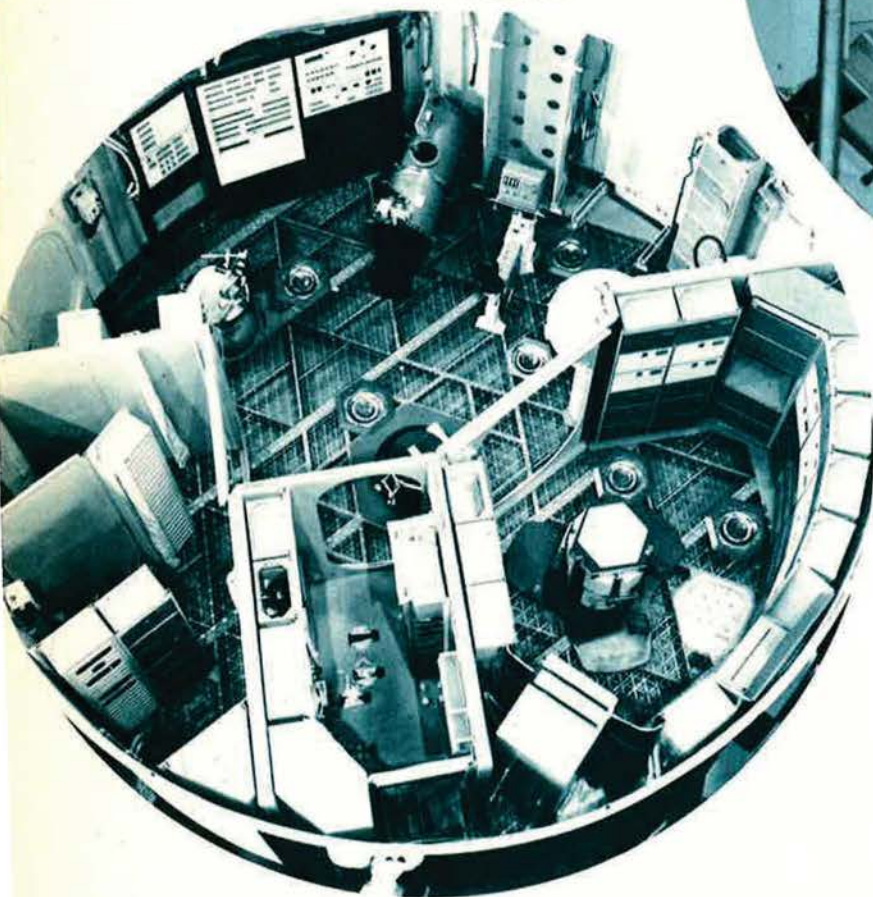
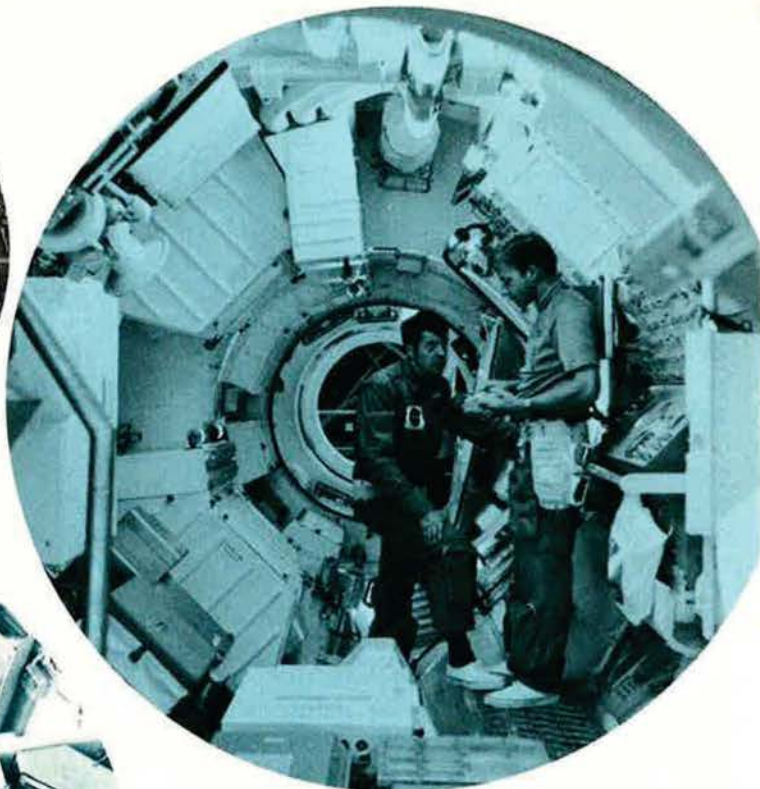
Sixty days later, a second crew will take off from the Kennedy Space Center and fly a similar but longer mission of fifty-six days with three periods of EVA. During the first EVA, they will load the cameras of the Telescope Mount. Halfway through the mission they will retrieve that film and reload, and toward the end of their mission they will bring all exposed film back into the spacecraft.

Thirty days after the return of the second crew, the third and last team of Skylab astronauts will take off for another, similar fifty-six-day mission. Upon that crew's return, or about eight months after the launch of the space station itself, the Skylab program will end. Skylab's three crews will perform more than sixty scientific experiments, including two formulated by the Air Force for the Department of Defense.

Space Rescue

In the past, spacecraft size, limited life-support capacities, and the absence of systems redundancy precluded the possibility of rescuing stranded astronauts. But because Skylab is a cluster, the astronauts can retreat to the Apollo Command Service Module if a catastrophic failure were to make the space station unusable.

The only likely condition requiring rescue, short of the highly improbable event that both the space station and the Apollo module should fail at the same time, is inability of the Command and Service Module to return to earth or the inability of the astronauts to enter the CSM. In such an eventuality, a rescue effort, involving another Saturn IB and a specially



By space standards, Skylab's crew quarters, shown here in mockup form, are palatial.

equipped CSM, would take off from earth as soon as possible, with two astronauts aboard. The rescue spacecraft would pick up the three stranded astronauts following a conventional rendezvous and docking maneuver and return all five astronauts to safety. There is, however, a considerable lag between the time an emergency might be reported and the rescue vehicle's takeoff. This lag varies from ten to forty-eight days, depending on where the preparations for the next Skylab launch stand at the time. In case of trouble on the last and final mission, a backup vehicle would have to be made ready for use as the rescue spacecraft.

Total cost of the Skylab program, which got under way in 1965, is expected to be about \$2.6 billion, or roughly one-tenth the cost of the Apollo program. At the time of this writing, Mr. Schneider told AIR FORCE Magazine, "we are completely within our cost forecasts and, as a matter of fact, recorded a small cost reduction last year."

The Orbital Workshop

The largest and principal element of the Skylab cluster is the Orbital Workshop, a converted third stage (S-IVB) of a standard Saturn V. It is more than forty-eight feet in length, about twenty-one feet in diameter, and contains two floors of work space totaling some 10,000 cubic feet of habitable interior space. (Counting

the other units of the Skylab cluster, the Skylab astronauts will have an unprecedented 12,763 cubic feet of habitable interior space, or more than three times the interior volume of the Soviet Soyuz spacecraft. Skylab's total length is slightly more than 118 feet.)

A fire-retardant aluminum foil covers the interior of the Workshop. Its exterior is protected by a tough aluminum meteoroid shield, held about five inches away from the spacecraft's exterior walls, to reduce the danger of puncture by high-velocity space matter.

The two-story Workshop, which includes crew quarters, has aluminum floors and ceilings. The quarters area is subdivided into a wardroom, which offers a generous 100 square feet of floor space; a sleeping area of about seventy square feet; and a small waste management area. Most of the remainder of the Workshop's interior, or about 180 square feet, will be used as Skylab's work and experiment area.

The astronauts will breathe a 70/30 percent mixture of oxygen and nitrogen pressurized at five pounds per square inch, comparable to the pressure levels aboard commercial aircraft. The interior temperature can be controlled by the crew at from sixty to ninety degrees Fahrenheit.

Almost all of Skylab's gear will be aboard the first launch, with the three crews carrying only a few critical items. About 2,000 pounds of food, in frozen, dehydrated, and dry form, will be stored in onboard containers and freezers. The crew can heat or chill food. More than 6,000 pounds of water is located in the forward end of the Workshop. The astronauts will enjoy some of the comforts of home: frequent clothing changes, a small book and music library, a vacuum cleaner, and a large picture window that faces the earth on the sun-lit side. They will be in regular voice communication with the ground. One-way television from the spacecraft to ground controllers will be in operation during certain periods. The total weight of all supplies will be about 11,000 pounds and will include more than 13,000 individual items.

The one feature that won't let the Skylab crews forget where they are is weightlessness. "We rejected the idea of providing Skylab with artificial gravity [by spinning the spacecraft] on essentially philosophical grounds. We are going into space to benefit from the effect of the zero-gravity conditions on manufacturing and other activities as well as to study how it affects man. A spacecraft that provides artificial gravity at all times would have defeated the very purpose of Skylab. This is not to say that we wouldn't have liked to conduct some artificial gravity experiments, but we found out that these were not compatible with our basic mission. In order to perform such an experiment,

we would have needed a second Skylab, and that was simply beyond our financial reach," Mr. Schneider explained.

The Skylab Experiments

The underlying purpose of the United States's first space station is to provide new information about man, his planet, and his most fundamental resource—the sun. More than sixty scientific experiments will be conducted over the life of the program. One of the key areas to be investigated is the medical or life sciences. Nineteen individual experiments will examine the effects of weightlessness and space on man over long periods of time. The duration of the three missions, Mr. Schneider explained, was determined by medical experts who "knew from previous space missions that our astronauts had endured periods of up to fourteen days in space without ill aftereffects. They concluded that we could double that time for the first Skylab mission. Once it is established that the first crew encountered no medical problems during its twenty-eight days in space, it will be reasonably safe to increase the second and third flights to fifty-six days."

Space, of course, has affected both US astronauts and Soviet cosmonauts in the form of mild calcium migration in the bones, a phenomenon somewhat akin to what bedridden patients experience during long periods of immobility.

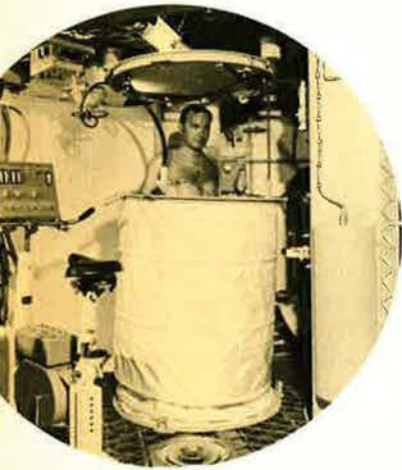
"Because of the absence of gravitational stress, all the US and Soviet spacecrews experienced some difficulties on their return to earth, such as weak knees and some dizziness. This is natural. It takes a little while to adjust from a weightless environment to a one-G environment and the other way around. We are confident that the calcium migration will be minimal and won't make the bones brittle," Mr. Schneider said.

He added that an elaborate exercise program has been set up for the Skylab crews, including regular workouts on an ergometer (Exercycle), in "order to build up their muscle tone." While Skylab's life-sciences experiments are highly technical, their basic, common purpose is to measure the impact of space on the human body and to provide the technological means to assure man's well-being aboard future space stations.

One of the most important series of experiments to be conducted by Skylab centers on intensive solar observations, unencumbered by the blurring and filtering effects of the earth's atmosphere. Special emphasis is being directed at finding out how the sun's thermonuclear fusion process is initiated "so that we can gain in our efforts on earth toward replicating this



Roomy kitchen, located in the wardroom section of the Orbital Workshop, helps to make Skylab almost like home.



Skylab astronauts will enjoy some of the comforts of home, including equipment for taking hot showers. When not in use, the unit is folded up and stored. Upper right picture shows the control console of Skylab's solar observatory. The pictures below show how the Skylab crew will sleep zipped into sleeping bags and be able to work out on a special Exercycle.

MAJOR INDUSTRIAL CONTRACTORS

Among the key contractors involved in the Skylab program are:

- **The Boeing Co.**, which produces the first stage of the Saturn V launch vehicle.
- **Chrysler Corp.**, which is responsible for the first stage of Saturn IB.
- **Martin Marietta Corp.**, which performs a variety of tasks in the area of systems engineering and integration.
- **McDonnell Douglas Corp.**, which is responsible for the Orbital Workshop and many of its subsystems.
- **North American Rockwell**, which is responsible for modifications of the Apollo Command and Service Module, as well as the propulsion systems of the Saturn V launch vehicle.
- **IBM**, which has a major role in Skylab's guidance and control systems.

process in the form of a continuous nuclear fusion reactor."

With the US energy crisis moving toward calamitous levels, making the nation highly dependent on foreign suppliers, US government authorities consider a reliable, nonpolluting energy source a paramount national requirement. At the same time, the Administration believes that, short of a major breakthrough, the only truly satisfactory and inexhaustible energy source—a nuclear fusion reactor—cannot be built much before the end of this century. Any advance in this area could have direct effect on nuclear weapons technology. (Present fusion weapons are really two bombs in one, with an atomic fission bomb generating the energy required to trigger the hydrogen fusion bomb. At least in theory, eliminating the fission trigger would enhance the yield of the weapon significantly.)

Other scientific research involves experiments with superconductive materials and materials fabrication under conditions of zero gravity and the near-total vacuum of space. The latter experiments are expected to point the way toward such advances as perfectly homogeneous alloys, fiber composites, and perfectly round ball bearings. Other efforts will be directed at collecting neutrons and X-ray particles as part of general high-energy physics research.

The two Air Force experiments incorporated into the Skylab program concern space radiation measurements and the effects of space radiation on thermal coating materials.

Another category of experiments—of vital importance to nonmilitary objectives—involves earth observations using a variety of sensors, including optical techniques.

Skylab, according to present NASA plans, is to be followed by another space station program known as the Sortie Lab. Its development is to begin either in 1974 or 1975. The system will work in concert with the Space Shuttle, the reusable space vehicle that will become operational toward the end of this decade.

Among the nine astronauts and scientists scheduled to fly on Skylab is a member of the United States Air Force—Lt. Col. William R. Pogue, who will serve as the pilot of the third Skylab mission. ■

A widely experienced former Air Force planner and student of military/political strategy reviews a decade of US experience in Southeast Asia, draws some conclusions that are relevant to that experience and to the future, and warns against wrong conclusions that have gained currency concerning . . .

Vietnam: Policy, Strategy, and Airpower

By Maj. Gen. Richard A. Yudkin, USAF (Ret.)

THE nation's experience in Vietnam has had tremendous impact in many areas. All sorts of meanings have been ascribed to individual aspects of the experience. Inevitably, many of these judgments were wrong: some were biased; most were premature. But this process of identifying the lessons that each seer prescribes as valid in the context of the Vietnam experience is bound to be a continuing one. Indeed, we may be nearing the time when the process should produce useful results.

In a recent column in the *New York Times*, James Reston identified four factors as breaking the stalemate and thereby setting the stage for resolution of the Vietnam conflict. He then observed:

There will, of course, be endless arguments about whether peace could have come years ago, if, as the hawks believe, there had been more bombing or, as the doves insist, more willingness to compromise in the last years of the Johnson Administration or the first years of the Nixon Administration.

But so far as this last decisive phase of the long tragedy is concerned, it was undoubtedly the combination of power and compromise that broke the Communist offensive, and, with the restraint of Moscow and Peking, persuaded Hanoi that it had more to lose by continuing the battle than by compromising.

Yes, there surely are adamantly held opposed positions, and each of these positions is surrounded by a complex of variables, more

than sufficient to generate very different judgments. I would like to assert at the outset that there is far less to be certain about than the extremes of the opposed points of view might suggest. If our interest is in a better understanding, a healthy departure point has to be recognition of the uncertainty that envelops the area we are examining.

Reston says that a composite of actions finally convinced the other side that "it had more to lose by continuing the battle than by compromising." Military action—in combination with other influences—convinced an enemy that it was in his best interests to terminate or significantly change the course of action he had been pursuing. As soon as we agree that either termination or some significant change is our goal, we create a highly qualitative situation, one that permits a range of solutions. Subjective judgments are important. Evaluations of how much change in the enemy's activity we must insist upon, how much application of what kind of force is tolerable in that context, what character of military force promises results and is acceptable in the role we identify, what we believe about the enemy and his value systems—all of these constitute areas of uncertainty. Inevitably they mean several, perhaps many, points of view. Just as inevitably they open the door to what Reston called "endless arguments." We must understand that these arguments can involve reasonable and informed men and women who know that there is no school solution.

We can now compound our problem by acknowledging that airpower adds its own measure of uncertainties. Airpower has both strengths and weaknesses. The weaknesses may be a result of limits that we impose on ourselves or that others impose on us. In almost any military situation that can be imagined, strategic objectives will limit and constrain the exploitation of military strength. What we do with our military power, how we use it, is fundamentally affected by our perception of objectives. The most efficient exploitation of force—from a military point of view—may be construed as damaging the achievement of larger strategic objectives.

The military man, the technician who wants to get the most out of his available airpower, sets out to achieve an optimum exploitation of strengths while minimizing weaknesses. But he must find himself at some point in conflict with

"In almost any military situation that can be imagined, strategic objectives will limit and constrain the exploitation of military strength."

constraints that flow from a perception of the strategic objectives. Adjustment and compromise must result, and these come from the exercise of judgment. Once again, we need to face the fact of uncertainty. We add more room for the "endless arguments."

One quick equalizer could be to reduce the uncertainty by clarifying the definition of strategic objectives. Surely this represents an area in which we can do better—and in respect to Vietnam, one which deserved better.

Balancing Objectives and Cost

There are those who believe that our fundamental strategic objectives in Vietnam were stated at the outset and never really changed. In a very theoretical sense, a case can be made for this argument. But, in a more operational sense, it seems to me that there is no case to be made. If one makes the claim that our essential strategic objectives in Vietnam remained constant, one must recognize that we, as a nation, progressively and incrementally raised the price that we were prepared to pay to achieve these results. I submit that price is an essential part of any bargain. To define objectives without a concurrent understanding on price, seems to me to be at best an incomplete action.

This matter of objectives/price relationship deserves more mention here. Price surely involved the dollars and lives that we were prepared to spend in pursuit of the results we wanted to achieve. Price also involved the effects, both positive and negative, on other international relationships; it involved domestic impacts to include the degree to which we di-

verted effort and support from domestic objectives; it involved the dislocations in an economy that are introduced by this sort of experience.

Somewhere, in the process of formulating and assessing the local objectives and the effect on other national interests of pursuing those objectives, a relationship has to be established between objectives and price; the two must be put in some balance. Certainly both must remain susceptible to adjustment, but when such adjustment occurs, the balance changes. New values have been assigned, but the bilateral quality of the relationship continues.

Those who believe that our strategic objectives changed—and perhaps a number of times—would presumably also recognize the effect of such change on the military effort. Objectives changed in response to circumstances, and the intensity or character of the military effort was revised but without the advantages of initiative.

Thus, I have to wonder whether our definition of objectives was not inadequate or incomplete from the outset of the war. It is not difficult to understand why governments and people prefer to put off hard decisions, particularly to defer those decisions that might encourage early large-scale commitments of military power. Getting wet slowly may be less of a shock to the system. But, at the same time, a creeping process of identifying objectives (and price) and adjusting them may lead to commitments of magnitudes that were unforeseen and unforeseeable when the first decision to take military action was made. The cause

"Can creeping escalation suggest coherent definitive purpose; can it be the convincing persuader?"

seems to me to be basic—failure to identify adequately the desired result, and the tolerable price, which should control the military effort.

Creeping Escalation: A Persuader?

All of these considerations affected our use of airpower in Vietnam. It is history that decisions were made to limit and constrain airpower, to be refined and discriminate in escalating, to be on the side of underresponding rather than overresponding; in sum, to be reluctant in our exploitation of airpower. Again, we come back to the matter of strategic objectives. Can creeping escalation suggest coherent definitive purpose; can it be the convincing persuader? To get back to Reston's language, was this the way to convince an enemy "that it had more to lose by continuing the battle than by compromising"?

Once again, the issue is anything but black and white; a logic can be constructed. At one time, great importance was attached to con-

vincing the enemy that the United States would not lose patience, that we would and we could stay the course. In this context, there is a value to a sustained, refined, highly controlled application of military force. But could such a pattern of action be interpreted as suggesting infinite staying power and open-ended resource commitment? Was it reasonable for the US to have infinite staying power in the Vietnam context? Was it reasonable to expect the US public to accept such a commitment? Was it reasonable for North Vietnam in its evaluation of US objectives to arrive at any such conclusion?

If these questions have particular application to the thinking which seemed to drive Vietnam operations in the 1960s, Reston, for one, now suggests a rather different point of view. Reston attributes the creation of an atmosphere conducive to resolution of the conflict to the combination of "power and compromise," and he identifies the mining of Haiphong and the intensified bombing as the power element of the combination.

There are still other important environmental changes. Reston refers to the attitudes of Russia and China. Perhaps the progress of Vietnamization ought also to be cited. Perhaps, too, North Vietnam has its internal difficulties, a point suggested in a recent *Newsweek* report by Arnaud de Borchgrave:

However inhibited Hanoi may be about admitting the NVA presence in the south, it has reasons to call troops home. "The bombing has caused widespread disruptions," explained a Soviet official in Hanoi. The regime's power is based on the army, and most of the army is in the south. After a cease-fire, the return of several divisions will be a matter of some urgency for Hanoi.

Granting the uncertainties about the strategic objectives that prevailed in the early and mid-1960s, and granting that our assessments of the causes of today's situation are necessarily speculative, the effects achieved in the two time frames are notably different. It would be simplistic to arrive at the judgment that one pattern of action was right and the other was wrong, but there is surely basis to recognize that one pattern of action seems to have been more successful, seems to have created an environment which both contending parties find acceptable for conflict termination. This is, it seems to me, what Reston recognized.

Policy, Strategy, and Airpower

Acknowledging again the uncertainties and speculations involved, we can begin to sort out some of the conclusions that are relevant in a strategic sense to the Vietnam experience. To start, we should have a better understanding of

how extensive the implications of a US decision to intervene militarily can be. We should also have a better appreciation of the limitations of military force, even thoroughly effective military force.

Hopefully, we have accumulated a better awareness of the importance of objectives, of the importance of knowing what we mean to achieve, including a hard understanding of the related military measures—the price we are

"Was it reasonable for the US to have infinite staying power in the Vietnam context [and] to expect the US public to accept such a commitment?"

prepared to pay—that must be part of the appreciation of objectives. Within this comprehension of objectives, there also has to be an appreciation of the importance of decisiveness, the need to be ready to "bite the bullet." Whether this understanding of the importance of objectives has been achieved is open to some question. Without such understanding, any discussion of decisiveness is theoretical.

Despite the dangers inherent in attempting to transfer experience to other times and places, there are still aspects of the Vietnam airpower experience that are worth keeping in mind because of their possible applicability elsewhere. As long as we recognize that this applicability is no more than possible, and that feasibility requires fresh contextual testing, the experience can have real utility.

Depending upon the objectives involved in a given set of circumstances, there are military results that airpower can achieve by itself. Airpower can destroy remote targets; and, by virtue of target selection, it can wear down, reduce, or impede given capabilities and activities. Objectives and constraints influence the results achieved and the costs of achieving them. Multiple options are available. The effort may focus on categories of targets, on levels of destruction, on timing, or on areas of attack.

Prior to his retirement in January 1970, the author, Maj. Gen. Richard A. Yudkin, was Director of Doctrine, Concepts, and Objectives in the Air Staff. Earlier, General Yudkin held assignments as a senior planner in Europe, the Pacific, and at Air Force Headquarters. He has written and lectured widely on problems of strategy and doctrine. General Yudkin is now a vice president of Owens-Corning Fiberglas Corp. in Toledo, Ohio.



Again, depending upon the situation, this sort of military action may be sufficient to achieve a given objective.

Airpower also gives us unequalled ability to observe. Aerial reconnaissance provides critically necessary information and permits a current accounting of the enemy presence and activity. Finally, airpower can provide mobility—mobility for forces, mobility for logistic support, mobility for fire support. The importance of terrain features and insecure roadnets is diminished, and the commander is given an important capacity to maximize the flexible employment of the military power available to him.

In offering this useful potential, airpower has certain inherent advantages. There can be a limited commitment of forces involved. This may mean a lesser national involvement, and it may also mean a less costly operation. The operations themselves can be highly responsive, and they can be accomplished with reasonable precision. Exploitation of airpower may also permit combat to take place on a relatively remote basis.

Airpower has disadvantages as well. While airpower can deny geographical areas, it may not by itself reclaim and hold ground for constructive exploitation. Airpower, whether land-based or seaborne, requires a base structure with variable demands dependent upon the complexity and operational characteristics of weapon systems employed. US airpower may in some circumstances represent an excessive national commitment, a conclusion that must emerge from judgments as to objectives and the acceptable means to achieve those objectives.

Public Understanding

Two cautions might be appropriate at this point. First, those of us who might be identified as believers in airpower have a serious obligation to restrain our advocacy. Surely, there was overselling of airpower and its effectiveness in relation to certain Vietnam operations. In the long term, this does airpower no service; on the contrary, it does damage. Enthusiasts and advocates need to be sober realists, and they need the perspective that comes from viewing airpower in the context of strategic objectives, acknowledging readily inherent strengths and weaknesses, identifying promptly and frankly those operations that lend themselves both more and less effectively to airpower applications.

Second, airpower lends itself to image-making and to propaganda efforts. In addition to avoiding the oversell, we believers need to be more articulate in explaining airpower, in helping to maintain the public's perspective. Individuals who sought our exit from Vietnam at almost any cost used airpower to create an unattractive public image. No one could escape

the harping on the theme that bomb tonnage dropped in Vietnam was of some specified relationship with bomb tonnage dropped in World War II. Even though the emptiness of the simplistic statistical comparison is readily demonstrated, even though the strategic and tactical differences were carefully overlooked, and even though informed people might understand that the attack on bomb tonnages was an attention-getting device that ultimately focused on a larger target, the public understanding and acceptance of airpower were hurt.

Looking now at the question of strategic effects, we know that we can use airpower to bring pressures to bear on the enemy. We know that we can harass and inhibit normal commerce and personal activity. We can interfere with essential public support systems such as power, communications, and transportation. We can damage or destroy important facilities of national value, such as dams, bridges, control centers at various levels, and production facilities. We can interfere with shipping activity in coastal areas and in harbors. We can mount behind-the-lines operations to achieve some specific end. We can exploit reconnaissance both for its end product and for the demonstration of watchfulness that it conveys.

In each of these actions, we have a very considerable range of intensity available to us. Keeping in mind the error of overselling, we want to keep highlighting that the feasible part of this range of intensity concentrates on reducing, limiting, constraining as opposed to some of the more absolute language one too often sees. But, even so, our options are many. Our objectives, the contribution a given operation may reasonably be expected to make to those objectives, the impact on the enemy and his allies of the operation contemplated—all these demand evaluation as part of the process of choosing courses of action.

Vietnam: Some Wrong Conclusions

Now, finally, I would like to nominate conclusions that should not be drawn from the Vietnam experience, conclusions that are sometimes asserted, but that are not necessarily supported by what we did and did not do in Vietnam. Five points seem to deserve particular mention here.

First, we should not anticipate that what happened in Vietnam can happen elsewhere. There is no assured transferability of the experience. The combination of circumstances was surely unique, and any total repetition is almost absolutely precluded. This does not invalidate learning from experience; it does prescribe care, judgment, and discretion in the learning process. It suggests the utility of moving from the specific to the general, and then applying the general proposition within a new specific framework.

Second, what happened in Vietnam does not prove that military intervention by the United States means a decade of conflict and a sustained national ordeal. We know what a given pattern of action led to in one set of circumstances. Other patterns of actions in other sets of circumstances have at least a potential of leading to quite different results. Whether a US military intervention is necessary or desirable must be determined on bases other than some extrapolation of the Vietnam experience.

Third, Vietnam does not mean that national commitments are bad. If we mean to be a factor for world peace, we must be prepared to assume commitments, and the seriousness, even the sanctity, of a US national commitment must not be subject to doubt. From Vietnam we should have accumulated a better understanding of the importance of precision in our commitments, of the desirability of restraint in undertaking them, and of the inescapable obligations that acceptance of the commitment establishes.

Fourth, Vietnam does not prove that US military intervention cannot have domestic support. Even without Vietnam, there was ample reason to conclude that Americans are fundamentally not militaristic. Vietnam will not make it easier to generate public understanding and public acceptance of intervention. But there are surely few Americans who would claim that a better job could not and should not have been done to improve public understanding and to widen the basis for public support of governmental decisions. If, or when, there is a next

time, obligations in this area will demand much more effective attention from the onset of the problem.

Fifth, and finally, our experience in Vietnam does not prove or disprove the effectiveness of strategic bombing operations. As Reston suggests, the bombing of targets in North Vietnam is bound to be the object of more study and many more words in the years to come. The judgment whether that campaign was or was not militarily effective should only be measured against the objectives intended for the effort; and when that measuring is done, there must be appropriate adjustments on the basis of limits and constraints imposed. By the same token, when and if consideration of another strategic bombing effort is appropriate, its potential contribution to goals must be determined in the context of the applicable situation.

The Vietnam experience does not generate many points of agreement among those who have been preoccupied with it. Regardless of deeply divergent judgments in specific areas, most, perhaps even all, Americans would agree that Vietnam has been a painful, torturing, unduly protracted ordeal. Now the time may be near when it will become possible to think more dispassionately, more clearly, about what the experience should have taught our country.

All of us know that mistakes were made and all of us would oppose repeating those mistakes. More objective analysis, less effort to demonstrate preconceptions, fewer strident voices—these would be helpful attributes of the “endless argument.” ■

COMMAND AND CONTROL

In July 1964, when the war in Vietnam was practically unknown and was carried on the inside pages of the Stateside newspapers, I was finishing my tour of duty in Vietnam as Information Officer for 2d Air Division, and looking forward to my replacement arriving so I could go home.

Claude Witze, Senior Editor of AIR FORCE Magazine, picked this time to visit Vietnam to see what the war was all about. Since I was the IO and an old friend of Claude's, I was assigned to escort him around.

When the day for his and my scheduled departure arrived, conscientious Claude decided to stay for an extra week. That same day, with one year and four days of Vietnam behind me and with my replacement, Lt. Col. Frank Campbell, in tow, I reported in to Gen. Joseph H. Moore, 2d Air Division Commander, to introduce my successor and to say good-bye.

General Moore, a great commander with whom I have served on four assignments, greeted my replacement, turned to me, and said.

“Where's Witze?”

I replied, “That S.O.B. decided to stay another week.”

General Moore looked me straight in the eye and quietly said, “So did you.”

I did.

(Ed. Note. The story had a happy ending. Claude pinned on Susskind's lieutenant colonel leaves during the extra week.)

—CONTRIBUTED BY LT. COL. HAROLD A. SUSSKIND, DIRECTOR OF INFORMATION, OGDEN AIR MATERIAL AREA

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

The White House Fellows Program



Catching the pulse of Congress is part of a Fellow's education. Here, this year's Fellows meet informally with Sen. Mark Hatfield (R-Ore.).

Each year since 1964, a group of gifted young Americans from a variety of professions, including the US Air Force, is selected to serve on the White House staff and in other executive agencies. Donald Rumsfeld, former head of the Office of Economic Opportunity and now Ambassador-designate to NATO, told AIR FORCE Magazine that the Fellows "... bring to government not only a particular skill and expertise, but also that important perspective of the informed outsider. . . ." Here is a report on the program and the Air Force people in it . . .

BLUE SUITERS IN THE WHITE HOUSE

By Maj. Robert W. Hunter, USAF

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

A RHODES Scholar. A collegiate heavyweight boxing champion. A fighter pilot. A "Top Ten US Collegian." A shot-put champion. An Air Force Academy honor graduate. A British Universities Discus Champion. Seven different people? No, just one—Maj. Robert H. Baxter, USAF.

Major Baxter is one of three Air Force officers serving the year in a program to provide

gifted young Americans with first-hand experience in the process of governing the nation, and with a sense of personal involvement in the leadership of our society. He is part of the White House Fellows program.

The other two Air Force officers, selected from among some 1,500 applicants for seventeen Fellowships, are Maj. Donald Stukel and Maj. John C. Fryer, Jr. Major Stukel is a West Point alumnus who graduated in the top five percent of his class. He holds a master's degree in electrical engineering and a Ph.D. in theoretical solid-state physics. He is a Distinguished Graduate from both the Air Command and Staff College and the Defense Systems Management School, and was the avionics program manager for the F-15 before becoming a Fellow.

Major Fryer, a fighter pilot with two Distinguished Flying Crosses, is the third Air Force White House Fellow this year. He holds an M.A. in political science and is a Distinguished Graduate of Air Command and Staff College. He worked in the Office of the Assistant Secretary of Defense for International Security Affairs before his fellowship.

Major Baxter is assigned to the Council on International Economic Policy, Major Stukel works with the National Security Council Coordinating Group, and Major Fryer is with the FBI's newly formed Office of Planning and Evaluation.

How It Started

The White House Fellows program was first announced on October 3, 1964, by President Lyndon B. Johnson. It had been prompted by the suggestion of then-Secretary of Health, Education and Welfare, John W. Gardner.

Since that time, 136 of America's emerging civilian and military leaders have been given the opportunity to serve for one year as assistants to cabinet officers, White House staff members, or other key federal officials. During that year, they work daily on tasks for the office to which they are assigned, participate in an educational program, and have the opportunity to travel and meet with foreign and domestic opinion leaders.

The US Civil Service Commission manages a congressional appropriation to cover salaries of the program's staff and office expenses. The salaries and expenses of the Fellows are paid by the agencies for which they work. Military Fellows remain on the payroll of their service. Salaries of civilian Fellows depend on what they were earning before their Fellowship, but top salary possible in any case is \$27,289 for the year.

Overseas travel is often funded through the United States Information Agency, using money available under the Public Law 480 program in specific countries.



Maj. Bob Baxter, USAF, chats with AFL-CIO leader George Meany. Business and labor are high on the list of the White House Fellows' interests.

The education program costs are not federally funded. Instead, private contributions come from the Carnegie Corp., Richardson Foundation, Rockefeller Brothers Fund, Ford Foundation, General Electric, US Steel, IBM, Olin Corp.'s Trust, General Foods, The Cincinnati Enquirer Foundation, and North American Rockwell, among others.

Competition for a Fellowship

Competition for the fellowships is keen. Major Stukel told *AIR FORCE Magazine* that it was one of the prime reasons he applied. "I enjoy competition. I had been nominated in 1970 by the Commander of the Office of Aerospace Research and was not selected. This year I applied on my own simply because I am a competitive person."

Lt. Col. Bernard Loeffke, USA, who is Director of the President's Commission on White House Fellows and a former Fellow himself, pointed out that in 1964, the first year for which Fellows applications were available, the Commission had about 5,000 requests for them. After aspirants saw the involved application and the results of the competition, requests in the second year dropped to about 600.

For the 1972-73 program, some 1,503 applications were received. About 240 applicants were accepted for preliminary interviews. After interviews by regional panels, thirty-two were selected as National Finalists. These men and women then came to Washington, at their own expense, for three-day interview seminars. They were questioned and observed in various settings, including social events, by Commission members—among whom, for example, are Milton Friedman, the University of Chicago economist, and retired Army Gen. Earle G. Wheeler, former Chairman of the Joint Chiefs of Staff. Seventeen survived the screening and were named by the President to be Fellows.

As of this writing, more than 10,000 requests have been made for applications for the 1973-74 program. According to Colonel Loeffke, the Commission is pleased that about forty-five percent of requests for applications were from women. The Commission is sensi-

tive to past charges that the program has had an overabundance of military Fellows and not enough women and minority representatives.

Military applicants are attractive because their qualifications are often more visible and easily documented than their civilian counterparts, according to Colonel Loeffke. As a result, some conscious effort at a balance has begun.

Actually, the statistics refute such criticism. Of the 136 current and former Fellows, forty-nine have come from business and industry, twenty-seven from the academic world, while lawyers rank third with twenty-two Fellows. Fewer than fifteen percent of all Fellows have been military officers, and during the past four years only ten percent have been military. Minorities have had more than eighteen percent



USAF Maj. John C. Fryer, Jr., left, is greeted by Gov. Jimmie Carter of Georgia during one of many domestic fact-finding trips.

representation overall. This year one Fellow is a woman.

Some Insights

What kind of person becomes a Fellow—and why? First, each is a US citizen between twenty-three and thirty-five years of age, and—with the exception of career military people—may not be an employee of the federal government.

Major Fryer indicated that he had been interested in political processes, and "this absolutely unique opportunity allows a perspective

that is rare for a military man. It allows one to work at the highest levels of government without first serving years of apprenticeship."

Major Baxter's ideas are somewhat parallel. He said, "The goals are similar to the Rhodes Scholar program that I have experienced, and here doors are opened almost magically. One is privileged to information he would not ordinarily receive."

"It is a unique chance to cut through bureaucratic layering," Major Stukel observed.

Major Baxter said he has found that high-level government leaders do not play political games. They have a "deep desire for quality."



Maj. Donald J. Stukel, one of three Air Force White House Fellows this year, is a West Point graduate and holds a doctoral degree.

He sees what he calls an "expectation gap." Often the American people look for things that are not there. They either expect too much or expect leaders to be politically motivated.

Although all agreed that their daily jobs come first, Major Stukel sees the Fellows program as "much more than getting a good job." (At the time of his interview, he was working on the Security Assistance Program, defining issues and participating in the program review.) "The opportunity in one's daily work to witness congressional and White House relations and political strategies, for example, is unmatched." He also noted, "most of the civilian Fellows do not have an understanding of the military. They really do not yet have an appreciation of all the considerations involved in our NATO commitments, for example."

What happens to Fellows after their year is

up? More than eighty-five percent of these men and women return to their professions. Seventy percent of the businessmen return directly to their companies. Other "graduate" Fellows have become involved in local and state governments and include an Attorney General of Alaska, a Director of Public Works for Baltimore, Md., a Director of Idaho's Water Resources Board, a member of the New Hampshire State Legislature, and a Director of Finance for the state of Illinois.

Major Fryer wants to go back to flying and work toward a command position. Majors Stukel and Baxter expect to go to the Pentagon, but did not express a desire for a particular job.

Broadening Through Work and Study

The fact that Major Stukel is a physicist and is working on our security assistance program is not unusual. Colonel Loeffke points out that the program aims to tap the Fellows' resources and develop their ability in the broadest sense. They must be "broad-gauged." They usually will not wind up doing the kinds of things they did before entering the program.

Another example is Major Fryer, who, when he talked with AIR FORCE Magazine, was working on FBI personnel issues—basic applicant standards and entrance testing. He has not had personnel experience.

By the end of his tour, each Air Force Fellow expects to have written speeches (Major Stukel was working on a few pages of one of the Vice President's speeches), review or help draft legislative proposals, deal with congressional inquiries, draft reports, and head up one or more projects—all at the highest levels of government. Theory, practice, analysis, and action is the blend sought.

The Fellows have a say in the content of their educational experiences. They meet to go over their objectives, help structure their experiences, and identify people and issues of interest to them.

Included in their recent activities was the Apollo-17 launch. A possible visit to the LBJ Ranch to talk with President Johnson was being considered, and domestic trips to study urban problems and investigate how the local definition of a problem corresponds to the national definition are planned.

An example of one of these domestic trips is a recent three-day visit to Boston. Adhering to a very tight schedule, Fellows met with the Governor, his staff, and state cabinet members; lunched with B. F. Skinner, the psychologist and author of *Beyond Freedom and Dignity*; breakfasted with Boston's Mayor Kevin White; met with the President of Harvard, Derek Bok; lunched with top area business executives;

talked with Professor James Watson, author of *The Double Helix*; and somehow also found time to tour the city.

From talks with American Indians, to night patrols in city police squad cars, to dialogue with midwestern farmers, and conversations with foreign diplomats here and abroad, each Fellow will broaden his understanding of national issues.

It is through foreign travel that they get an idea of America through the eyes of other countries and provide the President an independent assessment of foreign policy. And the goodwill created cannot be overlooked.

Shared Enthusiasm

That the Fellows are enthusiastic is obvious when one talks with them. But enthusiasm is not one-sided. President Nixon said, "At the time the program was developed . . . it was thought that those who would be selected as Fellows . . . would have an opportunity to broaden their perspective. . . . What we found is that the presence of the White House Fellows . . . has broadened *our* perspective."

The contribution of White House Fellows cannot be underestimated. Defense Secretary Elliot L. Richardson commented on the work of Marshall C. Turner, Jr., a 1970-71 White House Fellow who was assigned to him when he was Secretary of Health, Education and Welfare. Mr. Richardson told *AIR FORCE Magazine*, "During his year here as a White House Fellow, Marshall Turner was part of a team of five employees who made a basic study of the decision-making, policy-making, and imple-

mentation processes of the Office of the Secretary.

"Since the Office of the Secretary is, more than anything else, the center for making policy decisions and since the effectiveness of the decisions depends on their implementation, the study was of the most fundamental significance. The study began by analyzing the roles of the Assistant Secretaries as part of the policy-making process, and set forth a precise cycle of stages assigning responsibility for programs, their implementation, and their evaluation. The system, with modifications and additions, has been put into operation and is basic to the operation of the entire Department.

"Thus Mr. Turner's work has impacted significantly on the direction and control by the Office of the Secretary of more than 250 federal programs comprising one-third of the entire federal budget.

"The contribution of Mr. Turner, thirty-one, who is now Director of the Office of Policy Coordination at the Environmental Protection Agency, is a good example, I think, of the substantive work the White House Fellows consistently perform."

It is a program filled with an excitement that is heightened when the chemistry is right between a Fellow and the key government official to whom he is assigned. This year the chemistry seems to be right. The excitement is high.

As this goes to press, the screening process for next fall's program is well under way. With the largest number of applicants ever, the Commission expects a repeat of what has so far been a banner year for the White House Fellows program. ■

LET THAT BE A LESSON

At its very best, the mail service to Allied Air Forces, Southern Europe, Naples, Italy, could be described as haphazard.

Because of this, I was constantly on the receiving end of a series of sharp notes from my commander, Lt. Gen. Fred M. Dean, complaining about the late deliveries of his magazines.

Since I could do nothing about the US postal system, I was at least determined to impress him with the efficiency of my office. When the next magazine arrived, I sent it up to him with the following note written on the mailing wrapper:

"Sir, to save time, I'm expediting this magazine to you without even taking it out of the wrapper."

To my consternation, I received the mailing wrapper back with this curt note:

"If you hadn't stopped to write the note, I would have received my magazine a lot sooner."

—CONTRIBUTED BY LT. COL. HAROLD A. SUSSKIND

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

One of America's most distinguished editors warns of the dangers, in a democracy, of intellectual disdain for the military and military affairs . . .

THINKING THINGS OVER: Civilian vs. Military

By Vermont Royster



THE role of "the military in a democracy" was the subject of an interesting three-day symposium recently, sponsored by the Southern Newspaper Publishers Association and held on the campus of the University of North Carolina at Chapel Hill.

There was a long list of speakers. Among them, former Secretary of State Dean Rusk. A number of historians, political scientists and journalists. But no one from any of the military services.

The omission, apparently, was not by design. It just did not occur to those arranging the program that the view of the military might have some interest or bearing on the topic. There was an unconscious assumption that the military mind wasn't worth listening to, at least on this subject.

Yet in a way that made the omission more significant than if it had been calculated. It may have summed up better than anything else on the program the current public attitude toward the military in a democracy.

Among many people today it is fashionable to disdain the military mind. Not a few, indeed, hold up the military man as the villain who gets us into wars. Among the educated elite, and those who are being educated to join it, there is a widespread feeling that they should not only have no truck with military life themselves but not even concede that a

military view has any relevance to national policies. To do so is somehow equated with militarism, if not war-mongering.

This attitude differs in both kind and intensity from our traditional view of the military. We have always, of course, had a civilian attitude toward our armed forces. For most of our history they were small, and except in time of crisis treated with disinterest.

There was, nonetheless, a public consensus that, however regrettable that it should have to be so, the study of military problems was a respectable intellectual activity. There was nothing shameful about being a soldier. On the contrary, being one was at times a basic obligation of citizenship. Disinterest in the military was not the same thing as disdain.

* * *

Vietnam has wrought a change. The endlessness of that war, and the seeming pointlessness of it, have combined to bring us first to despair about that particular war, and then by transference to a scorn for anything military.

Thus we have nearly abandoned that concept of the citizen-soldier: we are talking of leaving the business of manning our armed forces to hired mercenaries. There is scarcely any respectability accorded any longer to those who think about military problems.

So it is interesting, if nothing else, to have one of our most distinguished historians rise to question this current public attitude—Barbara Tuchman, a two-time Pulitzer winner, author of "The Guns of August," that probing study of World War I.

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Mrs. Tuchman has thought much on war and peace, the causes of one and the hopes of the other. And in a recent syndicated article she finds urgent and persuasive reasons why the thoughtful and the better educated should, most of all, not abdicate their responsibilities toward the military and the nation's military problems.

She reminds us, to begin with, that Vietnam was not some aberration of the military. It was, she says, "a product of civilian policy shaped by three successive civilian Presidents and their academic and other civilian advisers."

The failure so far to end that war, she concludes, is also a civilian failure. "There is nothing the professional officers want more than to get the ground forces out of Vietnam as quickly as possible," she writes, adding, "which is perhaps one reason why President Nixon is doing it."

Mrs. Tuchman's conclusion is grounded in the record. When we first began to sink into Vietnam the loudest objections to a land war came, ironically, from military men. And anyone who actually reads those "Pentagon Papers" notices that those memoranda flying back and forth, including the most bellicose, were mainly from *civilian* officials in the Defense Department.

As for the military mind, Mrs. Tuchman comments:

"The liberal's sneer at the military man does himself no honor, nor does it mark him as the better man. Military men are people. There are good ones and bad ones, some thoughtful and intelligent, some men of courage and in-

tegrity, some slick operators and sharp practitioners, some scholars and fighters, some braggarts and synthetic heroes." That is, pretty much like the rest of us.

* * *

But Mrs. Tuchman is most provocative when she turns to the general relationship of the educated, thoughtful citizen to the military in our society.

"Our form of democracy—the political system which is the matrix of our liberties—rests upon the citizen's participation, not excluding—indeed especially including—participation in the armed forces. . . . To abdicate the right because our armed forces are being used in a wrong war is natural. But we must realize that this rejection abdicates a responsibility of citizenship."

Yet the citizen's participation, in her view, must be broader than that. It involves not merely sometime military service but constant involvement in the formation of military policies and, beyond that, in those national policies which may create military problems.

This cannot happen, in her view, when the enlightened citizen "climbs out of the arena," scorning not only the military mind but the intellectual importance of the problems with which the military mind must deal.

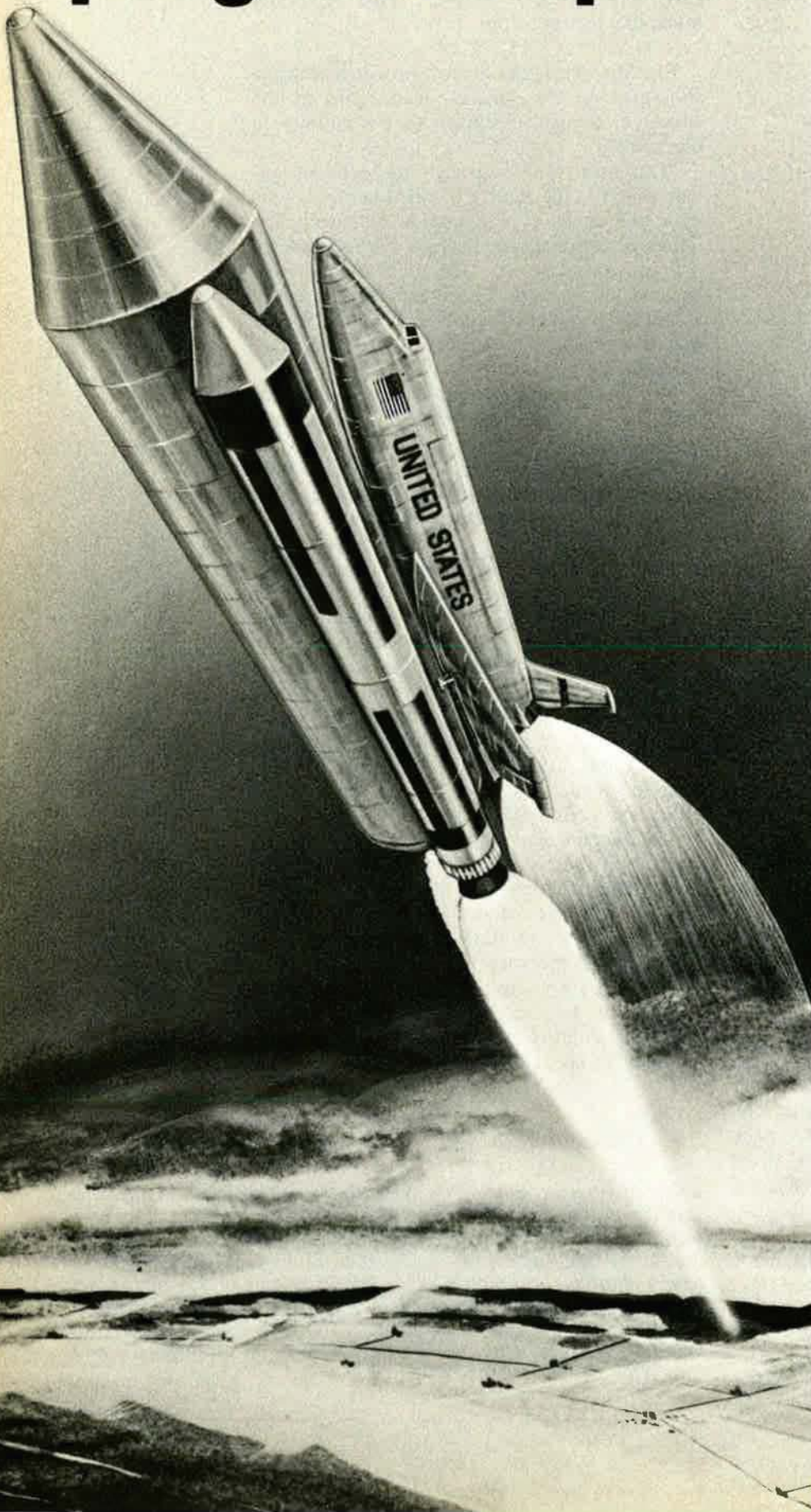
What her view implies is the need for an interaction between the military and the civilian intellectual arena. If the educated turn away, one consequence might be that we would end up with our armed forces dominated by the semi-educated, leading in fact to the narrow-mindedness of the stereotype.

The fundamental American premise has always been the civilian control of the military. This requires both that the civilian involve himself in military affairs and that the military be in the hands of those who understand the premises of democracy.

So if we are going to discuss the role of the military in a democracy it's absurd to exclude the military mind. It should be present not only to speak but to listen. ■

Vermont Royster joined *The Wall Street Journal* staff in 1936. He was the *Journal's* editor from 1958 to 1971. Mr. Royster has been awarded a Pulitzer Prize for editorial writing and was President of the American Society of Newspaper Editors in 1965-66. He is now a *Journal* contributing editor and Professor of Journalism and Public Affairs at the University of North Carolina. This selection appeared in his *Journal* column, "Thinking Things Over," on October 18, 1972, and appears here by special arrangement with *The Wall Street Journal*.

America's recycling program in space.



The space shuttle. The most practical and economical way of helping America reap the benefits of what it has sown in space.

One reason is that almost everything used in the program is recyclable. The orbiter itself can be utilized time and time again. It is boosted into space by two giant solid rockets. Mission completed, it lands back on earth like an airplane. (In contrast to today's multi-million dollar space vehicles that can only be used once.)

Even the booster rockets will be re-usable. They will be recovered, refurbished and put back to work.

The shuttle opens up other recycling possibilities, too. Take satellites. Now a small malfunction can turn a \$30 million satellite into orbiting junk. The shuttle makes it feasible to send men into space to make repairs and adjustments, with enormous savings.

The shuttle will also make it easy to send men and women into space without rigorous, expensive training. Scientists like chemists, agricultural experts, meteorologists, who will play the greatest role in bringing the benefits of space down to earth.

Benefits like accurate forecasting of crop diseases or plagues of insects. Space manufacturing of ultra-pure vaccines or optical glass that cannot be made under the influence of Earth's gravity. Accurate detection of underground water, oil, and mineral deposits. Even technology to make possible communication breakthroughs like the "two-way wrist radio." And a great deal more.

The space shuttle. America's recycling program in space that will do a lot to help conserve and recycle our resources here on earth.



United Technology Center

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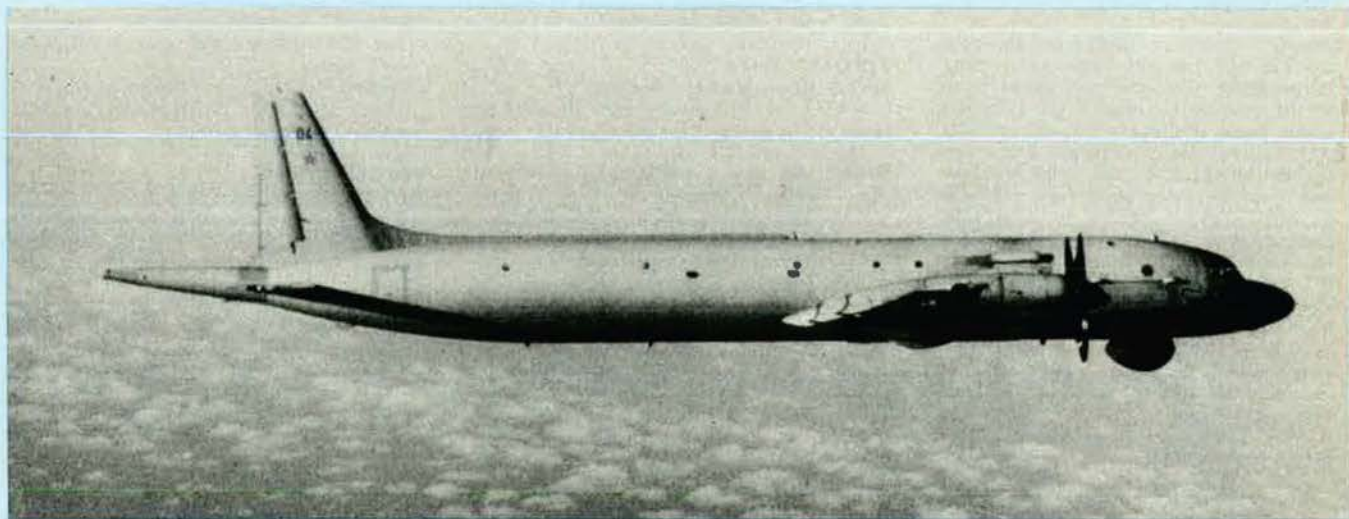
DIVISION OF UNITED AIRCRAFT CORPORATION

A.

SUNNYVALE, CALIFORNIA 94088

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Ilyushin Il-38 anti-submarine/maritime patrol aircraft (four Ivchenko AI-20 turboprop engines)

SOVIET MARITIME RECONNAISSANCE AIRCRAFT

It is now possible to identify and illustrate several important new versions of Soviet maritime reconnaissance aircraft, and to correct inaccuracies which have appeared previously in print. Detailed descriptions of the basic versions of these aircraft can be found in the current edition of *Jane's*. The following brief notes are intended as an aide-memoire on the known distinguishing features of each type. Note particularly the newly-recognised importance of the version of the Tu-95 known as "Bear-D".

ILYUSHIN Il-38

NATO Code Name: "May"

This anti-submarine/maritime patrol development of the Il-18 airliner has been seen increasingly during the past year. The accompanying photograph of an Il-38 in Soviet markings was the first to be released officially in the West. Subsequently, NATO forces in the Mediterranean have been shadowed by similar aircraft bearing

Egyptian Air Force insignia. These are believed to be manned by Soviet aircrews, operating from North African bases such as Matru, near Cairo.

It has been known for some time that the wings of the Il-38 are much further forward than those of the Il-18, to cater for the effect of internal equipment and stores on the aircraft's CG position. The *Jane's* three-view has been redrawn to show the wing location precisely, together with other details that can now be recorded for the first time. Operational equipment includes an under-nose radar and a magnetic anomaly detection (MAD) tail "sting". A fairing shown above the centre-fuselage in some published drawings resulted from misinterpretation of a wingtip seen projecting above the fuselage in a photograph.

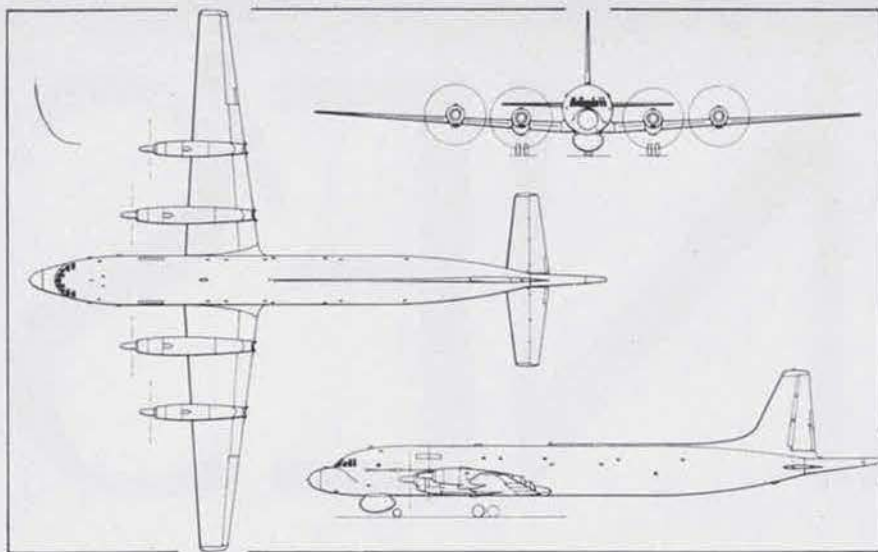
MYASISHCHEV Mya-4

NATO Code Name: "Bison"

Three major production versions of this four-jet aircraft may now be identified by NATO code names, as follows:

"Bison-A". The Soviet Union's first operational four-jet strategic bomber, displayed initially over Moscow in May 1954. Comparable with early versions of Boeing B-52 Stratofortress. Powered by four 19,180 lb (8,700 kg) st Mikulin AM-3D turbojets, buried in wing-roots. Max T-O weight 350,000 lb (158,750 kg). Range reported to be 6,075 nm (7,000 miles; 11,250 km) at 450 knots (520 mph; 835 km/h) with 10,000 lb (4,500 kg) of nuclear or conventional free-fall bombs. Heavy defensive armament of ten 23 mm cannon in twin-gun turrets in tail, above fuselage fore and aft of wing and under fuselage fore and aft of bomb-bays, believed necessary because of aircraft's operational ceiling of only 45,000 ft (13,700 m).

"Bison-B". Maritime reconnaissance version identified in service in 1964. "Solid" nose radome in place of hemispherical glazed nose of "Bison-A", with large super-imposed flight refuelling probe. Numerous under-fuselage blister fairings for specialised electronic equipment. Forward por-



Ilyushin Il-38 military derivative of the Il-18 airliner (Roy J Grainge)

tion of centre bomb-bay doors bulged. Aft gun turrets above and below fuselage deleted, reducing armament to six 23 mm cannon.

"Bison-C". Generally similar configuration to "Bison-B" but with large search radar faired neatly into new and longer nose, aft of centrally-mounted flight refuelling probe. Prone bombing/observation station, with optically-flat glass panels, below and to rear of radar; further small windows and a domed observation (and probably gunnery aiming) window on each side; under-fuselage blister fairings, bulged bomb-bay and armament; all as "Bison-B". An example of this version with the experimental aircraft designation 201-M was used to set up a number of official records in 1959 and was exhibited statically in the Soviet Aviation Day display at Domodedovo Airport, Moscow, in 1967. Powered by four 28,660 lb (13,000 kg) st Type D-15 turbojet engines, this particular aircraft established seven payload-

to-height records, including a weight of 121,480 lb (55,220 kg) lifted to 2,000 m (6,560 ft) and height of 50,253 ft (15,317 m) with a 10,000 kg payload.

TUPOLEV Tu-16

NATO Code Name: "Badger"

NATO code names have been allocated to seven major production versions of this twin-jet aircraft, as follows:

"Badger-A". First Soviet long-range strategic jet bomber, powered by two Mikulin AM-3M turbojets, each rated at about 20,950 lb (9,500 kg) st. Crew of seven. Glazed nose, with small under-nose radome fairing. Defensive armament of seven 23 mm cannon, in twin-gun manned tail turret, forward dorsal and rear ventral twin-gun remotely-controlled barbettes, and singly on starboard side of nose. Max internal bomb-load of 19,800 lb (9,000 kg) carried over 2,605 nm (3,000 mile; 4,800 km) range. Normal bomb-load of 6,600 lb (3,000 kg) carried

for 3,450 nm (3,975 miles; 6,400 km) at 417 knots (480 mph; 770 km/h). First seen in numbers in 1954 Aviation Day fly-past. About 2,000 Tu-16s were built. Six "Badger-As" were supplied to Iraq. Twenty delivered to Egypt were destroyed in the war of June 1967. "Badgers" with both Soviet and Egyptian Air Force markings have been seen subsequently in the Mediterranean area. It is possible that they all remain part of the Soviet Naval Air Force and are flown by Soviet crews.

"Badger-B". Similar to "Badger-A" but fitted with underwing pylons to carry two turbojet-powered aeroplane-type anti-shiping missiles (NATO code name "Kennel"). In service with the Soviet Naval Air Force and, since July 1961, Indonesian Air Force (two squadrons, currently inactive).

"Badger-C". Missile-carrier first seen at 1961 Soviet Aviation Day display. Large stand-off bomb (NATO code name "Kipper"), similar in configuration to USAF Hound Dog, carried under fuselage and stated to be for anti-shiping use. Radar in wide nose radome, displacing nose gun.

"Badger-D". Maritime reconnaissance version. Nose radome similar to that of "Badger-C", with slightly enlarged under-nose radome fairing, and three more blister fairings in tandem under centre-fuselage.

"Badger-E". Similar to "Badger-A" but with camera fit in bomb-bay.

"Badger-F". Basically similar to "Badger-E" but with electronic pod on a pylon under each wing.

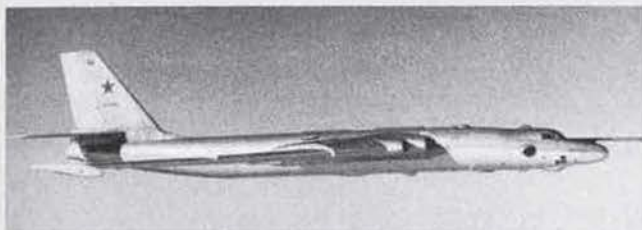
"Badger-G". Similar to "Badger-B" but with larger pylons for rocket-powered missiles (NATO code name "Kelt").

TUPOLEV Tu-22

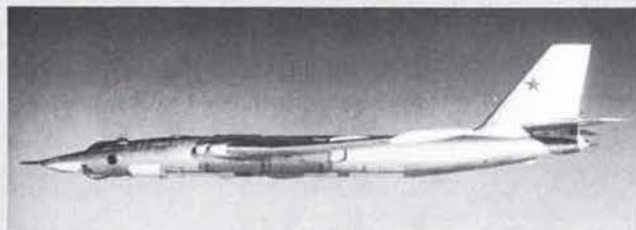
NATO Code Name: "Blinder"

There are now known to be at least four major versions of this first Soviet supersonic strategic bomber/maritime patrol aircraft, as follows:

"Blinder-A". Basic reconnaissance bomber version, with fuselage weapon-bay for free-fall bombs. Two turbojets, pod-mounted on each side of tail-fin, each have estimated thrust of 26,000 lb (11,790 kg) with afterburning, giving max speed of Mach 1.4 (800 knots; 920 mph; 1,480 km/h) at height. First shown pub-



Myasishchev Mya-4 maritime reconnaissance aircraft in the form known as "Bison-B" (Royal Air Force)



Latest operational version of the Myasishchev Mya-4 is "Bison-C" with a new nose



Tupolev Tu-16 reconnaissance bomber ("Badger-D") photographed by the crew of a Phantom from HMS Ark Royal



Underwing electronic pods identify this Tu-16 as the "Badger-F" version (Royal Air Force)



Tupolev Tu-95 ("Bear-B") photographed during a reconnaissance sortie near HMS Ark Royal (Royal Navy)



The streamlined blister fairing on the port side of the rear fuselage is a distinguishing feature of "Bear-C" (Royal Navy)

licly in 1961 Aviation Day fly-past over Moscow, "Blinder-A" entered only limited service, its max range of 1,215 nm (1,400 miles; 2,250 km) being inadequate for the originally intended strategic rôle.

"Blinder-B". Generally similar to "Blinder-A" but equipped to carry air-to-surface stand-off missile (NATO code name "Kitchen"), with estimated range of 400 nm (460 miles; 740 km) recessed in weapon-bay. Larger radar in nose. One of ten Tu-22s displayed in 1961 was a "Blinder-B". Most of the 22 Tu-22s flown over Domodedovo in July 1967 were carrying "Kitchen" missiles. Partially-retractable flight refuelling probe on nose.

"Blinder-C". Maritime reconnaissance version, with battery of six cameras in weapon-bay and camera windows in weapon-bay doors. Modifications to nose-cone, dielectric panels, etc, suggest possible electronic intelligence rôle or equipment for electronic countermeasures (ECM) duties.

There is also a tandem two-seat training version, in which the rear pilot sits in a raised position, with a stepped-up canopy. This was incorrectly referred to as "Blinder-C" in the 1971-72 and 1972-73 editions of *Jane's* and elsewhere. In fact it has no separate NATO designation at present.

TUPOLEV Tu-95

NATO Code Name: "Bear"

Four 14,795 shp Kuznetsov NK-12M turboprop engines make the Tu-95 and its

airliner counterpart, the Tu-114, the fastest propeller-driven aircraft ever flown. The former US Secretary of Defense, Mr Robert McNamara, said in 1963 that the Tu-95 has an unrefuelled range of 6,775 nm (7,800 miles; 12,550 km) carrying a 25,000 lb (11,340 kg) bomb-load, and an over-target speed of 435 knots (500 mph; 805 km/h) at 41,000 ft (12,500 m). Six versions have been identified by NATO code names:

"Bear-A". Basic strategic bomber, with chin radar, and defensive armament comprising three pairs of 23 mm cannon in remotely-controlled dorsal and ventral barbettes and manned tail gun turret. Max T-O weight estimated at 340,000 lb (154,220 kg). First flown in Summer of 1954 and included in fly-past over Moscow in July 1955.

"Bear-B". First seen in 1961 Aviation Day fly-past, with additional radar equipment in wide under-nose radome, and carrying a large air-to-surface missile (NATO code name "Kangaroo") with estimated range of 350 nm (400 miles; 650 km). Now used mainly for maritime patrol, with flight refuelling nose-probe and, sometimes, a streamlined blister fairing on the starboard side of the rear fuselage. Defensive armament retained.

"Bear-C". First identified when it appeared in vicinity of NATO naval forces during Exercise Teamwork in Sept. 1964. Generally similar to "Bear-B" but with streamlined blister fairing on both sides of rear fuselage. Refuelling probe standard.

"Bear-D". This version was first photographed extensively when several examples (together with Tu-16s) made low passes over the US Coast Guard ice-breakers *Edisto* and *Eastwind* off Severnaya Zemlya, in the Soviet Arctic, in August 1967. The aircraft then seen differed in detail, but each had an under-nose radar scanner, a very large under-belly radome, a blister fairing on each side of the rear fuselage like "Bear-C", a nose refuelling probe, and a variety of other blisters and antennae, including a streamlined fairing on each tailplane tip. The rearward-facing radar above the tail turret is much larger than on previous versions of the Tu-95. It is now known that "Bear-D" has an extremely important function as an anti-shiping missile control aircraft, in addition to its maritime patrol and reconnaissance duties. It operates as an intermediate control station for both surface-to-surface and air-to-surface weapons launched from ships and aircraft which are themselves too distant from the target to ensure precise terminal guidance.

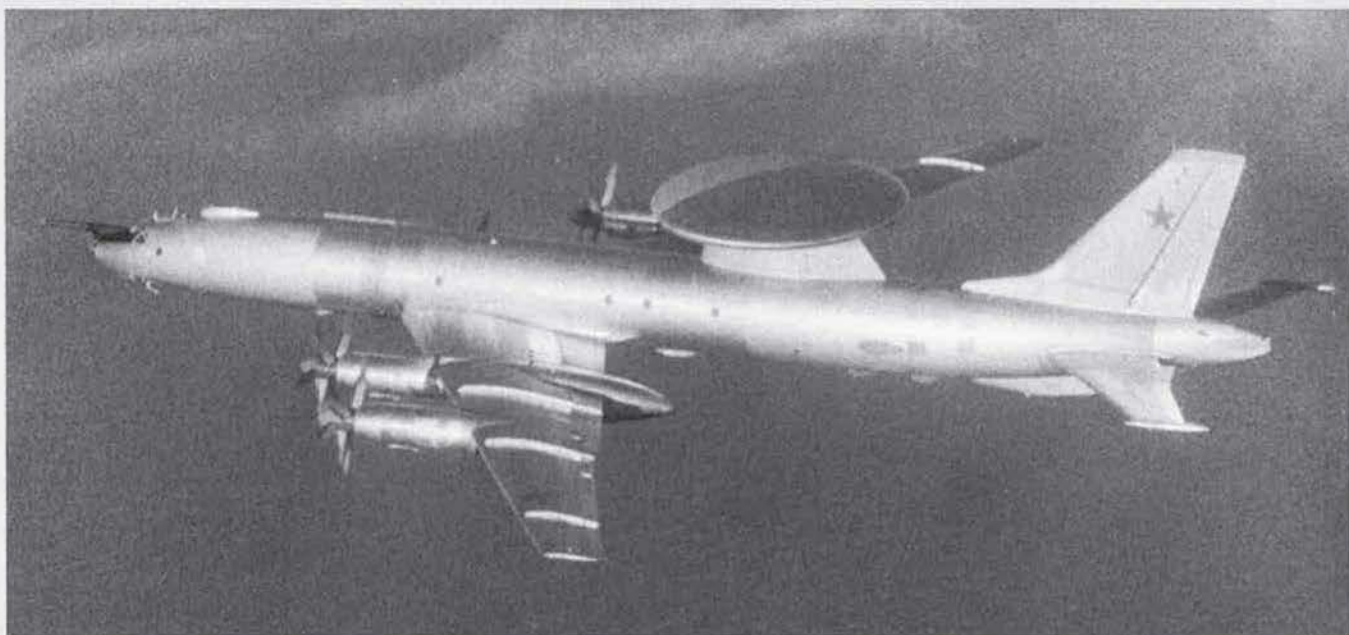
"Bear-E". Not previously identified in the press, this version is basically similar in configuration to "Bear-A" but has a refuelling probe above its glazed nose and the rear fuselage blister fairings of "Bear-C". Six bomb-bay windows, in pairs in line with the wing flaps, indicate the presence of reconnaissance cameras, sometimes with a seventh window to the rear on the starboard side.

The "Bear-D" version of the Tu-95 is now known to have an important missile guidance rôle (Royal Air Force)



Camera ports under the bomb-bay are a recognition feature of "Bear-E", latest identifiable version of the Tu-95 (Royal Navy)





The airborne warning and control aircraft ("Moss") developed from the Tu-114 turboprop transport (Royal Navy)

"Bear-F". Not previously identified, this version differs in having enlarged and lengthened fairings aft of its inboard engine nacelles, and other changes.

TUPOLEV AWACS AIRCRAFT NATO Code Name: "Moss"

Increased activity by "Moss" airborne warning and control aircraft near NATO naval units has made it possible to obtain the first clear and detailed photographs of these military developments of the Tu-114 transport. The accompanying, revised three-view drawing reflects this new information, including an enlarged and elongated fuselage tail-cone. The large-area flaps, projecting aft of the basic wing trailing-edge line, are similar to those of the Tu-114 and are not a feature of the military Tu-95. Diameter of the rotating "saucer" radome is approximately 36 ft (11 m).

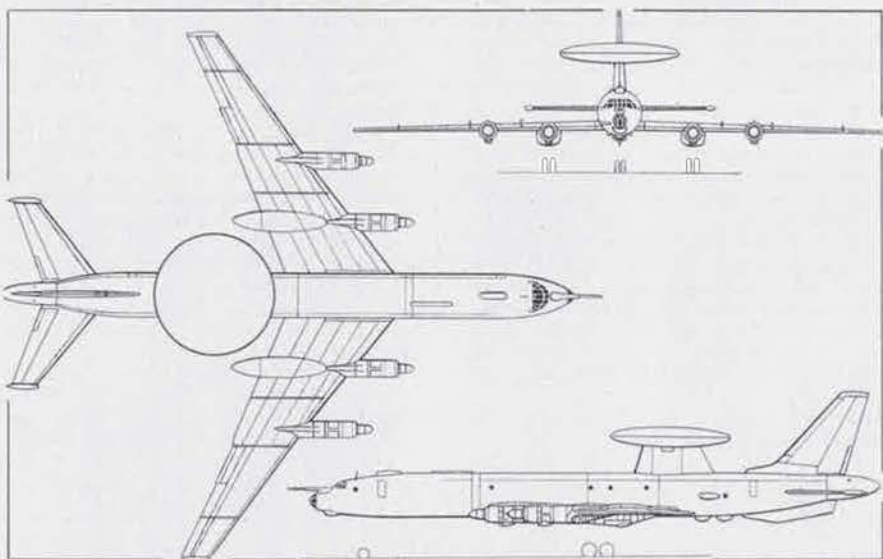
GENERAL DYNAMICS
GENERAL DYNAMICS CORPORATION;
Head Office: Pierre Laclède Center, St. Louis, Missouri 63105, USA

General Dynamics Model 401 USAF designation: YF-16

In April 1972, General Dynamics Corporation and Northrop Corporation were each awarded a contract to build prototypes for the USAF's Lightweight Fighter (LWF) Prototype Program. Intended to determine the viability of a small, lightweight, low-cost air superiority fighter, these prototypes will aid evaluation of the operational potential of such an aircraft, as well as establishing its operational rôle.

In the technical evaluation of the four proposals submitted originally for the programme, the General Dynamics Model 401 took first place, Northrop's P-600 (which now has the USAF designation YF-17) was runner-up, and the proposals received from The Boeing Company and LTV Aerospace were third and fourth respectively.

Under its contract, worth more than \$37.9 million, General Dynamics is to build two prototypes for evaluation in a twelve-month 300-hour fly-off competition against two prototypes of the Northrop P-600. The



The Tupolev AWACS aircraft known to NATO as "Moss" (Pilot Press)

first flight of each competing design is scheduled for early in 1974, and the programme is being directed by the USAF Aeronautical Systems Division's Prototype Programs Office, at Wright-Patterson AFB, Ohio, under the overall control of Colonel Lyle W. Cameron.

Whilst the LWF policy is, in effect, a reversion to the old-time USAF prototyping concept, without any guarantee of production contracts for the winning design, it is considered that the escalating unit costs of air superiority fighters currently under development might well lead to substantial contracts for the successful contender.

Design priorities for this programme recognised cost as being co-equal in importance with schedule and performance. The USAF specified that the prototype aircraft must provide accurate information in respect of both cost to develop and cost to produce. Thus, the manufacturer has had to consider how best to use advanced technology to provide very high performance

within a price range considered acceptable to USAF planners. The concept chosen for the Model 401 blends advanced technology with a basically conservative configuration and a power plant offering high thrust-to-weight ratio.

The selection of a single-engine configuration meant that emphasis had to be placed on weight saving if the critical performance categories of high acceleration rates, high rate of climb, and exceptional manoeuvrability were to be met. This dictated limitation of aircraft size, and the use of advanced concepts to obtain optimum lift.

Another source of weight reduction has been tapped by specifying graphite composite material for the tail unit, General Dynamics having gained considerable manufacturing and flight experience in the use of this material from its application in the F-111. In other respects the structure is conventional, keeping material costs to a minimum; it utilises approximately 33%

7050 and 2124 light alloy for integrally-machined components, 39% 2024 light alloy for formed sheet and extrusions, 2% full-depth aluminium honeycomb core, 2% 641V titanium, 9% 200 grade maraging steel, 4% graphite composites, 1% reinforced plastics, and 10% other materials.

Further cost savings stem from the use of identical and interchangeable horizontal tail surfaces, ventral fins, and wing flap/aileron. Eighty per cent of the main landing gear components are also interchangeable port and starboard.

More than 1,200 hours of wind tunnel testing of over 50 configurations led to the present design, with special emphasis on development of an optimum relationship between the wing leading-edges and the forebody strakes which provide vortex control. Similar in-depth study of potential requirements of an LWF resulted in the selection of manufacturing breaks, methods of attachment of external aerodynamic shapes and surfaces, structural provisions, and internal space so that full advantage may be taken of any new features or concepts that originate during progress of the prototype programme. This will ensure that changes can be made easily to a particular component, with minimum structural disruption to the rest of the airframe. The forward section of the engine air inlet, wings, tail surfaces, and forebody strakes are examples of readily removable structures. This modular approach provides great flexibility, and would make it possible to flight test on the YF-16 components such as supercritical wings, advanced composite wings, growth versions of the F100 engine, advanced armament, a more advanced high-g cockpit, and a variable-geometry engine air intake.

USAF, NASA, and company research all contributed to the technological advances built into the YF-16. They include vortex control, variable wing camber, a high-g cockpit, fly-by-wire control system, and a blended wing-body.

Vortex control is provided by sharp wing leading-edges and highly-swept strakes extending along the fuselage forebody. Benefits include the ability to use a lower aspect ratio wing, with significant reductions in wing area, and improved handling qualities through greater stability at high angles of attack.

Variable wing camber is achieved by the use of automatic leading-edge manoeuvring flaps, which increase wing camber to maintain effective lift coefficients at high angles of attack. The trailing-edges carry large combined flap/aileron.

In the high-g cockpit, the seat is inclined 30° aft, with a raised heel-rest position, to enhance the pilot's ability to perform efficiently while subjected to sustained high gravity forces during combat manoeuvres. The bubble canopy, being developed by Sierracin Corporation of Sylmar, California, will be made of polycarbonate, a virtually indestructible advanced plastic material. The windshield and forward canopy will be an integral unit, separated from the aft canopy by a simple support structure, which will serve also as the hinge-point where the forward section pivots upward and aft to give access to the cockpit. This new windshield/canopy design will provide 360° all-round, 260° side-to-side, 195° fore and aft, 40° down over-the-side, and 15° down over-the-nose view.

The cockpit will have a triple redundant system for emergency egress. In normal operation the canopy will be pivoted upward and aft by hydraulic power. Explosive bolts will release the canopy in the event of hydraulic failure; but should both these systems fail, the pilot will be able to un-



Artist's impression of the General Dynamics YF-16 (Model 401) lightweight fighter prototypes

latch the canopy manually, so that the airstream will force it into the open position.

A side control stick is expected to give more precise control inputs during combat manoeuvres. The McDonnell Douglas Escapac seat chosen for the YF-16 will provide safe ejection capability at ground level from 0 to 600 knots (0-690 mph; 0-1,110 km/h) during high sink-rate conditions.

In the fly-by-wire control system electrical circuits replace the conventional mechanical linkages, conveying direct electrical commands from the pilot's controls to servo motors that operate the control surfaces. There will be no mechanical back-up to the system in the YF-16, but four electric channels will provide quadruple redundancy. The fly-by-wire system is integrated into the basic aerodynamic configuration in a manner which exploits the total capabilities of flight control system technology through the controlled configured vehicle (CCV) principle. CCV in this application is concerned with the relationship of aircraft balance to static longitudinal stability, allowing the CG to be moved further aft than is normally possible with a conventional configuration. This results in a significant reduction in drag, especially at high load

factors and at supersonic speeds. The effect is to reduce trim drag, which includes both the tail drag and the change in drag on the wing due to changes in wing lift required to balance the down load on the tail.

The blended wing-body concept adopted for the YF-16 is achieved by flaring the wing/body intersection. This not only provides lift from the body at high angles of attack, but also gives less wetted area and increased internal fuel volume. In addition, thickening of the wing root gives increased rigidity of the structure, with a weight saving of some 250 lb (113 kg).

The Pratt & Whitney F100-PW-100 afterburning turbofan engine chosen to power the Model 401 will provide a thrust-to-weight ratio of approximately 1.5:1. The fixed-geometry air intake will be mounted beneath the fuselage, where the airflow suffers least disturbance throughout the entire range of aircraft manoeuvres, and minimises the problem of gun gas ingestion. To reduce the risk of foreign objects being drawn into the engine during ground operations, the nosewheel will be located aft of the intake. Because of the thin wing section, both main and nose landing gear units will retract into the fuselage, the nosewheel



Artist's impression of the General Dynamics YF-16 (Model 401) LWF prototype (one Pratt & Whitney F100-PW-100 turbofan). The outboard wing trailing-edge flaps shown here will no longer be fitted

turning during retraction to lie horizontally under the intake duct.

The prototypes will carry minimal avionics to restrict weight and costs, but ample space will be available for installation of suitable equipment at a later date. It is intended to utilise as much off-the-shelf equipment as possible in the prototypes. The horizontal tail and flap/aileron actuators, and electro-mechanical servos in the control system will be modified versions of units used on the F-111. The nose-mounted air data probe, feeding an air data converter and a central air data computer, will be similar to that of the Lockheed SR-71. The stick-grip, embodying control force transducers, will be a modified version of that used on the Vought A-7;

and the cockpit air-conditioning system will be a modified version of that used on the A-7 or Northrop F-5. To provide electrical power for the YF-16, Sundstrand Corporation's Aviation Division is to supply the constant-speed drive for an integrated drive generator rated at 50kVA.

Armament, which will be fitted only to the second prototype, will comprise a single M61 20 mm multi-barrel cannon with 500 rounds, mounted in the port side of the fuselage, and an infra-red missile carried on each wingtip. There will also be underwing hardpoints for the carriage of stores such as auxiliary fuel tanks and ECM pods.

TYPE: Single-seat lightweight fighter prototype.

WINGS: Cantilever mid-wing monoplane,

basically of light alloy construction. Wing blended into fuselage. Full-span automatic leading-edge manoeuvring flaps. Flap/aileron on each trailing-edge. Mountings at wingtips for carriage of infra-red air-to-air missiles.

FUSELAGE: Semi-monocoque all-metal structure. Highly-swept vortex control strakes mounted along the fuselage forebody. An airfield arrester hook can be mounted in the rear fuselage, between the ventral fins.

TAIL UNIT: Cantilever structure with swept surfaces, constructed largely of graphite composite material. Small dorsal fin, conventional rudder and interchangeable ventral fins. Interchangeable all-moving horizontal surfaces. Split speed-brake inboard of rear portion of horizontal tail surface, to each side of nozzle.

LANDING GEAR: Hydraulically-retractable tricycle type, main units retracting forward and nose unit aft into fuselage. Single wheel on each unit. Eighty per cent of main unit components interchangeable.

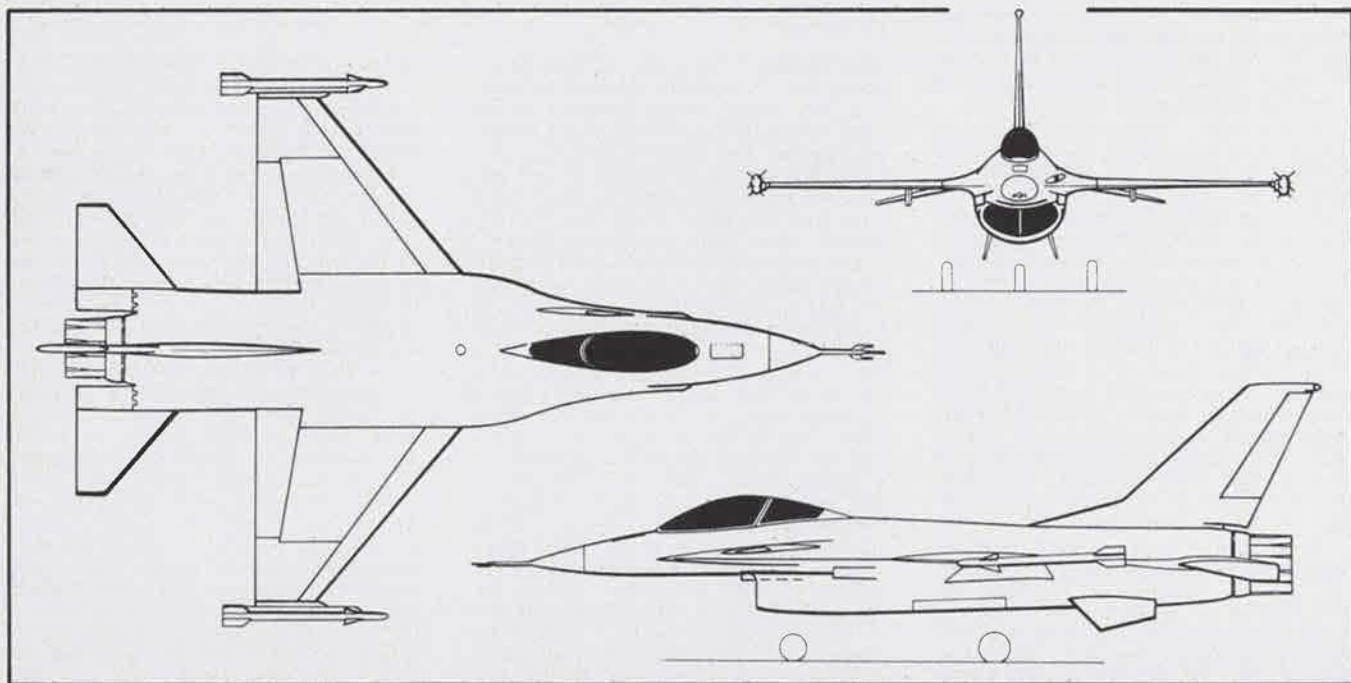
POWER PLANT: One Pratt & Whitney F100-PW-100 turbofan engine of approximately 25,000 lb (11,340 kg) st with afterburning, mounted within the rear fuselage. Fixed-geometry air intake beneath fuselage. Standard fuel contained in wing-root and fuselage cells, auxiliary fuel in tanks on underwing hardpoints.

ACCOMMODATION: Pilot only, in air-conditioned cockpit, on McDonnell Douglas Escapac type IE-2 zero-zero ejection seat, under polycarbonate transparent canopy. Forward portion of canopy opens upward and aft hydraulically.

SYSTEMS: Electrical system powered by engine-driven integrated drive generator, rated at 50kVA. Quadruple-redundant fly-by-wire control system. Hydraulic system for undercarriage retraction, operation of cockpit canopy and airfield arrester hook. Air-conditioning unit for cockpit, utilising engine-bleed air.

ARMAMENT: One M61A-1 20 mm multi-barrel cannon with 500 rounds. Provision for carriage of one infra-red air-to-air missile on each wingtip. Underwing hardpoints for miscellaneous stores. "Snapshoot" gunsight.

Three-view drawing of the General Dynamics YF-16 (Model 401) lightweight fighter prototype (Roy J Grainge)





Piper Cherokee Challenger four-seat light aircraft (180 hp Lycoming O-360-A3A engine)

DIMENSIONS, EXTERNAL:

Wing span	30 ft 0 in (9.14 m)
Length overall	47 ft 0 in (14.32 m)
Height overall	16 ft 3 in (4.95 m)

WEIGHTS:

Weight empty, approx	12,000 lb (5,443 kg)
Mission weight, approx	17,500 lb (7,938 kg)

PERFORMANCE:

Max speed in excess of Mach 2.0

PIPER

PIPER AIRCRAFT CORPORATION;
Head Office and Works: Lock Haven,
Pennsylvania 17745, USA

Piper Cherokee Challenger

This successor to the Cherokee 180 was announced by Piper Aircraft Corporation as one of its new 1973 line of Cherokees on 9 October 1972.

The Cherokee Challenger has a lengthened fuselage to provide more cabin space; an increase of 2 ft 0 in (0.61 m) in wing span; new glass-fibre wingtips to improve aerodynamic efficiency without increasing drag; and a larger all-moving horizontal tail surface to compensate for the increase in fuselage length. Wing area is increased by six per cent as a result of the greater span, and this allows an increase in the useful load. The baggage compartment, aft of the cabin, now has a volume of 24 cu ft (0.68 m³).

Emphasis has been placed on improved safety features. These include a large padded glareshield on top of the panel, to absorb shock and reduce instrument panel glare, together with new protective padding beneath the panel. The understructures of the front seats have been designed to collapse progressively in the event of excessive vertical descent; and inertia reel shoulder harnesses are standard equipment for the front seats. Improved single-post headrests are available as optional equipment for all seats.

The panel of the Challenger accommodates all instrumentation and avionics necessary for IFR flight. IFR instruments are grouped in preferred T arrangement, while engine instruments are located below and immediately to the left of the Sports Power console for easy power plant management.

Radios can be accommodated in a double stack, with adequate room for equipment such as dual nav/coms, ADF, DME, and transponder. A wide choice of King or Narco radios is offered in four factory-installed groups. Available automatic flight

systems include the Piper AutoFlite II, which holds the wings level or makes command turns, plus optional NavTracker II which tracks automatically to or from any desired VOR radial or ILS localiser. An alternative is the Piper AutoControl III which incorporates command turn function plus course selector coupled to the directional gyro. An optional omni coupler adds automatic VOR or ILS tracking.

In other respects the description of the Cherokee 180 given in the 1972-73 *Jane's* applies also to the Cherokee Challenger.

DIMENSIONS, EXTERNAL:

Wing span	32 ft 0 in (9.75 m)
Wing chord, constant	5 ft 3 in (1.60 m)
Length overall	24 ft 0 in (7.32 m)
Height overall	7 ft 9¾ in (2.38 m)
Wheel track	10 ft 0 in (3.05 m)
Wheelbase	6 ft 8½ in (2.04 m)

AREA:

Wings, gross	170 sq ft (15.79 m ²)
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WEIGHTS AND LOADINGS:

Weight empty equipped (standard)	1,386 lb (629 kg)
Max T-O weight	2,450 lb (1,110 kg)
Max wing loading	14.4 lb/sq ft (70.3 kg/m ²)
Max power loading	13.6 lb/hp (6.12 kg/hp)

PERFORMANCE (at max T-O weight):

Max level speed at S/L	129 knots (148 mph; 238 km/h)
Max cruising speed, 75% power at 7,000 ft (2,130 m)	122 knots (141 mph; 227 km/h)
Stalling speed, flaps down	53 knots (61 mph; 98 km/h)
Rate of climb at S/L	725 ft (221 m)/min
Service ceiling	14,200 ft (4,330 m)
Absolute ceiling	16,500 ft (5,030 m)
T-O run	720 ft (219 m)
Landing run	635 ft (194 m)
Range, 75% power at 7,000 ft (2,130 m), with standard fuel	597 nm (688 miles; 1,107 km)

Piper Cherokee Charger

Simultaneously with announcement of the Cherokee Challenger, on 9 October 1972, Piper gave details of a development of the Cherokee 235 which has been given the name of Cherokee Charger.

Basically similar to the Cherokee 235, described in the 1972-73 *Jane's*, the Cherokee Charger embodies the new safety features described for the Challenger; a longer cabin; larger door; larger all-moving horizontal tail surfaces to improve flight characteristics; a constant-speed propeller as standard equipment; an increase of 1,450 lb (658 kg) in useful load; and completely new interior trims.

Major improvement in the Charger is a "stretch" of 5 in (12.7 cm) in the fuselage length which, in addition to providing 50 per cent more leg-room for rear-seat passengers, makes possible a wider cabin door, wider forward side windows, and improved access to the rear seats. The interior decor of the cabin has been revised, and there is a choice of six different colour schemes. Rear seats of new design are individually reclining, and are quickly removable without the use of tools.

In other respects, the description of the Cherokee 235 in the 1972-73 *Jane's* applies also to the Charger.

DIMENSIONS, EXTERNAL:

Same as for Cherokee Challenger, except:	
Length overall	24 ft 1¼ in (7.35 m)
Wheelbase	6 ft 2¾ in (1.89 m)

WEIGHTS AND LOADINGS:

Weight empty, equipped	1,550 lb (703 kg)
Max T-O weight	3,000 lb (1,360 kg)
Max wing loading	17.6 lb/sq ft (85.9 kg/m ²)
Max power loading	12.8 lb/hp (5.8 kg/hp)

Piper Cherokee Charger (235 hp Lycoming O-540-B4B5 engine)



PERFORMANCE (at max T-O weight):

Max level speed at S/L	140 knots (161 mph; 259 km/h)
Max cruising speed, 75% power at optimum altitude	132 knots (152 mph; 245 km/h) CAS
Stalling speed, full flaps	55 knots (63 mph; 102 km/h) CAS
Rate of climb at S/L	800 ft (244 m)/min
Service ceiling	12,000 ft (3,655 m)
Absolute ceiling	13,900 ft (4,235 m)
T-O run, 25° flaps	800 ft (244 m)
T-O to 50 ft (15 m), 25° flaps	1,260 ft (384 m)
Landing from 50 ft (15 m)	1,740 ft (530 m)
Landing run	1,040 ft (317 m)
Range, 75% power at optimum altitude	786 nm (905 miles; 1,456 km)
Range, 55% power at optimum altitude	926 nm (1,066 miles; 1,716 km)

Piper PA-36 Pawnee Brave

On 9 October 1972 Piper Aircraft Corporation released details of a new agricultural aircraft named the Pawnee Brave, which has a more powerful engine than the PA-25 Pawnee C, is larger, and has increased capacity for either liquid or dry chemicals.

More than 4,200 PA-25s have been built by Piper; experience gained in their construction, progressive refinement, and operation has led to design of the Brave. Primary consideration was to provide an aircraft able to offer high standards of safety and comfort for the pilot.

The basic configuration seats the pilot well aft, with a long nose designed to collapse progressively in an emergency. The fuselage is a welded truss structure of chrome molybdenum steel, which is graded in strength to provide excellent energy absorption and progressive collapse. A sturdy overturn pylon is an integral part of the fuselage structure. The wing is of conventional cantilever construction, with laminated spars to provide structural redundancy. The wing leading-edges each comprise two glass-fibre sections, reinforced by a foam insert beam running spanwise. Normal impacts are absorbed by the leading-edge, more serious contacts by ribs designed to collapse with minimal impact transference to the basic wing structure.

The pilot is located in an isolated cockpit capsule which keeps him well clear of main structural members. The floor, for example, is 1 ft 0 in (0.30 m) above the lower longerons, and a cockpit width of 3 ft 2 in (0.97 m) allows for substantial deformation of the fuselage structure without hazard to the pilot. The seat is attached to the overturn pylon, and is articulated to allow the pilot's position to change with fuselage deformation. The cockpit capsule is sealed to prevent the ingress of toxic chemicals; and all protrusions, knobs, and levers which might cause injury have been eliminated. The instrument panel is equipped with a large energy-absorbing crash roll.

Ventilation of the cockpit capsule is provided by an air scoop in the top of the canopy, which filters the incoming air before discharge through two adjustable diffusers. A heating system is standard, and the inflow of ventilating and/or heated air has the effect of pressurising the cockpit, further discouraging any inflow of toxic fumes or chemicals.

Power plant consists of a 285 hp Teledyne Continental Tiara engine which, having a 2:1 reduction gear, permits the use of a large-diameter propeller. Turning at only 1,700 rpm at normal cruising speed, this ensures that the Brave is quiet in operation.

Several fire suppression provisions have



Piper PA-36 Pawnee Brave, a larger and more powerful development of the PA-25 Pawnee.

been introduced which are unique for an agricultural aircraft. The fuel tanks, located in the wing roots, are filled with reticulated polyurethane foam to serve both as a fire suppressant and as an infinite baffle to reduce fuel surge. Fire-resistant fuel pipes are wire-reinforced at potential rupture points.

To meet varying requirements, two hopper sizes are available. The larger hopper has a maximum dry chemicals capacity of 1,900 lb (862 kg), and is compatible with applicators designed to spread chemicals at rates of up to 400 lb (181 kg) per acre.

Spray equipment for the PA-36 has a capability of up to 228 US gallons (863 litres) per minute, which is the equivalent of 17 US gallons (64 litres) per acre at 117 knots (135 mph; 217 km/h) and with a 50 ft (15.25 m) swath width. The spray equipment consists of a quickly-removable pylon-mounted wind-driven spray pump, and spray-booms located just aft of the wing trailing-edges. This location reduces drag and allows the pilot to make visual checks of their operation.

All parts of the Brave's airframe are treated to prevent corrosion damage, with extensive use of polyurethane coating, selection of stainless steel for cables and other moving components in vulnerable areas, and internal oiling of lower truss sections. The design eliminates dust traps and inaccessible areas, and fuselage covering is spaced away from the frame to permit thorough hosing down. To facilitate washing, inspection, and maintenance, the plastic side panels and entire belly covering are attached by quick-release fasteners.

TYPE: Single-seat agricultural aircraft.

WINGS: Cantilever low-wing monoplane. Conventional two-spar metal structure. Light alloy laminated spars with two-bolt main spar attachment to fuselage structure. Light alloy covering, except for detachable leading-edges of glass-fibre, reinforced by foam inserts, and glass-fibre wingtips. Conventional ailerons and trailing-edge flaps. Landing lights in wing leading-edges.

FUSELAGE: Welded chrome-molybdenum steel-tube structure. Removable metal under-skin, and removable side panels of plastic material. Glass-fibre engine cowling.

TAIL UNIT: Cantilever all-metal structure. Tab in rudder and each elevator. Cable from top of cockpit structure to tip of fin to deflect cables.

LANDING GEAR: Non-retractable tailwheel type. Interchangeable cantilever spring steel main gear struts, with wire-cutters

on leading-edges. Main wheels and tyres size 8.50 x 10. Steerable tailwheel with tyre of 10 in (0.25 m) diameter.

POWER PLANT: One 285 hp Teledyne Continental Tiara 6-285 six-cylinder horizontally-opposed air-cooled engine, driving a Hartzell two-blade metal controllrollable-pitch propeller. One fuel tank in each wing root, capacity 45 US gallons (170.3 litres). Total fuel capacity 90 US gallons (340.6 litres), of which 85 US gallons (322 litres) are usable. Refuelling point on upper surface of each wing. Fuel tanks filled with reticulated polyurethane safety foam (Safom).

ACCOMMODATION: Pilot only, on adjustable seat in an isolated cockpit capsule, with steel-tube overturn structure. Seat, equipped with double shoulder harness and inertia reel, is attached to overturn structure. Wire-cutter mounted in centre of windshield. Combined window and door on each side, hinged at bottom. Cockpit capsule is heated and ventilated.

SYSTEMS: Electrical system for navigation and landing lights and radio installation.

EQUIPMENT: Standard equipment includes a non-corrosive hopper/tank of translucent glass-fibre reinforced plastic, installed forward of cockpit and approximately on CG. Optional hoppers of either 30 cu ft (0.85 m³) capacity, containing 225 US gallons (852 litres), or 38 cu ft (1.08 m³) capacity, containing 275 US gallons (1,041 litres). The latter has a maximum capacity for dry chemicals of 1,900 lb (862 kg). Venturi-type dry material spreaders of either stainless steel or aluminium available, including a basic design capable of application rates of 5 to 200 lb (2.3 to 91 kg) per acre. Spray system comprises an easily-removable wind-driven spray pump and 1½ in (0.38 cm) diameter spray-booms equipped with 60 nozzles.

DIMENSIONS, EXTERNAL:

Wing span	39 ft 0 in (11.89 m)
Length overall	27 ft 4¼ in (8.34 m)
Propeller diameter	7 ft 11 in (2.41 m)
Propeller ground clearance	10 in (0.25 m)

WEIGHTS AND LOADINGS:

Weight empty:	
standard	2,050 lb (930 kg)
sprayer	2,170 lb (984 kg)

Max T-O weight:

Normal category	3,900 lb (1,769 kg)
Restricted category	4,400 lb (1,996 kg)

Wing loading:

Normal category	17.3 lb/sq ft (84.4 kg/m ²)
Restricted category	19.1 lb/sq ft (93.2 kg/m ²)

North Africa, 1943: The Birth of Tac Air Doctrine

In a significant contribution to the history of World War II, the author, who was Deputy Commander of the Northwest Africa Tactical Air Force during 1943, sets straight the record of air action and evolving doctrine which has been distorted by slanted memoirs and the hit movie "Patton." He was there during the confrontation with Patton at Gafsa, and describes what really happened. Aggravated by a growing tendency to forget the tac air lessons of 1943 and by the treatment air doctrine has received in the memoirs and biographies of Ground Forces generals who were in North Africa, he tells it as it was in . . .

GODDAMMIT, GEORGIE!

By Gen. Laurence S. Kuter,
USAF (Ret.)

ALMOST THIRTY YEARS after the official establishment of the USAF tactical air concept, the tactical air forces' major contributions to victory in air-ground battles still are being played down or ignored. This perversion of history was serious enough when the US held a clear margin of strategic nuclear superiority. But, with the signing of the SALT agreements, we have, in effect, accepted at best a neutralization of strategic nuclear forces for the foreseeable future.

The rational use of military forces thus will probably be limited to conventional operations, potentially on a scale far larger than Vietnam. In a war of that character, opponents who could really threaten the world position of the US would almost certainly hold both manpower and geographical advantages. We must not compound these potential dangers by neglecting the air-ground cooperation lessons so painfully learned in two world wars. There are disquieting indications that some of those lessons are being ignored or distorted.

The US has now completed its disengagement of ground forces in Southeast Asia. All of the military services are deep in the analysis of SEA experience and in evolving concepts and doctrine for a new environment, condi-

tioned by SALT, by new technology, and by altered political relationships. It seems to me essential that military strategists and tacticians who are looking ahead also look back considerably further than Vietnam. That war may well be atypical of future conflicts—at least of conflicts that could seriously threaten the security of this country.

We airmen have been less articulate public exponents of tactical air doctrine than we should have been. To that extent, we must share the blame for the continual downgrading of the part played by tactical air in the military operations of the past half century. This came home to me with a vengeance as I re-read some of the personal histories of World War II, including accounts of air operations in which I had participated as a senior commander. For example, extracts of historic documents have often been quoted out of context and have sometimes been slanted in the memoirs of Army writers to slight tactical air. The patterns for victory learned the hard way in past battles are thus beclouded or concealed.

A case in point is the prize-winning movie, "Patton." In it, the only tactical aircraft seen in Tunisia are a half-dozen light bombers of the Luftwaffe. In historic fact, our eventual victory in Tunisia was based upon the absolute mastery of the air attained by Allied tactical air forces, followed by their massive support and carpet-bombing ahead of Allied ground troops as they swept from Mejez-el-Bab to Tunis.

I am a patient advocate, with close personal and professional ties to the tactical air concept. I was the commander of tactical air units in Tunisia. After seeing the movie "Patton," produced by Frank McCarthy (Brigadier General, US Army Reserve), who acknowledged that the movie was based primarily on Omar Bradley's *A Soldier's Story* and Ladislav Farago's *Patton*, which in turn quotes extensively from



George S. Patton. His concept of airpower as an "umbrella" over ground forces robbed tac air of its mobility and its ability to gain air superiority.

a Patton diary, I reviewed Bradley's account of the fighting in Tunisia and reread parts of the Patton book.

Particularly after rereading *Patton*, this "patient advocate of the tactical air concept" has become vigorously aggravated—goddamned aggravated, Georgie—by the treatment given to tactical air.

North Africa, 1943: Fact and Fiction

The father of the USAF (and RAF) tactical air concept was a New Zealander, Air Marshal Sir Arthur Coningham, RAF, who on February 21, 1943, assumed command of the Northwest Africa Tactical Air Force (NATAF) in Tunisia. I was the American Deputy Commander of NATAF, directly under Air Marshal Coningham. Coningham's concept, based on the coequality of tactical air and ground forces, had proved highly successful in battle as his Western Desert Air Force, in intimate and continuous cooperation with Montgomery's Eighth Army, drove the Germans and Italians from El Alamein through Tripoli and into Tunisia. On the other hand, US ground force commanders were parceling out their tactical air squadrons as "cover" for ground units and as an extension of artillery. The results, which I'll return to later, were not only poor, but they robbed airpower of its greatest asset—mobility—and made it impossible to gain air superiority.

Coningham insisted that his concepts be applied in the fighting in Tunisia when the Western Desert Air Force was joined by the American Air Support Command to form the Allied NATAF, and the Eighth Army was joined by the British Second Army and the American II Corps to form the Allied Ground Forces under Gen. Sir Harold Alexander.

Coningham's stature with Montgomery, Alexander, and Air Chief Marshal Tedder, Commander in Chief, Mediterranean Allied Air Forces, was strong enough to establish officially the tactical air concept of parallel cooperation between ground and air forces. On the American side, my own stature with General Spaatz, Commander, Northwest Africa Air Forces, with General Eisenhower, and General Marshall was adequate to lead to the formal establishment of the US Tactical Air Concept in Field Manual 100-20, which begins:

1. Relationship of Forces. Land power and air power are coequal and interdependent forces; neither is an auxiliary of the other. The gaining of air superiority is the first requirement for the success of any major land operation. . . . Air forces must be employed primarily against the enemy's air forces until air superiority is gained. . . .

Although I am not the father of the US tactical air concept, in spite of the implica-

tions in Chapter 5, Vol. II, of *The Army Air Forces in World War II*, I was there at the birth, and I claim to know what it was all about. I do not relish watching doctrine developed the hard way in battle and paid for in casualties become obscured by slanted memoirs.

A Soldier's Story

An example of slanted memoirs and quotes out of context is the treatment given in the movie "Patton" to a significant and historic clash between Coningham and Patton. The clash occurred during the Tunisian Campaign at Gafsa in the first days of April 1943. I was there. Omar Bradley was there. His book, *A Soldier's Story*, describes with easily understood emotion (pages 61-64) an attack by eight light bombers of the German Air Force on the first day of April. They dropped a string of bombs across a command post of a US Army battalion, killing Patton's aide and driver and wounding Bradley's aide.

General Bradley watched this flight of bombers as it approached the command post. The extent of our Army's use of cover and concealment is indicated by Bradley's description of the command post, which he said "consisted of a dozen tanks and half-tracks huddled together on a treeless terrain under a cloudless sky." As to the amount and effectiveness of our antiaircraft weapons, Bradley said that when the bombers "first approached at 8,000 feet" our pair of self-propelled Bofors 37-mm antiaircraft guns, "hoping to escape detection," did not fire at all.

Neither the Bradley nor Patton books nor the movie acknowledges a formal message from the Commander of the Northwest Africa Tactical Air Force five weeks earlier, which stated that NATAF units would discontinue defensive cover or "umbrella tactics and would concentrate on offensive employment to destroy German and Italian air units at their bases." Neither do they acknowledge that such offensive employment was reducing hostile air operations and shortly resulted in absolute control of the air—complete air supremacy for the final victorious battle in early May.

Omar Bradley, Patton's deputy, and subsequently commander of US II Corps during the fighting in Tunisia. The author believes that Bradley had a more objective view of air-ground operations than did George Patton.



The tactical air concept, developed in North Africa, had been tested in battle by Montgomery—shown here at the Battle of El Alamein—and Air Marshal Coningham, whose Western Desert Air Force was coequal with Montgomery's Eighth Army.



"Tooe" Spaatz, left, Commander of Northwest Africa Air Forces, and Air Chief Marshal Sir Arthur Tedder, Commander in Chief, Mediterranean Allied Air Forces, at the Casablanca Conference, where the issue of ground force and tactical air force coequality was finally settled.

After describing the attack by the Luftwaffe flight of light bombers on an exposed and unprotected battalion command post, General Bradley then quotes extracts of two important, once-top-secret messages with the following preamble and conclusion: "That afternoon Patton radioed Coningham's air support command to complain of the lack of Allied fighter interception of German air on our front. He was alarmed, as I was, by the demoralizing effect of enemy air on the frontline troops.

"And in summarizing the enemy air activity for that day, II Corps G-3 wrote his SITREP (situation report) for April 1:

Forward troops have been continuously bombed all morning. Total lack of air cover for our units has allowed German air force to operate almost at will. Enemy aircraft have bombed all division CPs and concentrated on units supporting the main effort.

"To Patton there came in reply a tart rebuke from Coningham, commander of the Tactical Air Force. After contesting the accuracy of the II Corps SITREP, he radioed Patton:

It is to be assumed that intention was not to stampede local American air command into purely defensive action. It is also assumed that there was no intention to adopt discredited practice of using air force as an alibi for lack of success on ground. If SITREP is in earnest and balanced against . . . facts it can only be assumed that II Corps personnel concerned are not battle-worthy in terms of present operations.

In view of outstandingly efficient and successful work of American air command concerned it is requested that such inaccurate and exaggerated reports should cease. Twelve Air Support Command have been instructed not to allow their brilliant and conscientious air support of II Corps to be affected by this false cry of wolf.

"Then to make matters worse," Bradley continues, "Coningham sent a copy of his TWX to every senior commander in the Mediterranean." The book *Patton* treats the messages in like manner although in less detail.

The controversial Coningham message takes a substantially different tone and meaning when read in toto:

TO: 2 Corps (R) Fairfield, Freedom, NAAF (Spaatz) 1st Army, 19 Corps, 10 Corps, 18th Army Group, 12th Support Command, Adv. Hq. Western Desert Air Force
FROM: NATAF Ref. Spec. 40 2/4/43
MOST SECRET

With reference 2 Corps SITREP of 1200 hours 1st April and later repetition by CG 2 Corps, the wording of which was: begins:

"Forward troops have been continuously bombed all morning. Total lack of air cover for our units has allowed German Air Force

to operate almost at will. Enemy aircraft have bombed all Div. C. P.s and concentrated on Units supporting main effort." Ends.

Facts are as follows: Total enemy effort over 2 Corps GUETTAR Front. 0730 unspecified number of fighters. 0950 12 JU. 87s. 1000 5 JU. 88s and 12 ME 109s of which some bombed. Total casualties four killed, very small number wounded. Our effort up to 1200 hours 92 fighters over 2 Corps Front. 96 fighters and bombers on enemy airdromes concerned. On SFAX 90 bombers at 0900. For full day 362 fighters of which 260 over 2 Corps. On receipt of SITREP it was first assumed to be a seasonal 1st April joke. It had later to be regarded seriously and action taken to ascertain above facts.

Coningham's message then continued as quoted above from General Bradley's book.

Meeting with Patton

I had read Patton's SITREP of April 1 and had planned to take off the next morning for the Thelepte airdrome to join Brig. Gen. F. L. Williams, commander of our Air Support Command, which comprised the AAF tactical combat component of NATAF, and then to drive with him to Gafsa to see Patton and set the record straight. Coningham had apparently brooded over his copy of the SITREP, then alone and during the night he had drawn up and dispatched his report to each of the addresses on Patton's SITREP. My copy of Coningham's message was my first indication that he had responded to the SITREP. Upon reading it first thing in the morning and learning that Coningham had left to visit Eighth Army Headquarters, I advanced my schedule and left immediately for Thelepte and Gafsa.

Shortly after I landed at Thelepte, Air Chief Marshal Tedder and Lieutenant General Spaatz also landed there en route to Gafsa to do some-

With General Eisenhower's endorsement of the coordinate stature of ground and tactical air forces on February 22, 1943, the tide of battle began to turn against the Germans in North Africa. These German and Italian prisoners were assembled in northern Tunisia shortly before the surrender.



thing about the Patton and Coningham messages. With them, General Williams and I drove to Gafsa and found Patton with Bradley at II Corps Headquarters in an old masonry building in the town.

Tedder, Spaatz, and I had a moderately tense meeting with Patton, Bradley, and Patton's Chief of Staff. We expressed regrets that Coningham's message had gone beyond the facts in the case, into the area of acrimonious and controversial opinion. Patton maintained a belligerent posture which impressed me as the attitude of a small boy who knew he'd been bad but believed he would get away with it. My diary records our assurance to Patton that Coningham would call on him personally. It also records my personal discussion on the side with Omar Bradley, and my belief that he had a much more objective view of the situation than did George Patton.

The movie and the Bradley book portray an attack on Gafsa by three or four German fighter-bombers as our conference was concluding. Such an attack actually occurred. When it was over, Tedder asked Patton how he had arranged it. Patton responded, in effect, "I'll be damned if I know, but if I could find the sonsabitches who flew those planes, I'd mail each one of them a medal."

On the next day Coningham called on Patton. My diary records in detail Coningham's report that day when he returned to our NATAF Headquarters. When Patton received Coningham, he was seated squarely behind the dead center of his flag-surrounded desk, wearing his polished helmet with two stars, his field jacket with two stars on each shoulder, his two pearl-handled revolvers, and his fiercest scowl. Coningham seated himself directly across, squarely and erectly facing Patton, wearing his brightest smile and not unmindful that the stripes on his RAF jacket represented

three stars. Patton opened with a speech extolling the "unquestioned bravery of his 62,000 men" and concluded with a vigorous fist on the desk.

Coningham followed, accepting the bravery without question, and stormed back with the bravery of his allied airmen, pounding his fist on the desk at least as vigorously. My diary says, "Patton snorted that if the occasion arises again he will prepare additional SITREPs exactly like the one Coningham challenged. Coningham replied that he also enjoyed a fight and would nail any repetition of such a SITREP to the mast as forcefully as possible." The diary goes on with Coningham's report that they shortly "shook hands and lunched together with much laughter and great good fellowship."

Eleven days later Patton was relieved of his command and returned to Morocco to work on the plans for the next campaign. Eisenhower named Bradley to command the US II Corps, and the tactical air-ground force relationship began steadily to improve.

Forgotten Lesson of World War I

The movie "Patton" and its sources are by no means an isolated instance of concealing or forgetting the role of airpower in the air-ground battle. What happened in northwest Africa was actually a costly relearning of lessons that already had been learned the hard way in World War I, then obscured or forgotten.

In the Meuse-Argonne Campaign of 1918, what little airpower the US had in France was being held on alert to attack enemy reinforcing or withdrawing elements within six to eight kilometers of the front lines. This restrictive use of tactical air was not relieving our frightfully high casualties.

The Air Service devised a plan to build a 202-squadron GHQ Air Force that would be used en masse to cut lines of communication and strike strategic targets such as the Mercedes engine plants and the Bosch magneto works. According to the plan, "all available airplanes should be concentrated on a single objective in a single day."

General Pershing and his staff approved the 202-squadron program. Among Pershing's principal operations staff officers was a young colonel named George Catlett Marshall. By that act, US Ground Force leaders of World War I established an air doctrine of unified command and control for airpower, far removed from parceling out air units for piecemeal use by numerous ground force units.

In the course of the years following World War I, the concept of the 202-squadron GHQ Air Force was nibbled to death by arguments that corps, division, brigade, regiment, and even battalion commanders should each have



On May 6, 1943, three and a half months after the reorganization and reorientation of ground and air forces, Allied troops marched into Tunis. Within a week, the war in North Africa had ended.

bits and pieces of tactical aviation to employ as they chose in the hundreds or thousands of yards of the unit's area of battle responsibility.

By early 1943, George Catlett Marshall had moved up from the position of a junior staff officer under Pershing to become the Chief of Staff of the greatest American Army ever organized. But so lost were the lessons of World War I that Army Field Manuals permitted the complete subordination of Army Air Forces tactical units to corps and divisions and sometimes lesser commanders in the Ground Forces.

In early February 1943 at Gafsa and in the Kasserine Pass, the American II Corps under Generals Friedendahl, and later Patton, had unquestionable authority to direct employment of scattered squadrons of Army Air Forces fighters and light bombers as "cover" for the 1st Armored Division at Gafsa, and over Corps Headquarters, and to extend the range of corps and division artillery. They exercised that authority.

On February 14, when what later proved to be about 2,000 German troops with some scattered Stukas, seventy vehicles, and a few Tiger tanks appeared eighteen miles north of Sened, the 1st Armored Division evacuated Gafsa and abandoned the divisional stocks of supplies, ammunition, and gasoline which had been moved at enormous effort and expense across the South Atlantic and much of the North African desert. That was no day to be proud of our employment of tactical aviation in the inefficient role of "air umbrella" or of the overall capability of our air-ground command structure.

Six days later, elements of the 21st and the 10th Panzer Divisions broke through the Kasserine Pass, and their way to Constantine and even Algiers appeared to be wide open. There was no lack of talent or fighting spirit in our tactical air units. One group of P-40 fighters was commanded by a very young Col. "Spike" Momyer, now the four-star Commander of the USAF Tactical Air Command, and another by an equally young Col. Fred Dean, who eventually wore three stars as a NATO Tactical Air Commander. Their missions were primarily to provide almost valueless "air cover" and then only in the limited area of ground troops and headquarters. When the Germans surprised our forces and moved into the Kasserine Pass at 5:00 p.m. on February 20, 1943, we may have hit the nadir of American military performance in World War II.

Casablanca and Coequality

It was a happy coincidence that the reorganization and reorientation of the Ground Forces and Tactical Air Forces as coequal, promulgated at the Casablanca Conference, made its appearance in North Africa on that very day. At 3:00 p.m. on February 21, while

the Germans were still moving into the Kasserine, Air Vice Marshal Sir Arthur Coningham arrived to assume command of the new NATAF, which had been conceived at Casablanca as consisting of all US and UK tactical air units in North Africa.

Concurrently, Gen. Sir Harold Alexander assumed command of the Eighteenth Army Group, consisting of the UK First Army under General Anderson, the UK Eighth Army under General Montgomery, and the US II Corps shortly to be commanded by Maj. Gen. George Patton, and then by Omar Bradley.

The next day, General Eisenhower, with his newly appointed Deputy Chief of Staff, Maj. Gen. Jock Whitely of the British Army, came forward to the battle area and held an intimate, informal command conference with General Alexander and his Chief of Staff, Lieutenant General McCreery, Air Marshal Coningham (promoted that day), and myself. At that conference, it was established that the Eighteenth Army Group and NATAF would follow the successful pattern established by the British Eighth Army and the Western Desert Air Force in their drive from El Alamein through Tripoli. The air and ground commanders would be quartered together, plan together, and use the same operations center. General Alexander would be the final authority on Ground Force matters and Air Marshal Coningham would be the final authority on Air Force matters.

To assure understanding in the American contingent, General Alexander authorized me to quote him as saying, "I shall never issue any orders on air matters. The Airman must be the final authority on air matters." As General Eisenhower's Deputy Commander in Chief (as well as being Commander in Chief, Eighteenth Army Group), General Alexander's military authority was legally of the very highest.

It may have been coincidental, but it is worth noting that February 22, 1943—the day that General Eisenhower endorsed the stature of the Northwest Africa Tactical Air Force as coordinate and not subordinate to the Eighteenth Army Group—was the very day that the advance of the German Army and Luftwaffe was stopped in the Kasserine Pass and the day that the Eighteenth Army Group and NATAF began moving forward.

While it was coincidental that the reorganization took effect in the battle area during the German penetration at the Kasserine Pass, it was no coincidence, only sixty days later, that NATAF initiated the air-ground battle that defeated the Axis in North Africa. It was a well-laid and well-timed cooperative air and ground plan. On April 19, the air phase of the offensive began. On April 22, the ground offensive began. By April 30, the Germans and the Italians had been driven out of the sky and the Allies had air supremacy.



One of the P-40 group commanders in North Africa was Col. "Spike" Momyer, now Commander of TAC. A fighter ace, Momyer once single-handedly took on eighteen JU-87s escorted by German and Italian fighters and scored four confirmed kills.



Another fighter commander in North Africa was Col. Fred Dean, who flew more than 100 combat missions in British Spitfires. After the war, he rose to three-star rank and command of Allied Air Forces, Southern Europe, before his retirement last year.



The author, Gen. Laurence S. Kuter, a 1927 graduate of USMA, was one of the four principal authors of the plan for employment of US airpower in World War II, and was General Arnold's representative at the Yalta Conference. Following the war, he commanded MATS (now MAC), Air University, Far East Air Forces (becoming first Commander in Chief of PACAF when that command was created in July 1957), and NORAD. After his retirement in 1962, he became Executive Vice President of Pan American Airways. Now retired for a second time, he and Mrs. Kuter live in Naples, Fla.

On May 6, NATAF flew 2,145 sorties in direct support of Allied Ground Forces advancing on a 6,000-yard front. Never before had half as dense a concentration of aerial firepower been delivered. Our armor reached Tunis on that day. During the next week the fighting ceased.

After studying the records of the surrender of these crack German troops that had been led by Rommel and Von Arnim, Forrest Davis concluded two articles in the *Saturday Evening Post* of July 31, 1943, as follows: ". . . it was essential for the air command in the field to be coordinate, not subordinate. Only thus could the Tactical Air Force pursue its dual task of serving as a true air force against the enemy's air strength as well as supporting the ground elements in all-out air and land battles without having this strength frittered away in local activities. In effect, the coordinate air forces in Tunisia readied Von Arnim's armies for the kill, then joined in to help administer the *coup de grâce* on May 6. On that day, the Tactical Air Force struck from the air while Alexander's armies struck from the ground. The combination was irresistible."

This pattern was applied during the successful invasions of Sicily, Italy, and, of course, the cross-channel invasions and drive into Germany. No German aircraft were in the sky on D-Day. And in the Pacific, still later, the Japanese government suggested terms after air strikes and naval action had made unnecessary any surface assault on the home islands.

Lest We Forget—Again

Since World War II, we have had some years of peace and the publication of countless memoirs and military histories with several provincial biases. We have also had many years of fighting in Korea and in Southeast

Asia under highly specialized local conditions. In Vietnam, we have maintained and exploited uncontested and absolute air superiority. Even the fragile helicopter and the vulnerable Cessna or Piper have been proper vehicles with which to move troops and to control air firepower.

As to employing their own firepower and movement, no mechanized Western army has any solution to the problems of guerrilla warfare in Southeast Asian jungles. In desperation, perhaps, Ground Force officers in Vietnam have fought the tactical air concept and worked to nibble away separate air elements and separate Air Force functions from the tactical air forces in order to augment the forces under their own command, in their own scattered and limited areas of battle responsibility.

The restricted, uncoordinated, piecemeal use of tactical airpower for which some Army officers still yearn brought nothing but disaster in the test of combat. It could be no different in the future.

Most of the new echelon of Army generals who contest the air-ground doctrine that was forged in two world wars were not born until after the agony of the Meuse-Argonne. None had positions of policy-level command or control at the time of our humiliation at Gafsa and our defeat at the entrance to the Kasserine Pass. Those unhappy events of military history must have been treated very lightly in our Army school system.

Once again it is high time to review and adhere to battle-tested air-ground doctrine. Air functions and air units must be consolidated into Air Force commands. The professional Air Force commanders must live, plan, and work with their opposite number, their coordinate and coequal professional Ground Force officers. That is the doctrine that has proved to be the pattern for victory. We can ill-afford to learn it in battle for a third time. ■

COGENT CORRESPONDENCE

During World War II, there was a plethora of Army Air Forces commands in the Caribbean Theater, some with apparently overlapping responsibilities and authority. Shortly after I became Executive Officer of Waller Field, Trinidad, B.W.I., in 1944, my adjutant, in an effort to reduce confusion in matters of military protocol, called my attention to some pertinent correspondence he had resurrected from the files. One letter and endorsement helped set me straight, and gave me a lesson in military correspondence.

It seems that an air base commander, in an attempt to clarify the chain of command, wrote to his acknowledged superior substantially as follows: "If Colonel So-and-So of the . . . Command gives me an order, can I tell him to go to hell?" He received this reply by endorsement: "If Colonel So-and-So tells *you* to go to hell, go quietly."

—CONTRIBUTED BY LT. COL. HENRY E. ABBOTT, JR., USAF (RET.)

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

The Air Force, along with the other military services, is caught in a difficult dilemma. Rapidly rising costs in the area of personnel and hardware combine with the need to compensate for steadily increasing R&D efforts by the Soviet Union and run headlong into an immovable object—a Department of Defense budget that, in terms of purchasing power, at best stays even and at worst buys less and less. The present DoD Director of Defense Research and Engineering, Dr. John S. Foster, Jr., outlines for AIR FORCE Magazine some of the . . .

Remedies for the Defense Budget Crunch

By Edgar Ulsamer

SENIOR EDITOR, AIR FORCE MAGAZINE

THE conclusion of the SALT accord has not led to any discernible reductions in the Soviet military research and development effort, whose level continues to top that of the United States by a considerable margin, probably by between forty and fifty percent. As a result, "we estimate that with present trends, the Soviet Union will surpass us in terms of total defense-oriented technological capability somewhere between 1975 and 1978," Dr. John S. Foster, Jr., Director of Defense Research and Engineering, told AIR FORCE Magazine.

The Pentagon, and presumably the White House, has learned to live with this prospect, albeit not without apprehension. But there simply is no realistic chance of scraping together the money needed to match the intensity of the Soviet effort. The only alternative, the Pentagon believes, is to make more effective use of the available resources.

Deterrence, Now More Than Ever

The central and imperative need, Dr. Foster points out, is to maintain the deterrent capability of US strategic forces. "This means not only the maintenance of existing forces, but, more importantly, their modernization to preserve their survivability and penetration potential against an increasing aggressor capability. Because the stakes are so large, the US hedges its strategic deterrent against technological

surprise by a triad of forces—the ICBMs, the submarine-launched ballistic missiles, and the strategic bombers—so as to have a variety of survivable basing modes and penetration techniques. Thus, should an enemy unexpectedly develop a technique that jeopardizes the survivability or penetration capability of one of the components of the Triad, our deterrent would still be secure.

"There simply is no way to guarantee that any one of our strategic systems will be safe from surprise attack or in penetration several years from now. The best we can hope to do is to make timely changes that seem to alleviate or remove serious, existing or potential vulnerabilities in basing or in penetration. For such reasons the Polaris was followed by Poseidon, which is now being followed by Trident. The B-1 bomber, which will give us far greater penetration capability and which can get off the ground much faster than the B-52, is an obvious and crucial requirement.

"We must assume that our ICBM force—because of its fixed position—can eventually become vulnerable to attack. We had planned to counter such a threat by increasing silo hardness and by providing Minuteman fields with an active defense system [the Safeguard antiballistic missile area defense system coupled with a hard-site, point-defense system], but the latter is now limited in interceptor capability by the ABM treaty.

"As a result," Dr. Foster points out, it is

important to "get serious about mobile basing. Unfortunately, the Congress last year disapproved funds [that were requested by the Department of Defense] to conduct research on mobile systems. Two basic approaches to mobility are being studied [by the Air Force and DoD] quite extensively: air-mobile systems and ground-mobile systems. Mobile systems pose difficult technical and operational problems. Among the former is that of operating delicate guidance systems in a rough shock and vibration environment. Nonetheless, defense scientists believe that these problems can be overcome by diligent engineering effort."

So far as land-mobile systems are concerned, Dr. Foster believes that a combination of mobility and the use of multiple shelters offers the best chance for true survivability. (There is reason to believe that the Soviets are developing an advanced mobile missile system. At any rate, Soviet negotiators refused to include mobile ballistic missile systems in the SALT ceilings.)

Another school of thought, espoused by many US defense planners, holds that the most logical evolution would be to an airborne system whose survivability is essentially assured once the launching aircraft is off the ground.

Design to Cost

But implementing plans for modernizing the US deterrent capability in the decades ahead, Dr. Foster points out, depends on what the Department of Defense, and especially the Air Force, considers the fundamental top priority of the moment. That priority is a search for

"Mobile systems pose difficult technical and operational problems. Among the former is that of operating delicate guidance systems in a rough shock and vibration environment."

effective means to reverse rising hardware costs which, aggravated by soaring manpower costs, threaten to reduce US defense capabilities to inadequacy and eventual impotence. "We cannot permit that to occur," Dr. Foster vows with determination.

The cost dilemma, in the Pentagon's view, is three-fold:

- Over the past twenty years, the cost of defense systems and the manpower needed to operate them has been rising at more than five times the rate of inflation.
- In the years ahead, the best that can be hoped for in terms of available funds, Dr.

Foster predicts, is "a flat-rated budget," meaning a budget that in terms of purchasing power remains constant even though the international temperature fluctuates from year to year.

- The need for national security forces to prevent or fight conventional as well as nuclear wars continues to increase, but their costs are growing, as are the technical sophistication and number of arms of potential adversaries.

The combined effect of these three conditions makes it economically impossible to replace systems in the inventory on a one-for-one basis. As a result, Dr. Foster points out, "our inventory is getting smaller and older."

The response to the dilemma is as revolu-

"We must reduce the cost of acquiring weapon systems by thirty percent . . . without sacrificing technical excellence and without compromising the performance capabilities. . . ."

tionary in concept as it is in objectives. "We must reduce the cost of acquiring weapon systems by thirty percent, or about \$7 billion a year, and we must do it without sacrificing technical excellence and without compromising the performance capabilities needed for military missions. We are doing this by reorienting our design and acquisition process toward greater productivity through what we call our 'design-to-cost' philosophy. We must reduce dramatically the cost of owning and operating capable systems." He points out that "the President has exhorted the country toward greater productivity. The Department of Defense must heed his call."

For the skeptic who suggests that the history of defense technology reflects inexorable cost growth in spite of a steady stream of schemes to halt this trend, Dr. Foster points out that cost trends elsewhere clearly show "that this doesn't have to be so. For example, the cost of electronic parts has come down by factors of ten to a hundred. The reason the cost of military electronic equipment hasn't come down is that we put in more parts than we need, by asking for more than we need. Also, in terms of purchasing power [of the average American], the cost of an automobile, or of electricity, or of phone service has actually declined. Yet the exact opposite condition obtains in the defense sector. Reduced to its fundamentals, the new R&D approach is predicated on a reversal of the traditional roles of price and performance.

"From now on," Dr. Foster says, "the Department of Defense will provide its suppliers with flexible, functional specification. We will go out to industry and say, 'Once you have

gone over our requirements, come back and let's talk about performance trade offs, let's talk about schedule trade offs. But we have an upper limit on what we can afford.' What we have to do—and because of recent Air Force experience we know it can be done—is to provide industry and our own people with the incentives to use advanced technology to hold costs down.

"It is people at the design level in industry and in government who have to be persuaded to examine design alternatives as the means to bring down production and operating costs rather than as a way to obtain the last five percent in performance. It will take time, perhaps as long as a couple of years, to permeate the thinking of the middle-management levels, because that's where price consciousness has to start. But it is at that level where it is lacking and where it doesn't even show up in the design manuals. We are quite confident that we can change this orientation by a combination of competitive pressures as well as the straightforward understanding of the fact that if price is not met, there either will be no program at all, or somebody else will get the business."

None of these considerations, Dr. Foster emphasizes, "means that we will tell industry how to design whatever it is we want. On the contrary, we recognize that industry is frequently much better qualified to do that than are we in government. All in all, we believe that our goals are legitimate and realistic. They are being set and met almost every day on the commercial side of the US technology effort by our industry, which is still the world's most productive, except perhaps for some isolated areas such as ship building and small electronics."

At the nub of the problem of designing new systems to cost is the challenge of setting cost ceilings, especially comprehensive life-cycle costs, which represent the lowest possible price for which adequate performance can be bought. "Setting the right price will take hard work, time, and wise management. This may well require that we expand our in-house expertise. Also, it will obviously require that we use this expertise in conjunction with the competitive market forces," Dr. Foster points out.

A new mechanism has been created to help set realistic cost ceilings. Known as the Cost Analysis Improvement Group, or CAIG, it is a new element of the Defense Systems Acquisition Review Council (DSARC), the body that advises the Secretary of Defense on all matters pertaining to major defense programs. CAIG's mandate, Dr. Foster told AIR FORCE Magazine, is to come up with reliable, uniform standards to be used by the services in preparing cost estimates; to monitor and assist the services in setting up their own cost-estimating mechanism; and to review the program

cost estimates of the services in order to enable the DSARC to judge the cost information it receives from the System Program Offices (SPOs).

Hardware Proof Is Mandatory

Concern with hardware costs, Dr. Foster admits readily, is not new. In the past its effect, more often than not, has been to keep the original cost estimates low but without slowing the cost escalation that followed. "We have no intention of restaging the liars' games of the recent past that were invited by the total-package-procurement scheme. The way to forestall this kind of occurrence is through hardware demonstrations, usually through brass boarding or prototyping, coupled with a vigorous test and evaluation cycle," according to Dr. Foster. Test and evaluation are to start early in the acquisition process to make sure that no long-range commitments are made until both the basic concept and the hardware design of a system under development have been proved out economically as well as technically.

This process is modeled after the present step-by-step "milestone" approach, but makes cost rather than performance the principal design parameter. The other benefit that results from systematic test and evaluation is that it

"We have no intention of restaging the liars' games of the recent past that were invited by the total-package-procurement scheme."

gives high assurance of the actual performance of the production article. "We will," Dr. Foster stresses, "accept only quality products and technological excellence under this policy of cost ceilings. Products that are just cheap will not be acceptable. The military needs must be met or we will not buy the systems."

This approach, Dr. Foster admits, presupposes "our willingness to pay more in time and dollars in the research and development phase in order to assure that we achieve both the desired unit production price and support costs as well as the required performance."

Dr. Foster does not think that the design-to-cost policy should be linked with particular types of contracts during the acquisition phase. The government plans to be "fully flexible in this regard." He points out that "one of the truly outstanding programs in terms of delivering technical excellence for the best cost is the Air Force's Maverick program, a modified total-package-procurement contract. As a matter of fact, the program management was so excellent that when they reported their cost figures, the cost-analysis experts in the Penta-

gon were sure they were too low. But we backed up the Program Manager, and it looks like he was right.

"We see similar excellence in another Air Force program, the B-1. We [DoD] have practiced a hands-off policy and let the Air Force/industry management team work out the trade offs. Both sides are completely dedicated to the design-to-cost philosophy. The Air Force programs are pioneering in the cost area, but the other services are also moving out."

While the government plans to use a range of different acquisition methods, the opposite will be true for the initial program phase, which generally is to be based on cost-reimbursable development contracts including incentives. Because the company that is doing the initial development of a new system—and in many cases may do so in competition with others—knows that it has no guarantee from the government of winning the potentially more lucrative production contract, it has every incentive to engineer into its design a maximum of cost-reducing features.

"We know that this is working from the A-X program, from the prototype fighter program, and the Advanced Medium STOL where the design-to-a-price incentive is driving the whole effort," Dr. Foster points out.

The Watchword Is Standardization

"If you look at any of the late model [Soviet] MIGs, you will find that most of the

"We know that this is working from the A-X program, from the prototype fighter program, and the Advanced Medium STOL where the design-to-a-price incentive is driving the whole effort."

avionics and other subsystems are of a standardized design used in other, earlier aircraft. This is also true for other countries and has not degraded performance of the subsystems. But if you look at a US design, you generally find that almost everything aboard has been designed from scratch for that particular aircraft. This is a luxury that we can no longer afford. In addition, miniaturization and other advanced techniques, especially in the electronics field, make it possible to design systems of ever greater scope and versatility. We can rely, therefore, more and more on standardization as a principal means to reduce the cost of our weapons systems. Standardization will result in higher volume production. This can lower cost and increase reliability. It also drives down the cost of logistics and training.

As a result, the issue of standardization, which is primarily a Department of Defense management problem, has become a crucial, vital element of the design-to-a-cost approach," Dr. Foster points out.

"Standardization has two benefits resulting from standard interfaces: First, it is possible to plug in standard modules acquired from a volume producer; and, secondly, it gives the ability to maintain a number of alternate suppliers, especially in cases of critical components." The concern with standardization,

"You will find that [on the late model MIGs] most of the avionics and other subsystems are of a standardized design used in other, earlier aircraft. This is also true for other countries and has not degraded performance of the subsystems."

Dr. Foster predicts, will take the form of separate prototype subsystem development efforts. These subsystems, once proved out, will be available for general weapon system use.

Coupled with standardization on the subsystem and component level will be efforts to achieve commonality between military and civilian technological systems. "We will place emphasis on such joint ventures by working very closely with NASA and the commercial sector. This we are already doing in the case of the Air Force's Advanced Medium STOL and its engine [see January '73 issue, pp. 40-42]. This approach is in the national interest and benefits both sides," Dr. Foster believes.

While he does not feel it is the government's job to regulate the size of the industry, he assumes that "some shrinkage is unavoidable."

Dr. Foster is optimistic that through meticulous application of the design-to-cost concept a thirty percent improvement in the cost picture can be realized and "even with a constant defense budget this should make it possible to buy enough weapons to maintain an adequate defense posture. The key to the success of this concept lies in industry and government management. We must demand more discipline on both sides: discipline in controlling costs; discipline in controlling reliability; discipline of the kind so familiar to the commercial marketplace where those who can't perform drop out; and discipline governing that ever-present human temptation to fiddle with the contract in order to get an extra few percentage points of performance."

Obviously, the only fiddling that's in tune with the times will be played on very tight purse strings. ■

It has become a truism that the youth of today are much more "aware" than were their counterparts of bygone eras. This awareness is often reflected in the concern with which they view the world around them. Presented here are character profiles of several young Americans in an Air Force unit in Southeast Asia. By any standard, they are a rich national resource, these men of . . .

Wolfpack Now

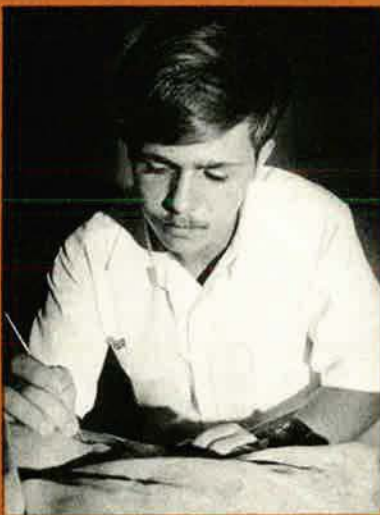
Adapted from an article that appeared in Pacific Stars and Stripes

By Capt. Angelo J. Cerchione, USAF, and MSgt. Stewart Diamond, USAF

UBON AIRFIELD, THAILAND
TODAY the young are "into" the environment, dig Nader and consumerism, campaign on the civil-rights front, and have liberated a

score of major and minor causes. Some have gone to Canada and some to SEA. More have gone to SEA than to Canada. Those in SEA are a new people. Yet, while they fight on that front, they have not

forgotten about their other causes. You find them—these new people—wherever the Air Force has set up shop to fight the war: the few remaining bases in South Vietnam, at Guam, in Thailand.



**William Spoon—
Freedom Is
Not an Island**

The 8th Tactical Fighter Wing—the Wolfpack—here at Ubon has its share. Take, for example, A1C William L. Spoon, age nineteen. His cause is to help his fellow man. As a medic assigned to the base hospital, he finds fulfillment in being able to treat the minds and bodies of fellow airmen. He becomes frustrated when they are taken by combat from his circle of concern. He frets till they return.

Recollections of smashed bodies from a recent plane crash flow vividly through his mind. "It seemed such a waste. Life is worth more than a body bag."

Beneath the blondish-red moustache, grown to hide the baby face, a smile constantly beams when he talks about the medical assistance he gives. "I mean like we all make a contribution to the Air Force effort in some way. If there were no medical people there would be no war, no pilots, no mechanics, no crew chiefs."

Here the smile dims. "But I feel

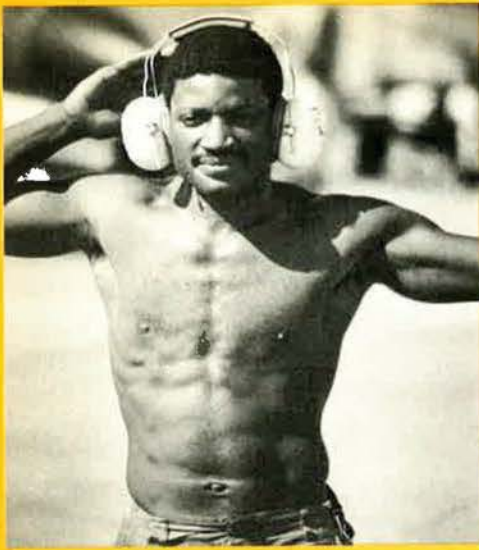
helpless when we concentrate our efforts on health only to have the possibility of body bags jump up with each mission."

Unpleasant thoughts past, the smile reappears. "I joined the Air Force because I couldn't get a job," he says candidly. "I have a wife and a baby, you know."

"I joined the Air Force because of concern for my family. It's the best move I've made yet. The Air Force has taught me responsibility and how to organize my life."

Born during a conflict in Korea he does not recall, he quickly learned that his personal freedom was linked to everyone else's. He is aiming for the Physicians' Aide program, which will allow him to gain more medical expertise. He has planted his feet on the road to helping others by bettering himself.

Young Spoon's first enlistment, hesitantly made, has caused him at last to come to grips with societal questions that are not easy to answer. He is not alone.



Ernest T. Jones— An Individual

Ernest T. Jones, twenty-six, sergeant, crew chief, black, a graduate

of Virginia State College with a BA in Industrial Arts Education, is serving two enlistments simultaneously. He's in the Air Force for a four-year hitch and in the civil-rights movement for life.

"I've got to see successes on both fronts in order to faithfully serve both causes," he says with a simple finality.

There is no doubt about the staying power of his commitment. In 1968, while en route to a driver's education class he was conducting, he got caught up in a riot. Black, he was arrested for disorderly conduct and unlawful assembly. Trotted before a city court judge with three other men, he was summarily convicted.

"They kept saying the crowd did this, and the crowd did that. 'I am not a crowd,' I told them, 'I'm Ernest T. Jones, an individual.'"

He repeated his claim to individuality at the appellate-court level and then before the circuit court,

but each time a guilty verdict was returned.

Meanwhile, alone and working nights to put himself through college without outside financial aid, he found himself funding his legal fight out of those same meager funds.

"First I sold my car and walked a lot. The courts took two years to hear my arguments. Fees piled up. I remember eating a lot of meals that consisted of water and 'Nab' cookies. Lean when it started, I dropped another twenty pounds. Finally, I got my case before the state Supreme Court. It cost \$6,000 in all, but the citation read 'Ernest T. Jones vs. the State of Virginia Constitution.' I won and my people won: The crowd was black, but an individual black man need not be accused on the basis of color only. I had cleared my name."

To his second enlistment, he brings the same astute mind, the same analysis, and the same deter-

Mike and Mike— Two Fighter Jocks

While dreams are a cherished goal, reality must be dealt with now; intangibles of freedom must be translated into practicalities. Captains Mike Van Wagenen, twenty-seven, and T. Mike Messett, twenty-nine, are practical men who take the awesome reality of guided bombs and F-4 Phantoms to Hanoi. They are the tip of the spear, the precise cutting edge of President Nixon's decision to sever all lines of communication and supply.

"When I was here before, during the time of Col. Robin Olds and Operation Rolling Thunder, technology lay one day behind us. Back then we would mount a major aerial offensive involving upwards of sixty aircraft against a target like the Paul Doumer Bridge," Captain Messett reminisced, tugging his cigar to the corner of his mouth with

LeMayish brusqueness. "Recently, we took guided bombs and—without exposing all those crew members to ground fire—we moved in with a small force and Wham! We took out the bridge. No stray bombs, no guesswork, just the destruction of a strategic target."

Mike Van Wagenen speaks. Handsomely clean-cut, he is the ideal recruiting-poster fighter pilot. "The sophistication of our weaponry today defies imagination when compared to World War II. Dresden, Hamburg, and Tokyo were all scenes of massive destruction. It took hundreds of aircraft, thousands of crew members, and sometimes months to knock out those targets. Scores of innocents died. Today, we can isolate and crack the target's braincase or cut its spinal cord cleanly."

But as US weapon technology grew, so did the enemy's ground defenses. Fighter pilots fly into the deadliest, most sophisticated anti-aircraft traps assembled in the history of aerial warfare. Van Wagenen has firsthand experience. Recently, he and his weapon systems opera-

tor went "feet wet" in the Gulf of Tonkin following a bout with a telephone-pole-sized SAM. They make no personal claims of heroism, however.

"Sure, we fly the missions, but look at what must be done to get the bird ready for flight. Teams of highly trained specialists—munitions loaders, mechanics, and crew chiefs—got out there on the flight line and made the thing right," T. Mike emphasized with a jab of his cigar. "Things have changed tremendously in the five years since I was last here. These guys are a lot better informed about what is going on, and it reflects in their performance. I personally make it a point to be damn sure my crew chief knows what each mission is all about. We don't discuss classified stuff. We talk flying. When I get back, I tell the man what went on. He has a fantastic pride in his bird, and that's making our job easier."

These men have an extraordinary faith in the technology of their trade and in the morality that keeps them from wantonly misusing it. They are not alone in their excellences.

mination. "As a black man living in America, I'm seeking the same things that a white crew chief is: We fight to preserve the basic freedoms assured us under the Constitution. I couldn't do less. If I didn't see daily signs of improvement in race relations, I think it would hurt my work on the flight line. You can't separate these things.

"When I take my toolbox out to my airplane, I have a broad understanding of what the pilots are trying to achieve because of the ROTC training that I had back at Virginia State. Then, too, the pilots on return give me a mini-briefing on their missions. I find great satisfaction in that because access to information is always the difference between a blind robot and a free man."

Jones joyfully leaps into the fray with the élan of a Cyrano de Bergerac. "Sure, I think our domestic problems have a very high priority—probably higher than this war, but it's a question of how to

quit this thing. A government that does a half-assed job on the international front will probably do a half-assed job on the home front. I see my role in this as helping to get people to the negotiating table. That goes for everything that I do. That's my way."

In those Virginia State College days prior to his enlistment, Jones began touring college campuses speaking about civil rights. It might be said that his military service in defense of liberty dates from that period, working with an organization called "Soldiers for Doctor King's Dream."

"I want for my work to survive. I'm doing this so that tomorrow it will not evaporate—puff! That's the supreme measure of success. You can't think about Doctor King and your own goals without recalling, 'For here cometh the dreamer. Let us slay him and then see what will become of his dreams.' Permanence! That's the test—here and at home."



Nick Lewis — Bringing It All Together

The qualities of Joseph Smith, founder of the Mormon Church, and of Antoine de Saint-Exupéry, French writer/aviator, are united in Sgt. Nicholas Lewis, twenty-four, an airborne interpreter and radio operator. He fills an additional duty of serving as an interpreter to Vietnamese ground commanders whose second language is French.

A deep love for Mormonism and the French language brought him to this particular point in space and time. High school language classes introduced him to the so-called *lingua franca* of the civilized world; his bishop offered him the opportunity for missionary work in France and Belgium. At nineteen, he left Brigham Young University and embarked upon God's work in Lille, Brussels, Mons, Rheims, and Strasbourg. For two and a half years he proselyted in this Franco-Belgian area on behalf of his church. Then came his draft notice.

It was a Coast Guard recruiter who recommended that he try the Air Force "... their educational



Van Wagenen



Messett

About the Authors

Capt. Angelo J. Cerchione is an action officer with Civil Branch, Community Relations Division, Secretary of the Air Force Office of Information. Captain Cerchione has served as Director of Information at bases in the US, England, and Thailand. A "multiple-cause" man, he recently took a master's degree in environmental regional planning and has published a book, Master Planning the Aviation Environment.

MSgt. Stewart Diamond, assigned presently to the 8th Tactical Fighter Wing Office of Information as NCOIC, is a veteran of more than fifteen years in the Air Force as an Information Technician. His career has involved both journalism and radio television. Previous assignments have included Palm Beach AFB, Fla.; the Press Liaison Office in Tokyo; Bolling AFB, Washington, D. C.; and Hq. Pacific Air Forces, Office of Information, in Hawaii.

benefits are much higher than other services."

While he was at Forbes AFB, Kan., the personnel office called and asked, "How would you like to fly, operate a radio, speak French, and go to SEA?" He said "yes" to all four conditions, despite the fact that he was about to become a bridegroom.

Speaking another's language, even though it is a second language for both, enabled Lewis to gain access to the Cambodian mind. "I worked with some men innumerable times and know them well. I've found that Cambodians possess a very deep belief in freedom. Also, while they accept our help, they still maintain their dignity and independence.

"These men tell me about deaths in their families, villagers massacred, lost and unheard-from relatives, and shortages of supplies." It is these desperate conversations with men low on supplies, facing a relentless and well-equipped enemy, that have indelibly seared his mind. "Their voices will get very close to breaking, and they tell me that they don't want to surrender, but hope is dwindling. I am thanked almost passionately for the air support my FAC is delivering. They are such proud people."

Twenty-four years old and a church elder, a glow of serene confidence emanates from him. He is at peace.

"My church sets forth four goals for the layman: to go on a church mission, for our families to be married in a temple, to get an education (preferably college or vocational training), and to perform military service. We feel that we need those four elements to balance out our lives. It's a source of comfort that I've been able to accomplish all four."

In Nicholas Lewis, church elder and airborne interpreter, there is a great coherence of interests, a focusing of spiritual and intellectual powers. He has brought it all together, a task not easily nor often accomplished by men so early in life.

Richard Sullivan— Reflecting Life

For each feat accomplished by members of the US Air Force in Southeast Asia, there must be a record of some kind for historians to ponder. A large part of this record is being amassed by men like Sgt. Richard Sullivan, twenty-one, a combat documentation photographer assigned to the 601st Photo Squadron.

The simple fact that at age thirteen Richard was able to squeeze an acceptable focus out of his dad's camera created a thirst for knowledge about photography. But snapshots and home movies were not the ultimate goal. As Sullivan discovered with experience and maturity, true depth was the element missing from his glossy photographs. In SEA, he began to gain the education and experience he had lacked.

He recalled his first combat mission in the back seat of an F-4 Phantom, flying out of Saigon. "I was scared to death," he confessed, "but the pilot, a captain, did a great deal to reassure me. He said he was '... a family man with a couple of children, and I won't do anything that will endanger our lives unnecessarily.' We didn't even get to expend our ordnance that evening, but I never forgot the concern he expressed. Two weeks later, he was shot down by a MIG. It just wasn't right. He was a great guy and a great officer."

It was at this point that Sullivan's credo began to jell. Recalling photos taken during World War II by the famous photographer, Eugene Smith, he pinpointed one specific shot of the skeletal remains of a Japanese soldier.



"I remember that Smith had explained his reason for taking the photograph. He said it was not to glorify war, but to show what once was a human being. It was his way, I believe, of pointing out man's inhumanity to man."

Sullivan does not believe in war, but is intense in his belief that man has the right to fight for his freedom. "This is what's happening here. South Vietnam was invaded, and we are attempting to ensure their right to freedom. My pictures must present things as they happen. I'm adequately equipped for this, but I know that my future as a freelance photo-journalist must develop through understanding and education.

"The Air Force has provided me with the perspective from which to visualize fully what I want to be. I realize now that I must have college courses in art, history, music, and psychology. Without in-depth knowledge my pictures are no more than two-dimensional images in the worst sense. There must be greatness on either side of the lens. Then a picture becomes a reflection of life, not an inadequately expressed symbol.

"If my photographs of Air Force involvement over here can somehow preclude this sort of thing from ever happening again, then I'll have succeeded to some degree."

Joe Gaglio— He Cared

Sullivan wants to bring about peace, and so does SSgt. Joe Gaglio, but the peace that comes to an addict who has kicked the habit is what he's after.

Gaglio, twenty-five, established the 8th Tactical Fighter Wing drug-education program at Ubon, virtually starting from scratch. But when you're alone, a smooth-functioning organization with desks, job descriptions, and wall charts must wait because the hooked kid cannot.

Joe invested his energy like a sailor spending money in a liberty port—very freely. Yesterday, the drug- and alcohol-abuse program was a distant primitive frontier; today, the approach is much sounder. Pioneers were not always successful, but they had strength. Joe also had an additional quality: sympathy. He cared, and it showed.

Gaglio crashed into a chair in front of a friend's desk. "Joe, what the hell's happened to you? Your breath smells, your clothes are a mess, and you stink!—you stink, Joe!"

"Listen," he said, his hands trembling, his eyes red-rimmed with fatigue. "I just spent three days with a guy hooked on heroin—night and day—three days.

"I was trying to keep him clean because in three days he was to get on a plane and go to Clark Air Base for detoxification and then on to the rehabilitation center at Lackland.

"Three days. Stand around while he showers, sleep next to his bunk on the floor at night, hold his hand, don't even let him out of sight when he goes to the john. It was like a grim honeymoon. Then the last day as we're getting close to the wire, I lose sight of him for a second, and the next thing I know he's got a few red crystals under his nose and on his chin: red rock.

"You know, we got a hell of a program here. If a guy will take the first step, we go a long way with him. A young dude can pick up a habit very cheaply, but he can't honestly—honestly, I said—support that habit back in the States. And if you want help in most places, where do you go? In most places, the only thing the community is geared to do is shoot a hole in you when you try to rip something off to make a little bread for the man.

"Hell, you name it: limited privilege communication, teenage consultants, medics, former addicts, hot lines manned twenty-four hours a day, rap sessions, multimedia briefings for squadron commanders and their troops. You name it and we're trying it. We help a lot of guys. You can't imagine the problems some of these men have.

"Drugs—they're just the surface. Underneath is a guy with a problem that's eating him alive. We help a lot of people, but I wanted to reach this guy. I wanted to get him on that plane and get him started on the road back." The gesticulating hands fold futilely into his lap. "Three days."



They are not all heroes and saints, but they have been to SEA, and they are a measure of our progress. A proper assessment of the worth of the Air Force in its service to the American nation cannot be accomplished without reckoning the power of their total commitment.

Spare and bless these kids. ■

"GOOD MORNING, SWEETHEART"

In mid-1944, Hq. Twelfth Air Force was located at Florence, Italy. Brig. Gen. Robert D. Webster, a veteran of many combat missions, became the Deputy Commanding General and soon acquired a statuesque WAC lieutenant as his secretary. It quickly became evident that coordination with the Deputy Commander's Office was necessary to ensure proper news coverage of the steady stream of VIPs who visited the headquarters.

As Staff Photo Officer, I took to calling the General's secretary early every morning and inquiring, "Good morning, sweetheart. Will you need any photography this morning?" One day the inevitable happened. I called as usual and sang out, "Good morning, sweetheart," but before I could utter another word I heard a crisp voice in my ear: "This is General Webster speaking." I sucked in my breath sharply and then cautiously inquired, "Sir, do you know who this is?" "No," he barked. "Thank God," I murmured weakly and hung up the phone.

I sat at my desk for a long moment and chuckled, but quickly forgot about the incident until forty-five minutes later when my phone rang. "Staff Photo," I answered mechanically. The familiar voice was ice cold: "Hello, sweetheart, this is General Webster!" My mouth hung open in disbelief. Finally, finding my voice, I inquired, "Sir, how did you find out?" "Ha!" he snorted. "That's why I'm a General and why one day you may find yourself the oldest Captain in the Air Force."

—CONTRIBUTED BY COL. FRED E. BAMBERGER, JR., USAFR (RET.)

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



Parachuting is not just fun and games for members of the Air Force Academy team. Besides the competitive élan that led them recently to an unprecedented fifth consecutive National Intercollegiate Parachute Championship, the Academy jumpers are dedicated to instructing their fellow cadets in basic parachuting techniques . . .

Hitting the Silk at the Air Force Academy

By William D. Madsen

OUT OF the Colorado sky—as blue as only the western sky can be—the speck gradually grew into a U-4B Aero Commander.

At about 10,000 feet above the plowed ground of the Air Force Academy's DZ (drop zone), five tiny figures streamed out of the aircraft. Each trailed red smoke, billowing from a dispenser attached to one boot.

At twelve seconds from exit the jumpers' parachutes blossomed in the sparkling mountain air.

"Sir, the jumpers are using the Paracommander, a type of maneuverable chute we use in meets," said Cadet Second Class (junior) James L. Hayhurst, who serves as official narrator when the Academy parachute team makes public jumps.

High above, but descending fast,

the five parachutists were in a rough line from north to south. "The first maneuver they'll make," Cadet Hayhurst went on, "will be a ninety-degree left turn, then they'll 'fly' west for exactly ten seconds."

As the parachute leader turned to a westerly heading, the others followed suit. Then, like a troop of magically levitated ballet dancers, the chutists pirouetted 180 degrees

to the right and "flew" east. The red smoke trails in the blue sky emphasized the accuracy of their movements.

"Now they'll form a stack and come in for precision landings," Cadet Hayhurst told a visitor. "Their target is that red, ten-centimeter disc in the center of the plowed circle." As the visitor watched, squinting in the clear bright sunlight, the jumpers assumed a step-like formation, with the lead jumper on the bottom step. Suddenly, it was touchdown—the lead jumper impacting not six inches from the tiny red disc. All five jumpers landed upright, their chutes collapsing above them.

This routine training jump demonstrated the kind of daring meticulousness that has led the Air Force Academy cadet parachute team to *five straight* National Intercollegiate Parachute Championships.

Despite this unprecedented success, competitive parachuting is only an offshoot of the Academy's voluntary jump training, which is offered by the Airmanship Division as one flight-oriented leadership option. If elected by a cadet, such training begins in the summer of the third-class (sophomore) year.

Usually each summer, about 500 cadets have signed up for the US Army's basic airborne course—the same given to its fledgling paratroopers—at Fort Benning, Ga. This training includes appropriate—and rugged—physical conditioning and ground school, followed by five static-line jumps from Air Force transports to qualify for the coveted paratrooper wings.

Though this basic course is prerequisite to making the Academy parachute team, many cadets opt to enroll only in Airmanship 490—Aircrew Emergency Parachuting—a free-fall course taught at the Academy.

"Four-ninety is our stock in trade," said Maj. Allan Homstead, Chief of the Academy Parachute Branch. "It is emergency parachute training of great practical value to Air Force aircrew members. It is designed to save lives."

An understatement, when one considers the hazards of punching out of a high-speed jet at altitude.

It is in this program that members of the Academy parachute

team earn their bread and butter, acting as instructors and jumpmasters. In fact, as in many other activities at the Academy, the cadets themselves run the entire program, supervised by active-duty officers and NCOs. On the average, some twenty cadets who have qualified as instructors or jumpmasters form the Academy parachute team. They all have been through the advanced course—through ground and aerial experience, delayed free falls, controlled free maneuvers, precision landings, and other competitive requirements. Most will spend up to 1,400 hours a year—including weekend and summer training time—teaching others the basics and improving their own jump performances.

Helping Major Homstead supervise the cadet-run parachuting pro-

gram are other dedicated men: Capt. Don Towner, MSgt. Morton Freedman, and MSgt. Chisley Bowden. "We do not emphasize competitive ability here," said Captain Towner, "because our prime mission is, was, and will be emergency aircrew parachuting. Cadet competitive ability, though, is a by-product of our year-round emergency free-fall training. This experience develops pride in their work, aggressiveness, and competitive skills. The progressive training makes them capable and responsible leaders with a desire to win."

Cadet Second Class Ken Pethe typifies the instructor/jumpmaster role at the Academy: "My greatest satisfaction comes from teach-

Academy parachute training officers include Maj. J. E. Walsh, left, pilot of the U-4B jump aircraft; Maj. Allan R. Homstead, officer-in-charge of the Parachute Branch; and Capt. D. A. Towner, assistant OIC for parachuting. While these men plan and direct the training program, it is run essentially by members of the cadet parachute team.



Cadet instructor Ken Pethe, right, shows a trainee the correct way to adjust and close the riser clips on his parachute harness. The cadet team of instructors works many hours training fellow cadets in parachuting procedures.

The author of this article, William D. Madsen, is an employee of the Office of Information at the US Air Force Academy, Colorado Springs, Colo. His previous contribution to AIR FORCE Magazine, "Shaping Up for the Academy," appeared in the November 1971 issue.

ing these green suiters," he said. "Watching them progress through this course, knowing that I had a small part in teaching them a skill that may save their lives some day, makes the effort worthwhile."

Looking back over other satisfactions in the parachute program, Cadet Pethe said, "Night jumps are exciting—a new experience. And water jumps in nearby Monument Lake. In place of regular regalia, we bailed out in shorts, tee shirts, and tennis shoes. We learned to release the chute immediately so as not to get caught under a wet canopy."

Regardless of the practical and professionally interesting aspects of participating in the Academy's parachuting program, the icing on the cake for the parachute team is competitive jumping.

"Frankly, service academy jumpers have an advantage over civilian university competitors," said Cadet Mike Smith, a first classman. "We work at parachuting practically every week during the year. Moreover, we have splendid equipment and facilities at our disposal without the personal expense incurred by civilian jumpers."

Also, the Academy's two U-4B jump planes are flown by experienced Air Force pilots, and classroom and ground training aids are located handily on the Academy airstrip. Easing the time bind are rated civilian parachute riggers who repack and repair chutes used in training. (The cadet parateam jumpmasters repack their own chutes.)

All this expertise, however, provides an offsetting factor in competitive jumping. The parateam cadets, because of their training, are denied entry in the novice category of intercollegiate competition and therefore must amass enough points in the advanced and intermediate levels to win.

In the recent 1972 national meet at Deland, Fla., Cadet First Class



Out of the Mock Door and along the cable in a simulated—but realistic—exit from an aircraft.

(senior) Richard "Skip" Sanders and Cadet Second Class (junior) Donald J. Hoffman finished tops on the nine-man team, to lead it to its fifth straight championship. (No other school has won more than two titles.)

Cadet Sanders placed second in the advanced overall category by taking second in style and ninth in accuracy.

Cadet Second Class Terence T. Henricks finished sixth in intermediate overall and Cadet Hayhurst nailed down ninth place.

Cadet Hayhurst also won the intermediate style event, while Cadet Henricks placed second.

"Intercollegiate meets feature three major events," Cadet Sanders explained. "They are individual and team accuracy, style, and relative work competition. Each college can enter a maximum of nine jumpers. Each event is divided into three divisions: Beginners—less than 100 jumps; Intermediate—100 to 300 jumps; and Advanced—more than 300 jumps."

In accuracy competition, the goal is to land on or as close as possible to a ten-centimeter disc. The jump altitude is 2,500 feet above ground level.



Members of the cadet parachute team make a demonstration jump at the Academy's annual Field Day.

In the team accuracy event, three or four jumpers exit the aircraft on the same pass. They come in on target at not more than ten to eleven seconds separation. Called a "team stack," they follow the leader in.

"Scoring is strictly on the point of impact," Cadet Sanders pointed out. "The approach to the landing is not scored, but how the approach is made is very important and is the key to accuracy landings."

"Style" is basically an individual free-fall event from 6,600 feet above



Used in training is this U-4B Aero Commander, one of two jump planes.

ground level. The jump starts with a ten- to twelve-second free fall, usually diving to pick up speed. The competitor is scored on a series of required maneuvers—turns and loops.

Cadet Walter S. Stine—despite all the free time he puts into the parachuting program as an instructor—is on the Superintendent's List for excellence in both academics and military training. As a matter of fact, eighteen of the twenty parateam members are either on the Dean's List or the Commandant's List for scholastic or military achievement.

"When I first watched through a telemeter and saw a cadet make a style jump, I thought *that's for me!*" Cadet Stine grinned. "Imagine, here's a guy making a free fall to a speed of about 140 knots. Then he tightens his body and, using his hands to maneuver, makes a 360-degree turn to the left, a 360 turn to the right, and a back somersault, followed by a second 360-degree turn to the left, a right 360, and a second somersault. All in the space of eight seconds!"

In addition to the Left Series of maneuvers described above, Stine pointed out that there is also a Right Series and a Cross Series.

"In the Cross Series," Stine explained, "the jumper makes a left 360-degree turn, a right 360, and a back loop followed by a *right* 360, a left 360, and a back somersault. You have to think fast, remember where you are, or you'll get all mixed up!"

Skip Sanders once attended a



meet in which he did a Left, Right, and Cross Series all during the same jump.

Halfway through the maneuvers, he forgot where he was, sailed all over the sky trying to regroup and do the thing right. The team awarded him an old wine bottle stuffed in a worn-out boot as the Flubber-Dubber of the Year.

From a spectator's point of view, the relative work (RW) event is a crowd pleaser. In this group activity, three or four jumpers usually exit the aircraft rapidly at 7,500 feet above ground level. The team has approximately thirty seconds to form a star by "flying" together to join hands.

The team must hold their star for a minimum of five seconds to qualify. Then they separate and form a team stack behind the leader and go in for accuracy landings at eight- to ten-second intervals.

The cadet parachutists are very matter-of-fact about their jumping experiences. Anything unusual ever happen? Nope. After a moment's thought they'll say "strictly routine." And they mean it.

One of those "routine" happenings took place recently at a meet in Issaquah, Wash. Cadet Mark McClellan, who has developed into a first-rate competitor through his work as a parachute instructor, put it in these words:

"Typical Washington state weather: solid high overcast, light rain, misty." McClellan reminisced, "Chuck Lakin, Mike Smith, and I were in a Cessna 180 climbing to altitude for our team jump in the relative work competition.

"As we approached the airfield—we could see the ground clearly—the pilot's windshield iced up. A half inch of ice formed on the wing strut."

In RW events, the three-man team must exit the aircraft as close together as possible. They all get out on the strut at the start, if possible.

"Mark crawled out first, and Chuck was next. Just as I got in the door, Mark's feet slipped off the icy wheel. Well, he hung there in the icy slipstream as we approached the jump point. Believe it

or not, our instruments began to ice over—the altimeter and sweep second hand clock we carry face up on our chest packs."

When the aircraft reached the proper point, McClellan nodded his head, bellowed, "Ready! Go!" and they dropped away to form the three-man star, then go in for accuracy landings.

"It was not a very good performance," McClellan laughed. "Then again, considering the circumstances, maybe it wasn't bad."

* * *

Recently, Maj. Allan Homstead posted a letter on the bulletin board in the parachute loft at the Academy airfield. A clipping beside it explained how Lt. James H. Issenmann, a June 1972 Academy graduate, and his pilot instructor were forced to bail out of their T-37 near Webb AFB, Tex.

The letter from Lt. Issenmann read:

Dear Major Homstead and the AM 490 crew—

I graduated from the Academy this past June and from your AM 490 course last spring—last jump was May 21. From the article you can see I've already put to use what I learned. . . .

I'd like to personally thank you and your crew for the training I received in AM 490—it undoubtedly helped save my life. Only a scratch and bruise from the whole thing!

We ejected at 9,000 feet and automatically deployed. I made my four-line release and pulled so hard on the red toggles I tore their housing completely. We steered away from the burning wreck below us, and I even managed to make a good PLF [parachute landing fall] and pop my J-1 releases—and walk away!

I want to place credit where credit is due—with the officers, sergeants, and cadet instructors of the AM 490 course who taught me emergency parachuting. Tell your students it is a lifesaving course, because it *can* happen to them—even on the third ride!

But whether bailout or practice jump, as the wag once said: "That first step is a big one!" ■

MIA/POW Action Report

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

Shriveled Hopes

In early November 1972, the outlook seemed extremely bright for a speedy end to the hostilities in Southeast Asia through a negotiated cease-fire.

Top Presidential adviser Henry Kissinger was more than optimistic. Following what appeared to be a successful series of talks in Paris with North Vietnamese representatives, he had proclaimed to the nation in late October that "peace was at hand." Only a few loose ends remained to be tied up before a treaty could be signed, Dr. Kissinger said.

The President's envoy described in some depth the essential elements of the prospective cease-fire agreement, including arrangements for the release of US prisoners held captive in North Vietnam and throughout Southeast Asia. Of particular cheer to the families of men missing in SEA was North Vietnam's acceptance of responsibility for ac-

countability of the MIAs, an issue considered vital by the League of Families and one the League had devoted major resources in time, energy, and money to publicize.

Such was the assurance of governmental officials that the signing of a treaty was imminent that the skepticism of MIA/POW families, forged by the dashed hopes of previous years, began to wane. Not at any time since the beginning of the US's participation in the war, with the loss of the first Americans captured and missing, had there been such a surge of hope by their relatives at home. With the POWs seemingly soon to be released, details of the overall plan for their repatriation and rehabilitation—a program called Egress Recap—were made public. It was believed that some of the men might even be home by Christmas.

Then the situation simply fell apart.

The cease-fire discussions broke off completely and intensive bomb-

ing of military targets north of the 20th parallel began again in earnest. For the first time in the conflict, a substantial number of B-52s, plus a goodly number of other aircraft, were lost to enemy anti-aircraft defenses in North Vietnam (see pp. 4 and 14). As in other times, Hanoi soon began to release a stream of photos showing newly downed American aircrewmembers.

The reaction of the League of Families to the tragic breakdown in negotiations was poignant and, considering the circumstances, restrained:

"Along with millions of other US citizens, the families of Americans who are missing and held captive in Southeast Asia had harbored desperate hopes that a peace treaty could be signed before Christmas. And that at least some of our men—particularly the sick and injured, and those men held long years—would be quickly reunited with their families. We had expected that all other



—Wide World Photos

Nippon Denpa News of Tokyo, Japan, released this photo showing soldiers and newsmen inspecting wreckage said to be that of a US B-52 strategic bomber that was shot down in Vinh Phu province northwest of Hanoi during the stepped-up bombing campaign against North Vietnam in December.



—Wide World Photos

An AP wirephoto by radio from Hanoi shows American prisoners of war at a press conference in Hanoi, reportedly deploring the US saturation bombing of North Vietnam. The prisoner at the mike being "interviewed" is identified as Lt. Col. John H. Yuill.

prisoners might be home by March and that intensive identification and accounting of the missing would be taking place in the interim.

"Now we know that we must face another Christmas with no immediate peace in sight. It is a bitter prospect, and the disappointments and frustrations are severe.

"We trust that our country's spokesmen will refrain in the future from raising the hopes of the nation until a peace treaty has been firmly agreed upon."

With the coming of the new year, the bombing campaign in the North was terminated and negotiation efforts once more were resumed, with no one knowing at which point a conclusion might be reached. And the families of Americans missing or captive in Southeast Asia returned to a state many had long since become accustomed to: waiting.

On Behalf of MIA/POWs

With the attitude prevalent that at *some* point the POWs will be coming home, Pentagon officials continue to thrash out the details to assure their smooth reentry.

In a recent letter to AFA President Martin M. Ostrow, Lt. Gen. Robert J. Dixon, Deputy Chief of Staff, Personnel, asked AFA's help in a related project:

"In reviewing our detailed preparations for providing individualized career readjustment for each of our returning prisoners of war, I see an area in which the Air Force Association may wish to take a hand. I am referring to a continuing need to show personal interest and concern for those who, for whatever reasons, may wish to return to civilian life.

"Our preparations are well in hand for the men who will wish to stay in the Air Force. The Department of Defense has energized other governmental agencies and the private sector to provide responsive job placement and counseling services for the men who opt for civilian life. We will also support this group through our Project Transition offices at the many Air Force bases.

"The link I thought you might like to help forge is that of continuing personal attention through the local AFA Chapters. Here I am thinking of local introduc-



The Volunteers for POW/MIA in Dayton, Ohio, purchased one of many trees, each representing a different country, which were displayed at the city's downtown "One World of Christmas" mall. The Volunteers chose this American tree to honor the prisoners and missing in SEA and to remind the people of Dayton that, as they prepared for the holiday season, these men must not be forgotten.

tions, contacts, or local advice, particularly in locations somewhat distant from military installations. I would anticipate that we would have very few returnees who would be leaving the Air Force.

"I have a feeling that the Association members would welcome an opportunity to help our separating returnees transition back into civilian life. If you agree, perhaps you could advise the local Chapters of this opportunity and provide the Air Force Military Personnel Center a copy of your Chapter listing and the name of a contact at each. We would then advise the separating returnee of a Chapter in his selected area of residence and allow him to take it from there. We could also provide to AFA names of these individuals, together with their area of residence, and the local Chapter could then offer its assistance if contacted by the returnee."

In his reply, Mr. Ostrow assured General Dixon full cooperation in the suggested project: "We are taking immediate action to advise our Chapters of [the AFA-wide program]," he informed the General, "and we are providing a listing of our Chapters, together with the names and addresses of Chapter Presidents, to your Personnel Center at Randolph [AFB, Tex]."

"At the same time, we do respectfully ask that, prior to release from active duty of any of these men, we be notified of the individual's name and the location in which he intends to reside. The reason for this is that, while we have some 275 Chapters through-

out the nation, there are a number of areas in which we do not have Chapters, but areas in which we do have outstanding AFA members whom we can count on to participate. Also, and even in areas where we do have Chapters, we might wish to select a specific individual to be the contact for a given former POW. . . ."

* * *

The IRS has ruled that the military pay of servicemen listed MIA or POW in SEA "remains exempt from federal income tax even where the serviceman is later found to be dead during this time." IRS said it has no intention of collecting back taxes on the serviceman's compensation that has been received by his wife or other relatives.

* * *

Beginning in December, Radio of Free Asia, which since August 1970 has been beaming broadcasts to North Vietnam exclusively on the MIA/POW issue, has revamped its format to concentrate on the MIA problem. Each program now elicits information about a missing serviceman or civilian in Indochina, with one entire program devoted to a single individual for greater impact. The December and January programs concerned four Air America crewmen and three missionaries from the Christian and Missionary Alliance in New York City. Those who are interested in having Radio of Free Asia request information about an MIA should write for a broadcast request data form to: Radio of Free Asia, MIA Broadcast Operations, 905 LaSalle Building N. W., Washington, D. C. 20036. ■

The Bulletin Board

By Maj. Robert W. Hunter, USAF

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

Retirees in Civil Service

Criticism that the federal bureaucracy lets military retirees grab off soft jobs is unfounded, according to a study by the Subcommittee on Manpower and Civil Service, House Committee on Post Office and Civil Service. The study covered most of the agencies in the executive branch of the government.

Only 3.9 percent of the *total* federal work force is military retirees. While most of them are in the Department of Defense, retirees make up only 5.7 percent of DoD's work force. Further, criticism that retired officers find plush jobs was proved invalid. Enlisted retirees outnumber officers by more than three to one, and fewer than five percent of retirees employed in federal civil service are retired regular officers.

Of the retired officers working for the federal government, sixty-four percent retired as majors or lieutenant colonels. Only thirty-six in full-time permanent positions were identified as retired regular general or flag-rank officers.

About fifty-seven percent of all retirees are in GS jobs, with the rest in wage system jobs. While military retirees make up three percent of the total GS employee population, they hold only two percent of the supergrade jobs. About half the retirees earn less than \$10,000 per year, and only nine percent earn more than \$18,000 per year, compared to thirteen percent for all employees of all agencies. Ninety-four percent of military retirees are in *competitive* civil service positions.

Military Justice Study

On April 5, 1972, then-Secretary of Defense Melvin R. Laird asked a group of distinguished Americans representing both civilian and military segments of our society to take a hard look at the administration of justice in the armed forces. He

asked that they provide a clear assessment of its impact upon racially identifiable minorities.

The group, as spelled out in their charter, began with the requirement that the nature and extent of discrimination be determined. Second, they were asked to get the hard facts about an individual's circumstances prior to entry into service and during service to see if a clear picture of the forces involved in existing inequalities or disparities emerged. Third, they were to look at the full range of patterns and practices in the military system that may be having a negative effect on discipline, respect for law, and fair administration of justice.

The group, cochaired by Nathaniel Jones, General Counsel of the NAACP, and Lt. Gen. C. E. Hutchin, Jr., First Army Commander, has recently released the results of its study, totaling two volumes and comprising more than 100 recommendations, some requiring legislation and some that have already been set in motion by Secretary Laird's memorandum to the Service Secretaries on September 7, 1972.

The group, known as the Task Force on the Administration of Military Justice in the Armed Forces, found that racial discrimination in the military system is "not specifically a Negro, Mexican-American, Puerto Rican, or white problem. Rather it is also a problem of a racist society. Minority and majority preservice racial and ethnic attitudes are enormously important factors. Fear, mistrust, and suspicion influence the fair administration of military justice and do contribute to racial animosity and tension."

Other preservice factors identified by the Task Force include educational, economic, and language disadvantages, as well as coerced induction in lieu of a civilian jail term.

Military environment factors in-

clude: unfairness in testing, assignment, and promotion practices, minority officer shortage, insufficient funding and support for DoD equal-opportunity and human-relations programs, unfairness, and the *perception* of unfairness concerning military justice.

Other practices that adversely influence military minority attitudes include: off-base housing and recreation segregation, overregulation of individual personal appearance and group expression, policies that unnecessarily limit communication to the English language, and peer group pressure resulting in social polarization and "reverse discrimination."

The Task Force saw that the *perception* of unfairness is as corrosive on the attitudes of servicemen toward the military justice system as is *actual* unfairness.

Recommendations cover such areas as: nonjudicial punishment, the summary court-martial, correctional facilities, increased stature of counsel and judicial functions, selection of court members, shortages of judge advocate personnel, court-martial reviews, Article 134, UCMJ, military justice training, regulation of personal appearance, worship and self-expression, status of forces agreements, Americans of Spanish descent in the armed forces, and administrative discharges.

Project Volunteer Package

Travel entitlements for sergeants with more than two years of service are included in a record-breaking USAF Project Volunteer package that will be presented to Congress this year. The package would cost more than \$56 million in FY 1974.

Officials say that, for the first time, the money cannot be diverted to any area outside the volunteer programs. In the past, some money has been diverted.

The travel entitlements would eat up some \$27 million of the total,

but officials expect sizable money from the FY '73 programs that were scheduled to be repeated during FY '74.

Other provisions would include education and training benefits and Reserve Forces recruiting. USAF also wants more money for tuition assistance, the Community College of the Air Force, renovation of education centers and classrooms, and the start of a new minority airmen commissioning program.

That commissioning program will identify minority airmen with officer potential (preferably those with some college) and offer them a chance to finish their schooling and apply for officer training. USAF wants 240 such airmen in FY '74.

Money under Air Force recruiting goals would be used to increase advertising to attract minorities, medical doctors, and dentists. Also, the old AFQT (Armed Forces Qualification Test) and the AQE (Airmen Qualification Evaluation Test) will be replaced by a new Armed Services Vocational Aptitude Battery. It will be offered to volunteer high school students.

Resignation Policy Toughened

Once an officer's date of separation (DOS) has been approved, getting it withdrawn will be considerably more difficult than in the past, according to Military Personnel Center (MPC) officials. It's all contained in an emergency change to AFR 36-12.

Continued officer strength reductions have brought about the new standard. From now on, DOS withdrawal requests will depend on the Air Force's need for the particular individual. So MPC's advice is, "Look before you leap."

Military Pay System

The Joint Uniform Military Pay System (JUMPS) was recently started with the transfer of the military pay records from Clark AB, Philippines, and Bergstrom AFB, Tex., to the computerized file at the Air Force Accounting and Finance Center (AFAFC) in Denver, Colo.

All remaining Air Force members will convert to JUMPS beginning in May 1973, with completion of the changeover scheduled for December 1, 1973.

The major benefit of JUMPS is

more effective management for the \$7 billion military-pay appropriation. It also increases the efficiency of the Checks to Bank (CTB) program. Under this program, a member can have his paycheck sent to his bank. With JUMPS, if, for example, 100 members have their checks sent to a single bank, instead of sending 100 individual checks, AFAFC sends one check and a listing of deposits by Social Security number, account number, and name. Postage is saved as well as a long list of supply, management, and personnel costs.

Many members are already receiving monthly leave and earning statements (LES). Under JUMPS, everybody will get a more detailed LES. For example, all allotments will be shown, in addition to complete information on all entitlements, deductions, and other transactions for the given month. The LES is of prime importance to each member and should be taken to the appropriate accounting and finance office if there are any inquiries.

GM Supports Reserve Forces

General Motors Corp. became the first company in the nation to sign a "Statement of Support" to improve relations between an employer and members of the Guard and Reserve.

In its statement, the company agreed that: "Our employees' job and career opportunities will not be limited or reduced because of their service in the Guard or Reserve; our employees will be granted leaves of absence for military training in the Guard or Reserve without sacrifice of vacation time; and, this agreement and the resultant company policies will be made known throughout the organization and announced in company publications and through other existing means of communication."

The Statement of Support is the first of many steps the National Committee for Employer Support of the Guard and Reserve plans to take to improve relations between members of the Reserve components and their employers, who often

HOPE FADES FOR RECOMPUTATION

At press time, the Special Subcommittee on Retired Pay Revisions of the House Committee on Armed Services, chaired by Samuel S. Stratton (D-N.Y.), had just released its report on recomputation.

The report, unanimously approved by the subcommittee members, now goes to the Committee Chairman, F. Edward Hébert (D-La.).

It is an unconditional recommendation against recomputation of retired pay, and, since Representative Hébert has earlier gone on record as not favoring recomputation (see *AIR FORCE Magazine*, April '72, p. 63), passage of such legislation does not seem probable at this time.

Nonetheless, AFA, as mandated by the delegates in its National Convention, will continue to press for consideration on this issue. AFA's original presentation to the subcommittee was a strong endorsement of the principle of recomputation, and this remains AFA's goal with the 93d Congress.

Some of the rationale contained in the report and spelling possible doom for recomputation include the following:

- The tremendous cost of recomputation could result in a reduction of funding available for supporting active-duty personnel. It could also result in the reduction of greatly needed defense programs and other programs in the government. The alternative would be an increase in taxes.

- The cost of the military retirement system is rising rapidly. By 1975, there will be more than 1,000,000 retirees on the rolls, and the annual cost will exceed \$5 billion.

- Full recomputation for everyone in the service on a continuing basis would cost an additional \$1.16 billion the first year and \$170 billion cumulative through the year 2000.

- Nothing short of full recomputation for all those with pre-1958 service would satisfy the proponents of recomputation. Therefore, passing the Administration's compromise "one-shot" bill would not really solve anything, and Congress would be subject to the same recomputation pressures in the future.

For more on recomputation, see *AIR FORCE Magazine*, "The Bulletin Board," December '72, p. 121. (Readers who are interested in studying the complete report may order HASC No. 92-80, December 29, 1972, from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402. The price is 40¢.)

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make it difficult for Guardsmen and Reservists to maintain two careers. (For more on the committee, its work, and Reserve Forces, see AIR FORCE Magazine, November '72, pp. 82-86, and January '73, pp. 54-59.)

Community College Accepted

The General Assembly of the Commission on Occupational Institutions of the Southern Association of Colleges and Schools has announced that the Community College of the Air Force has been accepted for affiliation with the Southern Association.

It also announced that the General Assembly has voted accreditation for a five-year period for the schools of Applied Aerospace Science at Keesler AFB, Miss., Lackland AFB, Tex., and Sheppard AFB, Tex.

Also accredited was the School of Health Care Science at Sheppard AFB and the USAF Security Service School at Goodfellow AFB, Tex.

Computer Testing

Computerized selection tests have become part of pilot training school screening.

The tests, called the perceptual psychomotor test battery, are a series of eye, hand, and foot coordi-

nation exercises. The concept was used to test World War II pilot candidates, but was dropped because it did not significantly indicate future performance.

What makes this test any better? It's using a computer to administer and score the test for one thing; that alone is expected to reduce the margin of error of the WW II tests. Secondly, it's making better use of applied psychology; the testing area is environmentally controlled for optimum lighting, sound, and even color.

New Ph.D. Program?

A recent meeting at SAC headquarters may eventually make it easier for military people to earn a doctorate.

Officials of twelve universities met to discuss a proposal made by Dr. Henry Albers of the University of Nebraska. Proposed was the formation of the Dwight D. Eisenhower Institute, conceived as a coordinating center for cooperating universities to facilitate doctoral programs for military members.

Attending were representatives of: American University, University of Arkansas, George Washington University, Golden Gate University, University of Hawaii, Southern Illinois University, University of Nebraska, University of North Dakota, University of Oklahoma, University of Southern California (Los Angeles), Troy State University, and the University of Utah. These institutions will study ways to solve residency requirements and transfer credits.

Evaluating Reenlistments

To give each MAJCOM a more sophisticated measurement of their TOPCAP effectiveness, USAF personnel people are testing a new figure—the reenlistment effectiveness rate (RER).

Unlike the standard reenlistment percentage that simply measures the ratio of reenlistments to eligibles, RER figures will not include those who hold surplus AFSCs.

Commands have been told to concentrate re-up efforts on those holding needed specialties. Airmen in forty-five surplus specialties are being encouraged to retrain.

The TOPCAP personnel management plan calls for a certain number of airmen in each AFSC to enter the career force (the fifth year of service) each fiscal year, and commands have been warned not to maximize their reenlistment rate at the expense of the RER. The Military Personnel Center will give the commands the reenlistment requirements by AFSC and will forward monthly RER data.

Senior Staff Changes

B/G Richard G. Cross, Jr., from Chief, Air Ops Div., MACV, Saigon, Vietnam, to Dep. Dir., Plans for Force Development, DCS/P&O, Hq. USAF, replacing B/G William B. Yancey, Jr. . . . M/G Walter T. Galligan, from Cmdt. of Cadets, USAF Academy, Colo., to Cmdr., USAF Security Service, San Antonio, Tex., replacing retiring M/G Carl W. Stapleton . . . B/G Hubert O. Johnson, Jr., from DCS/Civil Engineering, Hq. AFLC, Wright-Patterson AFB, Ohio, to Dir. of Facilities Management, OASD (I&L), Washington, D. C., replacing retiring B/G William T. Meredith . . . B/G Lyle E. Mann, from Asst. DCS/Intelligence, to DCS/Intelligence, Hq. PACAF, Hickam AFB, Hawaii . . . B/G William B. Yancey, Jr., from Dep. Dir., Plans for Force Development, DCS/P&O, Hq. USAF, to Chief, Objectives Plans & Military Assistance Div., J-5, Jt. Staff, OJCS.

RETIREMENTS: Gen. David A. Burchinal; B/G Benjamin B. Cassidy, Jr.; B/G Ralph J. Hallenbeck; L/G John B. McPherson; B/G William T. Meredith; M/G Ernest A. Pinson; M/G Carl W. Stapleton. ■

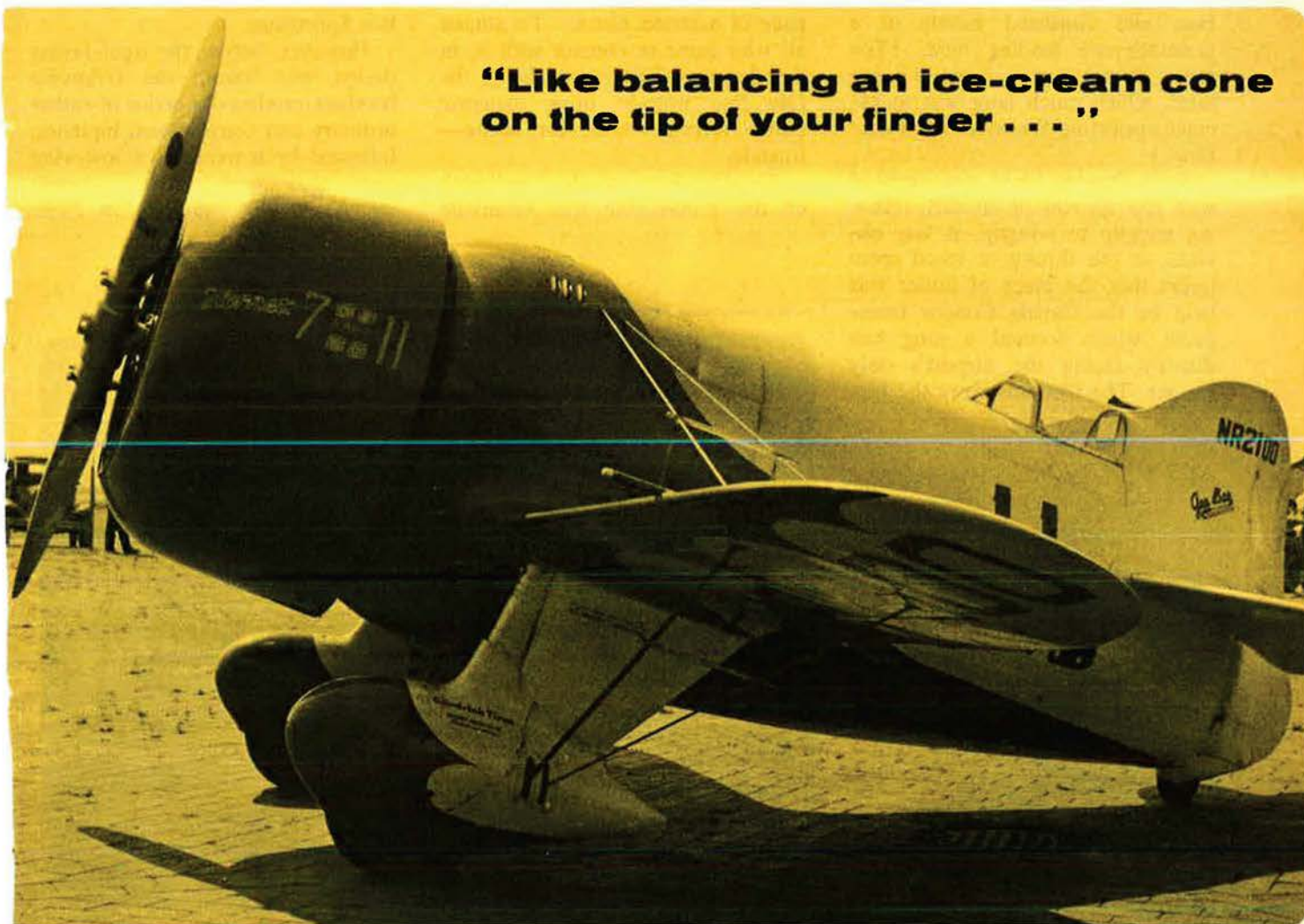
AFA's Board Chairman, Joe L. Shosid, of Fort Worth, Tex. (right), pins the stars of a brigadier general on Astronaut Tom Stafford, in a recent ceremony at the Manned Spacecraft Center, Houston, Tex. At age forty-two, Stafford, veteran of three space missions, becomes the youngest flag officer in the armed forces. He is now Deputy Director of Flight Crew Operations at the Spacecraft Center.



The author, Col. L. Fletcher Prouty, presently the Manager, Government and Military Marketing, for Amtrak, the National Railroad Passenger Corp., retired from the Air Force in 1963. He has lived in the Washington, D. C., area since 1954 and for eight years after retirement was in the banking business. From 1955 through 1963 he served with Hq. USAF, the Office

of the JCS, and the Office of the Secretary of Defense under Mr. Gates and Mr. McNamara. He was a pilot and saw service in both the European and Pacific theaters during World War II, in the Korean War, and in the early days of Vietnam. His first book, *The Secret Team*, will be published by Prentice-Hall this April.

—Martin and Kelman



“Like balancing an ice-cream cone on the tip of your finger . . .”

The ultimate in Granville-built racers was the Gee Bee R-1.

IT WAS AN AGE WHEN AVIATION WAS IN ITS ADOLESCENCE. IT WAS A TIME WHEN HOT-SHOT PILOTS TESTED THEMSELVES AND THEIR MACHINES—WITH OFTEN FATAL RESULTS—AGAINST THE LITTLE UNDERSTOOD BUT UNCOMPROMISING LAWS OF FLIGHT. HERE IS RECOUNTED THE TRUE TALE OF A BAND OF BROTHERS, THE DAREDEVIL MEN WHO FLEW FOR THEM, THE SENSATIONAL AIRPLANE THEY BUILT, THE CLIMAX BEGAN THAT DAY IN SPRINGFIELD, MASS., WITH THE JOINING OF TWO CHAMPIONS . . .

JIMMY DOOLITTLE AND THE GEE BEE

By Col. L. Fletcher Prouty, USAF (Ret.)

THE YEAR 1930 was a wondrous time for a small boy growing up in Springfield, Mass. Especially for one thrilled by the sight of an airplane, as I was.

That was the year that the US

Army decided on a public demonstration of its aerial might, and into New England over the Berkshire Hills of western Massachusetts flew hundreds of military aircraft of the latest types.

From the ground, the sky seemed crowded with airplanes, as the winged armada circled slowly over the Connecticut River Valley, while element after element landed at Bowles Airport, near Springfield.

At the time, Bowles was one of the largest airports in the Northeast, and consisted mostly of a grass-covered landing field. (Ten miles distant was a huge tobacco farm, which much later was to become sprawling Westover Air Force Base.)

Soon Bowles Field was jammed with row on row of aircraft, standing wingtip to wingtip. It was obvious to the throng of awed spectators that the place of honor was held by the Curtiss Condor transports, which formed a long line directly facing the airport's only hangar. The Condors were the big-

hind was the insignificant little "Sportster," its wheels hidden in the airfield's tall grass.

But as the vaunted Curtiss Condor then flew into aeronautical obscurity, the tiny Gee Bee—as the civilian airplane was called—went on to earn its niche in the explosive pace of aviation history. To almost all who came in contact with it, in that heyday of daredevil flying, the Gee Bee was to bring meteoric fame, fortune, and—for some—tragedy.

The Gee Bee was the handiwork of the remarkable five Granville

city dump, and scaring up some much needed financial backing, the Granvilles were soon in the airplane production business—by hand, that is.

The tiny airplane parked at Bowles Field was the first in what was to be a marvelous line of Gee Bee Sportsters.

However, before the right racing design was found, the Granville brothers produced a series of rather ordinary and conventional biplanes, followed by a number of low-wing production models. But aircraft weren't selling too well in those

—The Smithsonian Institution



The Granvilles' earlier Gee Bee "Y" version, powered by a Pratt & Whitney 420-hp Wasp engine, could hit speeds of 200 mph.



Russ Boardman met his death racing a Gee Bee at Indianapolis.

gest aircraft of their day, queens of the aerial fleet.

At one point during the grand display of all this impressive airpower, a tiny single-engine civilian aircraft taxied up to a Condor, and the ground crew maneuvered it under the transport's belly, where it looked no larger than a big egg about to be hatched.

Advent of the Gee Bee

Several days later the air fleet departed, and the thunder it generated faded from the skies. Left be-

brothers, who, like so many others all across the country caught up in the excitement of aviation, were building their own airplanes.

The brothers, sparked by the genius and zeal of the eldest, Zantford, had migrated from their family farm in New Hampshire to Boston and thence to Springfield, to be near the Pratt & Whitney Co. in East Hartford, Conn., where great strides were being made in engine development.

Setting up shop in an abandoned dance hall at the edge of a small airfield on Liberty Street, near the

early days of boom and bust, and the Granvilles decided to put some zing into aviation and their lives by building a revolutionary racer that would win them the elusive fame and fortune they sought.

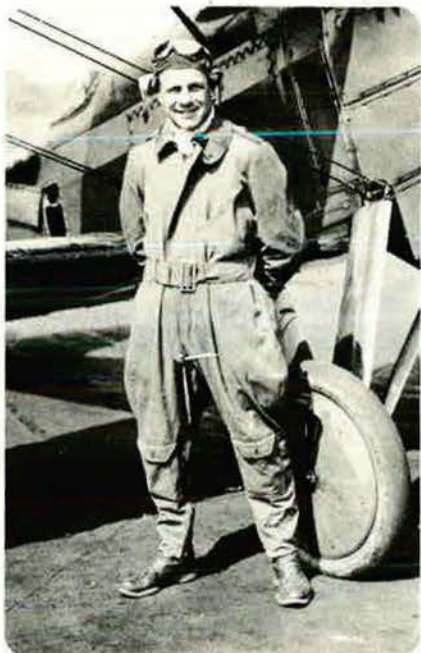
Their early model Sportster was a good racer, and the diminutive but aggressive pilot they hired to fly it—Lowell Bayles—made a commendable showing in the All-America Flying Derby, winning second place. He raced his ship at an average speed of 116 mph behind its little 110-hp Cirrus engine.

But Bayles, the chocolate-bar-

chomping, jockey-sized pilot, was voracious for an aircraft with more power, more speed. And the Granvilles said "can do."

The brothers obtained one of the new Wasp radial engines built by Pratt & Whitney, and the fiercely enthusiastic Springfield Air Racing Association (headed by an ice-cream tycoon named Tait) promised the financial backing they needed to put everything together.

To call it an ambitious undertaking would be an understatement, indeed: A few men with little more than hand tools attempting to build



Doolittle—a young pilot at the outset of an action-packed career.

what was intended as the world's fastest landplane. And to further complicate things, the big new Wasp would require an airframe of totally new design and concept. The resulting airplane would be unique, incorporating the revolutionary "teardrop" streamline design.

Now there are those who claim that Gee Bee stood for Granville Brothers, and others who say the Gee was for Granville and the Bee for Boardman, an early financial supporter and speed pilot who was later to meet death in a Gee Bee model at Indianapolis. But those of

us whose fascination it was to spend countless hours at the Granville workshop knew that the planes were named for the indelibly linked pioneers Granville and Bayles.

While the brothers worked on the plane, Bayles was everywhere, checking each detail. He never took time off for a square meal; as far as anyone knew, he was sustained wholly on chocolate bars.

It was a big day in July 1931 when the souped-up Pratt & Whitney Wasp 535-hp radial arrived from East Hartford. The big packing crate was placed in the middle of the floor under the chain hoist. They knocked the top and sides off, and there it sat, "ready for a saddle," as Bayles put it.

I never saw that engine in any other part of the shop until it was raised into position by a chain hoist to have the airframe shoe-horned around it. And that was exactly what happened; they built and faired the fuselage on to it. The result was the streamlined, stub-nosed, bottle-shaped Gee Bee.

Triumph at Cleveland

With Bayles at the controls, that "Super Sportster" Model Z won the Goodyear Trophy at 206.001 mph, and the prized Thompson Trophy at 236.239 mph. Bayles then followed those spectacular triumphs at Cleveland with a straightaway speed dash at 267.342 mph in the special championship Shell Oil race—the fastest speed of the entire meet.

After this performance, Lowell Bayles, the Granvilles, and their red-hot Gee Bee were on top of the aviation world. But they wanted one more prize—the coveted World Landplane Speed Record. And they believed that their Model Z could get it for them.

Back in the hangar workshop, a new, even bigger Wasp, the 1,340-cubic-inch displacement, 750-hp radial, was skillfully fitted into the blunt nose of the now-famous Model Z. By December, the team was again back in Cleveland to shoot for the world record. This required, according to the strict international association rules, four passes, two in each direction, at low level over a measured one-mile

course—all to be performed in one flight.

On one pass, Bayles recorded an incredible 314 mph. But on another, when perfection was vitally needed, a timing device failed.

Then on December 5, 1931, luck ran out altogether. The official explanation is that a gas cap came loose, shot through the thin isinglass canopy, and hit Bayles on the head. The Gee Bee then spun crazily out of control at high speed to one of the most spectacular crashes ever filmed. Perhaps more people have seen the film of that crash than any other, because it later was used by many Hollywood producers in aviation movies of the day.

Despite that account, there were many who believed that the Gee Bee itself had been the killer. Look closely at the design of the Model Z and you will note that the vertical tail fin was exceptionally small. In those days when the plane was built without such advanced engineering design benefits as wind-tunnel testing and other now-standard practices, it was entirely possible that the Gee Bee possessed unwitting faults. The now-famous film of the crash appears to bear this out. Bayles's plane, at very high speed and full power, went out of control, began to rotate around its own lateral axis, and crashed straight ahead, corkscrewing through the air at low altitude as it did so.

The loss of the Model Z and of Lowell Bayles was tragic, but racing was popular, the Springfield Aircraft Racing Association had made money, and the Granvilles were always ready to try newer and bigger engines straight from the Pratt & Whitney shops in East Hartford. In 1932, they built two Super Sportsters. Then, just before race time, Russell Boardman, a financial backer and the new Gee Bee pilot, was seriously injured in the crash of another Gee Bee Sportster.

This put such a damper on the reputation of the Super Sportster that few others volunteered to fly it. For a few hectic and frantic days, Ed Granville, only a fledgling pilot, had about decided as a wild last resort that he was going to fly the monster.

Race week at Cleveland was but a few days away, and the Super R-1, back at the old city dump in Springfield, had been off the ground for a brief spell only once. Russell Boardman, a big investor in the Springfield Air Racing Association, had flown the plane on August 13, 1932, but aborted the flight when conditions proved too dangerous. It was agreed that the stubby vertical stabilizer was too small.

Meanwhile, a famed stunt flyer and racing pilot named Jimmy Doolittle was busy testing a Laird "Super Solution," with the objective of beating everyone at Cleveland, including the Gee Bee and whomever the Granvilles might put on the line. Doolittle, a major in the Army Air Corps Reserve, had taken off his uniform in 1930 to be-

labeled and raised slightly higher than the original, under a critical last-minute design change.

fuselage had been painted a pair of dice, turned up to "seven," each die flanking a huge number eleven. This was the one to beat, the new 800-horsepower, Super Sportster, the "Seven Eleven" . . . the ultimate Gee Bee Model R-1—the pride of the Granvilles.

With the announcement that Jimmy Doolittle had agreed to fly the plane and that he would arrive in Springfield at any time, my brother and I rode the trolley out the Liberty Street line early each morning. We meant to be on hand to see that new Gee Bee take off, as

labeled and raised slightly higher than the original, under a critical last-minute design change.

Finally, Doolittle came to a decision. He would fly the aircraft to Cleveland, even though it had never been test-flown with its new vertical stabilizer.

We pushed that tiny plane out of the hangar into the hot August sunlight. Outside, that little package of power looked like a toy. It was very small, very compact, and very unconventional.

There had been little flying activity on the airfield that summer, during the depths of the Depression, and the grass was long and billowing in the early afternoon breeze. Doolittle talked things over with the Granvilles. Then one of them took out a screwdriver and

—The Smithsonian Institution

—The Smithsonian Institution



In this Gee Bee Model Z, Lowell Bayles won the 1931 Thompson Trophy. Devoted to the Granvilles and their aircraft, he was later killed in a spectacular crash during the Cleveland races.



The Gee Bee Model X was the first of the Granville racers, powered by a 110-hp Cirrus engine.

come manager of the Aviation Department of Shell Petroleum Products Corp.

As fate would have it, Doolittle cracked up the Laird. He emerged unhurt but with no time to rebuild his ship.

The Granvilles, capitalizing on the event and sensing a "super solution" of their own, wired Doolittle and offered him the R-1.

It was only days before the races. The R-1 had been lashed down for engine tests, which proved it a fire-breathing demon and ready to go. On the side of the red and white

we had seen so many other Gee Bees do before.

At the field was the grizzled old barnstorming pilot of Curtiss Jenny days, Harry Herman, one-time National Stunt Flying Champion—along with his partner, Charlie Antaya. All of the old Bayles and Granville crowd were there. Finally, Doolittle arrived. He said little to any of the racing buffs crowding around the small hangar.

Instead, he marched right over to the gleaming red-and-white plane and studied it inch by inch. The vertical tail surface had been en-

opened the tiny hatch. The cockpit was incredibly small, designed originally for Bayles. It could scarcely accommodate the stocky Doolittle. It was set so far back to counterbalance the weight of the oversized new radial engine that it formed the unusually thick leading edge of the vertical stabilizer. The pilot actually sat in the empennage. Visibility forward to the ground was virtually nil.

Several of us pushed the Gee Bee all the way across a half mile of hot, dusty hayfield. Then Doolittle, before climbing into the cockpit,

took one last turn around the plane. Sitting there, it looked impossibly out of place. It was only eighteen feet from propeller to rudder, and sixteen feet from wingtip to wingtip. The whole plane was scarcely larger than a nacelle for a modern engine of the jet age.

A Cloud of Buttercups and Daisies

Without another word, Doolittle climbed in, and the hatch was closed and fastened securely from the outside, with no way to open it from within. He started the engine



and let it roar. Pebbles and grass flew everywhere. Only the heavy chocks kept the plane from rolling. Then, by prearrangement and to give it one final all-out test, we held the wingtips while he revved the 800-hp engine to full power.

Finally satisfied with it, Doolittle throttled back and gave us the signal to let go. He gained speed across the field and waited for the feel of the rudder so that he could give it full throttle. The Gee Bee cut a swath through the hayfield, throwing buttercups and daisies up in a cloud.

In no time, the plane seemed just a toy buzzing across the field. The tail never lifted more than a few inches. The field was level across

to the dump end, where it fell away abruptly, like a carrier deck. Straight ahead the terrain descended for two or three miles to the Connecticut River.

From where we stood at the far side of the field, the speeding plane disappeared. It was lost completely. We were silent. We listened for the engine and half expected to see a flash followed by the billowing smoke of a crash. Then someone shouted, "There he is!"

Far away across the valley to the west, we saw a small speck, almost on the horizon, disappearing over the Berkshire Hills. Doolittle never even circled the field. He scarcely even gained altitude as he buzzed over the houses and offices of the city. But at least we knew then that he was in the air. While the excited people of Springfield were settling back in their chairs, wondering what had created the overhead roar, he put miles behind him. All he wanted was to get that plane to Cleveland in one piece, in the least time, and by the most direct route.

The rest is history. That one flight was enough to convince Doolittle that the R-1 could not be trusted. She could fly—and fly fast in the hands of a skilled pilot—but as he said later, "It was like balancing an ice-cream cone on the tip of your finger." That Gee Bee needed constant watching and firm handling.

That night, Doolittle sat up figuring out precisely the angle of bank required to take him around the Thompson's perilous pylons in the equivalent of one long 100-mile continuous turn. He knew that he would have to fly much further than the others, who would be cutting the pylons tightly, diving into each turn, and pulling sharply inward and up, getting set to dive at the next turn in the race. He would have to fly outside of them. He was confident that he had the speed to overtake them as the race wore on if he could just master the monster and fight it through that long turn.

Doolittle won the Thompson Trophy in the Gee Bee R-1, flying against the best pilots in the world at a speed of 252.686 mph based upon his elapsed time over the Thompson's 100-mile triangular

course. Then he thrilled the crowd at Cleveland by flying the Gee Bee to a new world landplane speed record of 294.38 miles an hour on September 5.

Two days later, with the Thompson Trophy and the world landplane speed record in hand, a great clamor went up for Doolittle to fly the Gee Bee once more to top 300 mph. Special bonus prize money was offered to lure him back into the air. Instead, Jimmy Doolittle announced his retirement from aircraft racing: "I have yet to hear of the first case of anyone engaged in this work dying of old age."

It was this combination of skill, courage, and judgment that would make Jimmy Doolittle one of the great air leaders of World War II. Only eight years after his triumph at the 1932 Cleveland Air Races, Doolittle was recalled to active duty and became the leader of the historic B-25 strike on Tokyo from the carrier *Hornet*, in April 1942. Later he became Commanding General of the Fifteenth Air Force in Italy, and then the Eighth Air Force in England.

These boyhood memories of Jimmy Doolittle and the Gee Bee came back to me one day in 1943, on the ramp at El Aouina Airfield near Tunis. I had just parked my VIP Lockheed Lodestar next to a B-17 as it cut engines after a bombing mission over northern Italy.

As a trim, leather-jacketed man swung down from the B-17, my VIP passenger, Brig. Gen. C. R. Smith (later to become better known as President of American Airlines and Secretary of Commerce), immediately recognized an old friend. With a twinkle in his eye, the B-17 commander told "C. R." that the flak had been so thick that "we could have put our gear down and taxied on it."

It was Jimmy Doolittle, still in the thick of the action a decade after he became part of the legend of the Granville brothers and the perilous quest for a world speed record, which perhaps no other living man could have captured in that incredible racer called the Gee Bee. He had mastered the monster at the Cleveland air races in that September in 1932. ■

An invaluable source of counsel to the Air Force Association President are the AFA Committees and Advisory Councils, whose members for the current year are shown on this and the following pages. These hard-working men and women truly represent AFA's volunteer spirit. Except as noted, the chairmen and members are appointed annually by AFA's President, who serves as an ex-officio member of all the Committees and Advisory Councils.

AFA's Committees and Councils

Executive Committee



Ostrow



Gross



Hardy



Harris



Markey



Mazer



Shosid



Withers

Composed of the President (who also acts as Chairman), Secretary, Treasurer, and five additional members of the National Board of Directors, the Committee acts on behalf of the Board of Directors between meetings of the Board. The Executive Committee also functions as the Resolutions Committee. Members are Martin M. Ostrow, Chairman, Beverly Hills, Calif.; Jack B. Gross, Harrisburg, Pa.; George D. Hardy, Hyattsville, Md.; Martin H. Harris, Winter Park, Fla.; Howard T. Markey, Washington, D. C.; Nathan H. Mazer, Ogden, Utah; Joe L. Shosid, Fort Worth, Tex.; Jack Withers, Dayton, Ohio.

Finance Committee



Gross



Douglas



Hardy



Harris



Hasler



Keith



Kriendler



Shosid

Composed of the Treasurer and seven other members as appointed by the President, the Committee is responsible for recommending fiscal policy to the AFA President. Members are Jack B. Gross, Chairman, Harrisburg, Pa.; George M. Douglas, Denver, Colo.; George D. Hardy, Hyattsville, Md.; Martin H. Harris, Winter Park, Fla.; Gerald V. Hasler, Johnson City, N. Y.; Sam E. Keith, Jr., Fort Worth, Tex.; Maxwell A. Kriendler, New York, N. Y.; Joe L. Shosid, Fort Worth, Tex.

Membership Committee



Gaillard



Bell



Callahan



Campbell



Clark



Douglas



Downey



Eubank



Hall



Stearn



West



Withers

One of the oldest standing committees of AFA, its function is to promote membership in the Association and to advise the National President on ways and means to increase and maintain Association membership at the highest possible level. Members include Paul W. Gaillard, Chairman, Omaha, Neb.; J. Raymond Bell, Washington, D. C.; Dan Callahan, M.D., Warner Robins, Ga.; Stanley Campbell, San Antonio, Tex.; Earl Clark, Jr., Kansas City, Kan.; George M. Douglas, Denver, Colo.; Russell Downey, Merced, Calif.; William C. Eubank, Las Vegas, Nev.; James C. Hall, Denver, Colo.; Ed Stearn, San Bernardino, Calif.; A. A. West, Newport News, Va.; Jack Withers, Dayton, Ohio.

Constitution Committee



Stewart



Brosky



Markey

Responsible for a continuing review and updating of the Association's Constitution and By-Laws, and for recommending to the President necessary amendments to the Constitution and/or By-Laws. Members are Hugh W. Stewart, Chairman, Tucson, Ariz.; John G. Brosky, Pittsburgh, Pa.; Howard T. Markey, Washington, D. C.

Convention Site Committee



Ostrow



Shosid



Gross

Responsible for recommending to the President a listing of those cities for a National Convention. Members are Martin M. Ostrow, Chairman, Beverly Hills, Calif.; Joe L. Shosid, Fort Worth, Tex.; Jack B. Gross, Harrisburg, Pa.

AFROTC Council



Lamb



Brown



Copeland



Flemens



Haire



Knapp



Hanna



Sommer

This council recommends to the Association President policies and procedures in support of all elements of Air Force ROTC, including the senior programs at colleges and universities and the Junior ROTC program at the nation's high schools. Members are Col. Thomas Lamb, USAF (Ret.), Chairman, Irmo, S. C.; CMSgt. Louis Brown, USAF (Ret.), Fort Collins, Colo.; Col. Phillips J. Copeland, USAF (Ret.), Los Angeles, Calif.; Lt. Norman Flemens, Sheppard AFB, Tex.; John H. Haire, Huntsville, Ala.; Lt. Richard Knapp, Pease AFB, N. H.; Col. Keith C. Hanna, Consultant, Maxwell, AFB, Ala.; Col. William R. Sommer, Consultant, Maxwell AFB, Ala.

Organizational Advisory Council



West



Capriglione



Carter



Hall



Hunt



McCall



Price



Turner

In its deliberations, the Council considers matters pertaining to State and Chapter programming, membership, solicitation, reporting procedures for field units, and the like. Members are A. A. West, Chairman, Newport News, Va.; Joseph Capriglione, Newark, N. J.; James W. Carter, Brentwood, Tenn.; James C. Hall, Denver, Colo.; Marjorie O. Hunt, Mount Clemens, Mich.; A. D. McCall, San Antonio, Tex.; Jack C. Price, Clearfield, Utah; Tom Turner, Bethesda, Md.

Civil Air Patrol Council



Rowe



Bullock



Hansen



Hill



Kunsemiller



Miller



Rapp

This council recommends to the Association President policies and procedures in support of all elements of the Civil Air Patrol, especially the CAP Cadet Program. Members are Kenneth Rowe, Chairman, Richmond, Va.; Noel Bullock, Aurora, Colo.; Zenon C. R. Hansen, Allentown, Pa.; Peggy Hill, Portland, Ore.; John Kunsemiller, Clinton, Md.; Charles E. Miller, Jr., Savannah, Ga.; William C. Rapp, Spring Valley, N. Y.

Government Advisory Council



Wilson



Blandford



Charles



Eaton



Larson

A Council established last year to advise the Association President on policies and procedures affecting AFA relations with all elements of the federal government. Members are Winston P. Wilson, Chairman, Arlington, Va.; John R. Blandford, Arlington, Va.; Hopkins G. Charles, Washington, D. C.; Robert E. L. Eaton, Washington, D. C.; Jess Larson, Washington, D. C.

Airmen Council

Created as a standing committee in 1961 by convention resolution, the Airmen Council advises the Association President on all matters pertaining to the interests and well-being of Air Force enlisted personnel, both active duty and in the Reserve components. Three members of this year's Council are former Outstanding Airmen of the USAF. Members are CMSgt. Freddie J. Walton, Chairman, Hamilton AFB, Calif.; SSgt. Robert Barry, Bolling AFB, D. C.; CMSgt. Jimmie Collins, Vandenberg, AFB, Calif.; CMSgt. Kenneth Cunningham, Bolling AFB, D. C.; MSgt. Lyle W. Ganz, Wauwatosa, Wis.; SSgt. Charlotte Tesch, Bolling AFB, D. C.; CMSgt. Richard E. Vincent, Sandy, Utah; SSgt. Elmer K. Webster, Bolling AFB, D. C.; SMSgt. Elmer F. Williams, Offutt AFB, Neb.; CMSgt. of the Air Force Richard D. Kisling, Consultant, Washington, D. C.



Walton



Barry



Collins



Cunningham



Ganz



Tesch



Vincent



Webster



Williams



Kisling

Junior Officer Advisory Council (Executive Committee)



Pronsky

Farkas

Miller

Page

Rock

Sams

Stanley

Roberts

AFA's JOAC was originally formed in 1967 to help convey AFA's interest in officer career motivation and retention, and to stimulate interest among young officers in AFA activities. It advises the AFA President on matters pertaining to active-duty junior officers. In 1972, the basic council was expanded to include at least one representative from each Air Force major command and operating agency. The officers pictured above form the Executive Committee of this expanded Council. They are Capt. John Pronsky, Chairman, Washington, D. C.; Capt. Richard Farkas, Offutt AFB, Neb.; Capt. James A. Miller, Washington, D. C.; Capt. Audrey Page, Washington, D. C.; Capt. Albert C. Rock, III, Ent AFB, Colo.; Capt. Monroe S. Sams, Jr., APO San Francisco; Capt. Rowland Stanley, Nellis AFB, Nev.; Maj. Gen. John Roberts, Consultant, Washington, D. C.

Military Manpower Council



Maddux

Frank

Hackler

Hosley

Patterson

Seebode

Taylor

Smart

Formerly the Retired Council, the name was changed in 1968 when the group's scope of interest was broadened to encompass other segments of the military population, such as veterans, short-term enlistees, and draftees. The Council still devotes much of its time to such retiree matters as recomputation of pay, dual compensation, job opportunities, and survivors' benefits. It is the only AFA Council to have representation from the other services. Members are Lt. Gen. Sam Maddux, Jr., USAF (Ret.), Chairman, San Antonio, Tex.; Maj. Robert E. Frank, USAF, Maxwell AFB, Ala.; Maj. Gen. James F. Hackler, USAF (Ret.), Myrtle Beach, S. C.; Maj. David L. Hosley, USAF, Washington, D. C.; Capt. Douglas A. Patterson, Scott AFB, Ill.; Maj. Thomas Seebode, USAF, San Antonio, Tex.; Maj. Thomas H. Taylor, Wright-Patterson AFB, Ohio; Gen. Jacob Smart, USAF (Ret.), Consultant, Washington, D. C.; Capt. Fredrick A. Wyatt, USNR (*not shown*), Consultant, North Hollywood, Calif.

Medical Advisory Council

Advises the AFA President in areas affecting Air Force medical personnel, both in the active establishment and the Reserve Forces, and military medical programs for the benefit of all Air Force personnel. The members are David Waxman, M.D., Chairman, Kansas City, Mo.; Bruce J. Morrow, D.D.S., Macomb, Ill.; Dalton S. Oliver, M.D., Baton Rouge, La.; Lawrence Phillips, M.D., Temple Hills, Md.; Robert H. Saber, M.D., Orlando, Fla.; James L. Tucker, M.D., Abilene, Tex.; Rudi Unterhiner, M.D., Mount Healthy, Ohio; Ralph Skowron, M.D., Consultant, Cherry Hill, N. J.; Alonzo A. Towner, M.D., Consultant, Fairfax, Va.; Barnett Zumoff, M.D., Consultant, Brooklyn, N. Y.



Waxman

Morrow

Oliver

Phillips

Saber



Tucker

Unterhiner

Skowron

Towner

Zumoff

Air Reserve Council

Recommends to the AFA President policies in support of the Air Force Reserve. One of AFA's oldest advisory groups, it is concerned with programs and legislation affecting both units and individual Reservists. This year, the Council is composed of representatives from both the unit and individual training elements of the program. Members are Brig. Gen. Campbell Y. Jackson, Chairman, McGuire AFB, N. J.; Capt. Douglas P. Bennett, Washington, D. C.; Brig. Gen. William J. Crandall, Andrews AFB, Md.; Maj. Gen. Clarence Davies, Jr., New York, N. Y.; Capt. Ernest L. Gunn, Houston, Tex.; Honorable Orval Hansen, Washington, D. C.; Maj. Gen. John S. Patton, Washington, D. C.; Capt. Anne Spurlin, Washington, D. C.; Col. Benjamin S. Catlin, II, Consultant, Denver, Colo.; Col. Milton E. Mitler, Consultant, Arlington, Va.



Jackson



Bennett



Crandall



Davies



Gunn



Hansen



Patton



Spurlin



Catlin



Mitler

Air National Guard Council



Cowgill



Higgins



Kelly



MacDonald



Morrisey



Newman



Posey



Slate



Betts



Simpson

Recommends to the AFA President policies and appropriate methods by which the Association can demonstrate its support of the Air National Guard in the most effective manner. Council members are chosen to represent all elements of the Air National Guard. Members include Col. Ralph Cowgill, Chairman, Charleston, W. Va.; Capt. R. Clark Higgins, Alexandria, Va.; Col. William Kelly, Savannah, Ga.; Col. Alexander P. MacDonald, Fargo, N. D.; Lt. Col. Edmund C. Morrisey, Jr., Alcoa, Tenn.; Col. Stanley F. Newman, Oklahoma City, Okla.; Brig. Gen. Richard Posey, Harrisburg, Pa.; Lt. Conrad Slate, Knoxville, Tenn.; Capt. James Betts, Consultant, Washington, D. C.; Col. Richard Simpson, Consultant, Washington, D. C.

Civilian Personnel Council



Lang



Jones



Lingelbach



Mayer



Owen



Watson



Watts



Brennan

Advises the President on matters pertaining to the effective utilization of Civil Service employees of the Air Force, and seeks to promote greater understanding between civilian employees and uniformed members of the Air Force at all levels. Members include John A. Lang, Jr., Chairman, Greenville, N. C.; William Jones, Jr., Tinker AFB, Okla.; Lee C. Lingelbach, Robins AFB, Ga.; Dr. Sylvia Mayer, Hanscom Field, Mass.; William A. Owen, Randolph AFB, Tex.; Robert Watson, Wright-Patterson AFB, Ohio; John A. Watts, Washington, D. C.; George F. Brennan, Consultant, Washington, D. C.; Robert L. Hunter, Consultant, Springfield, Ohio; Robert T. McLean, Consultant, Washington, D. C.; John E. Zipp, Consultant, Denver, Colo.



Hunter



McLean



Zipp

By Don Steele

AFA AFFAIRS EDITOR

THE SAL CAPRIGLIONE AND THOMAS E. MCGUIRE, JR., N. J., CHAPTERS . . .

cited for effective programming in support of the mission of AFA, exemplified in their community-action program to provide clothing to needy families in their areas.



Program participants in the Robert H. Goddard Chapter's dinner, which was held in conjunction with the California AFA's recent Midyear Meeting at Vandenberg AFB, were, from left, AFA President Martin M. Ostrow; Maj. Gen. Salvador E. Felices, Commander, 1st Strategic Aerospace Division (SAC), the principal speaker; Robert S. Lawson, Vice President for AFA's Far West Region and master of ceremonies; and Chapter President L. T. Taylor.

One of the more effective, and least publicized, community-action programs being conducted by AFA units is the Sal Capriglione Chapter's continuing project of furnishing clothes, food, and furniture to needy families in the Newark, N. J., area.

Recently, the Thomas E. McGuire, Jr., Chapter at McGuire AFB joined the Sal Capriglione Chapter in its project. Some two tons of clothing have been obtained from the Capriglione Chapter for distribution to needy families in the Burlington area.

Readily serviceable items have been distributed to local and out-of-state community agencies for redistribution to needy school children and adults. Many of the contributions obtained by the Capriglione Chapter are new but damaged items donated by large department stores in the New York City area. These items need only buttons, zippers, small patches, or some creative renovation to become serviceable.

The leaders of the McGuire Chapter arranged a new clothing renovation program with the Home Economics Chairman of the Burlington City High School and donated funds to purchase needed materials. To date, more than 500 pounds of clothing have been made serviceable and attractive by the

home economics classes at the school. This clothing has been distributed to needy school children within the Burlington community by the school nurses and social workers, and has made it possible for many children to attend school who heretofore remained at home because of lack of warm or respectable clothing and shoes.

This kind of program does much to enhance the image of AFA, the Chapter, and the Air Force. And it helps smooth the way for an opportunity to present to school children and their parents the Air Force story and the advantages of an Air Force career.

We are proud of the Sal Capriglione and Thomas E. McGuire, Jr., Chapters, and, in recognition of their outstanding domestic-action program, we are pleased to name them AFA's "Units of the Month" for February.

More than 260 civilian and military guests attended the Kitty Hawk Day dinner cosponsored by AFA's Golden Gate Chapter and the San Francisco Bay Area Chapter of the National Aeronautic Association.

The program observed the sixty-ninth anniversary of powered flight by the Wright brothers and also honored other pioneers of aviation represented by the Early Birds (a group of men who flew solo before December 17, 1917), and Col. John Macready, USA (Ret.), who with Lt. O. G. Kelly made the first nonstop transcontinental flight—2,520 miles—from New York to San Diego in a Fokker T-2 Liberty 375.

In contrast to Colonel Macready's twenty-seven-hour flight in May of 1923, Brig. Gen. B. E. Harris, Commander, 9th Strategic Reconnaissance Wing, Beale AFB, with the assistance of his Command's briefing team, gave a presentation on the Mach 3 SR-71



At the Golden Gate Chapter's Kitty Hawk Day dinner, Cadet Col. Richard Bundy, left, Commander of the AFROTC Wing at California State University at San Francisco, receives the Air Force Association's AFROTC Silver Medal from Chapter President Walter W. Berg.

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Lockheed "Blackbird," which can cross the continent in one hour.

Capt. Charles B. DeBellevue, USAF, leading US ace in the Vietnam War, was a special guest at the dinner.

Chapter President Walter W. Berg presided, and Col. Cal Ferris, USAF (Ret.), was master of ceremonies.

Lt. Gen. Harry E. Goldsworthy, Deputy Chief of Staff, Systems and Logistics, USAF, was honored by the Air Force Association in December at a luncheon sponsored

Force during his Air Force career.

Among the more than 200 friends and colleagues from the Air Force and aerospace industry who honored General Goldsworthy were Gen. John D. Ryan, Air Force Chief of Staff; Lt. Gen. Robert J. Dixon, DCS/Personnel; Lt. Gen. George S. Boylan, Jr., DCS/Programs and Resources; Lt. Gen. George J. Eade, DCS/Plans and Operations; Lt. Gen. Otto J. Glasser, DCS/Research and Development; and Maj. Gen. Robert N. Ginsburgh, Director of Information, Office of the Secretary of the Air Force.

Chapter President Tom Turner was master of ceremonies.

Arthur C. Storz, Sr., a permanent member of AFA's Board of Directors, was guest of honor at

a luncheon sponsored by the Ak-Sar-Ben Chapter of Omaha, Neb.

The Chapter, AFA's largest, was founded by Mr. Storz and chartered in January 1953.

During the luncheon at the Offutt AFB Officers' Club, an AFA Special Award was presented to the eighty-three-year-old AFA leader by Gen. Curtis E. LeMay, retired Air Force Chief of Staff and former Commander in Chief of the Strategic Air Command.

In presenting AFA's first "Elder Statesman" Award—a plaque citing some of Mr. Storz's contributions to AFA, to the Air Force, and to SAC—General LeMay, also a permanent member of AFA's Board, said, "No one can place into words the service that Art Storz has given the people of the United States, particularly the Air Force and, more particularly, SAC."

The luncheon was held on General LeMay's sixty-sixth birthday, in conjunction with his visit to Offutt to participate in the dedication of the Strategic Aerospace Museum at the base.

During the program, General LeMay was presented a birthday gift by Mr. Storz and a plaque by Lt. Gen. Glen W. Martin, SAC's Vice Commander in Chief.

Chapter President Paul W. Gaillard, who also is an AFA National Director and Chairman of AFA's Membership Committee, presided. In his remarks, Mr. Gaillard described AFA as "the voice of a free people" and said,



At the Nation's Capital Chapter's luncheon held in his honor, Lt. Gen. Harry E. Goldsworthy, right, Deputy Chief of Staff, Systems and Logistics, USAF, accepts an Air Force Association Citation of Honor for outstanding leadership from AFA Board Chairman Joe L. Shosid, as Mrs. Goldsworthy beams with pride.

by the Nation's Capital Chapter at the Marriott Twin Bridges Motor Hotel.

AFA Board Chairman Joe L. Shosid presented General Goldsworthy an AFA Citation of Honor "In recognition of outstanding managerial leadership as Deputy Chief of Staff for Systems and Logistics, Headquarters USAF, demonstrated by solving critical problems in logistics related to the Southeast Asia conflict."

In their remarks, Barry J. Shillito, Assistant Secretary of Defense (Installations and Logistics) and Lewis E. Turner, Acting Assistant Secretary of the Air Force (Installations and Logistics), were high in their praise of General Goldsworthy's contributions to the nation and to the Air

Arthur C. Storz, Sr., left, and retired Gen. Curtis E. LeMay admire the Special Award just presented to Mr. Storz as the Air Force Association's first "Elder Statesman." The presentation was made by General LeMay at a luncheon sponsored by AFA's Ak-Sar-Ben Chapter of Omaha, Neb.



"the voice of Art Storz . . . was heard above all others in the cause of freedom."

After a short period of inactivity, the Enid, Okla., Chapter, sparked by dynamic new leadership, has recruited more than 285 new AFA members and sponsored a dinner honoring former astronaut Mike Collins, now Director of the National Air and Space Museum in Washington, D. C.

The function was one of several activities held to celebrate the graduation of the 200th Pilot Training Class of the 71st Flying Training Wing, USAF's Twenty-fifth Anniversary, and the thirty-first anniversary of Vance AFB.

During a recent Enid Chapter dinner Oklahoma AFA President Ed MacFarland, left, presents a plaque to Col. John Rollston, Commander, 71st Flying Training Wing at Vance AFB, on the occasion of the Wing's record-setting 200th Pilot Training Class graduation.



The principal participants in the Charter Night Meeting of the Amoskeag Chapter were, from left, AFA National Director Joseph E. Assaf; William Loeb, publisher of the New Hampshire Sunday News and Manchester Union Leader, the guest speaker; Chapter President Harold W. Carter; and New Hampshire AFA President R. L. Devoucoux.

Unfortunately, weather conditions prevented Mr. Collins' arrival in time for the dinner. However, he did arrive the next morning in time to speak at the graduation ceremonies. Lt. Col. Tom Swalm, leader of the USAF's Thunderbirds, substituted for Mr. Collins at the Chapter's dinner. The Thunderbirds were the featured attraction at an open house at Vance AFB.

During the dinner program, Oklahoma AFA President Ed MacFarland presented a plaque to Col. John Rollston, Commander of the 71st Wing, commemorating the 200th graduation.

Chapter President Ken Martin was master of ceremonies and host of a program that was a real tribute to the Air Force's anniver-

sary theme, "Pride in the Past, Faith in the Future," as well as to the 12,658 pilot training graduates of Vance AFB and the many thousands to come.

The November Charter Night Meeting of the newly organized Amoskeag Chapter of Manchester, N. H., featured an address by William Loeb, publisher of the New Hampshire Sunday News and Manchester Union Leader.

In his address, Mr. Loeb said, "The principal effort of the Air Force Association and of all those who believe in a strong national defense for the United States has to be devoted to persuading the uninformed American public of the seriousness of our present weak position not only in the air, but also on

the sea and on land, in relation to the Russian military might, which is now the greatest the world has ever seen.

"Unfortunately," Mr. Loeb said, "the majority of Americans are absolutely convinced that the United States is the strongest nation in the world from a military standpoint, that our military might is overwhelming, that we never could be challenged.

"This complacency," the Manchester publisher added, "aided by politicians who are afraid to tell the public the truth, and newspapers, TV, and radio and others who actually are desirous of deceiving their readers, viewers, or listeners as to the true facts, makes extremely difficult this task of alerting the American people as to our present dangerous situation.

"A great deal can be accomplished," Mr. Loeb said, "by thousands of members of the Air Force Association, if they will master the facts concerning the US danger and then, in a fashion, tell the facts to everyone with whom they come in contact."

AFA National Director Joseph E. Assaf presented the AFA charter to Chapter President Harold W. Carter, and New Hampshire AFA President R. L. Devoucoux installed the Chapter's officers. In addition to Mr. Carter, officers of the newly chartered Chapter are: Walter W. Clatanoff, Vice President; Leah G. Griffin, Secretary; and Phillip DuPont, Treasurer.

The Northern Virginia Chapter's quarterly dinner meeting fea-

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tured a presentation by **John A. Pope** on "The Business Aircraft—Catalyst of Commerce." Mr. Pope is Director of Membership Relations and Administration for the National Business Aircraft Association and is also Treasurer of both the Virginia AFA and the Northern Virginia Chapter.

In his presentation, Mr. Pope emphasized that the business aircraft fleet is a valuable adjunct to the nation's airpower resources.

AFA's Board Chairman **Joe L. Shosid**, in his first appearance before an AFA Chapter since assuming his present office, told of the ever-increasing importance of the Air Force Association, and of the need for more effective Chapter programming in support of AFA's mission and objectives.

Chapter President **Stanley E. Stepnitz** was master of ceremonies.

CROSS COUNTRY . . . J. Raymond Bell, a Past President of the Iron Gate Chapter of New York City and chairman of several of the Chapter's Air Force Salutes, has resigned as a Vice President of Columbia Pictures Industries, Inc., and, effective January 1, 1973,



Judge **John G. Brosky**, right, AFA National Director from Pittsburgh, Pa., representing AFA on the National Awards Jury, joined Justice **Kazuhisa Abe** of Hawaii, left; Gen. **Harold K. Johnson**, USA (Ret.), center, President of the Freedoms Foundation at Valley Forge, Pa.; state supreme court justices; and members of patriotic and civic organizations to screen entries for the Foundation's 24th Annual Awards Program.



John A. Pope, left, National Business Aircraft Association executive and speaker at a recent dinner meeting of AFA's Northern Virginia Chapter, discusses his presentation with, from his left, Chapter President **Stanley E. Stepnitz**, AFA Chairman of the Board **Joe L. Shosid**, and AFA's Director of Field Organization **Don Steele**.

joined the law firm of Wyman, Bautzer, Rothman & Kuchel. The firm has offices in Washington, D. C., Beverly Hills, Calif., London, and Paris. Mr. Bell will be associated with the firm's Washington office. Good luck in your new career, Ray.

• At the annual general meeting of the National Aeronautic Association in Washington, D. C., **J. B. Montgomery**, **John P. Henebry**, **Arthur F. Kelly**, and **Howard T. Markey**, all Past Presidents and former Board Chairmen of the Air Force Association, were elected President, Senior Vice President, and Members of the NAA Board of Directors, respectively. Congratulations to each.

• More than 400 members and guests attended a recent meeting of the **Connecticut Chapter** at which the Howard Hughes' aviation classic film "Hell's Angels" was shown. Commentary on the history and filming of the movie was furnished by **Robert Stepanek**, President of the Connecticut Aeronautical Historical Association.

• **Gen. John P. McConnell**, retired Chief of Staff of the Air Force, was the guest speaker at a recent meeting of AFA's **Colin P. Kelly Chapter**, Rome, N. Y. General McConnell told the more than 250 members and guests that the USAF and the AFA must continue to work together to defend the contributions of the military in Southeast Asia and to prevent further cuts in the defense budget that might place the nation in jeopardy. He praised retiring **Rep. Alexander Pirnie** (R-N. Y.) as a congressman who fought to maintain strong defense forces, as well as a good quality of life for servicemen and women. General McConnell was introduced by Chapter President **Paul B. Oliver**.



At the November Dining-In of the One-hundredth Class of AFLC's NCO Academy at Robins AFB, Ga., AFA President **Martin M. Ostrow**, left, accepts a plaque from **MSgt. Robert S. Forbush**, Hill AFB, Utah, Senior Member of the Student Advisory Council, expressing appreciation for AFA's efforts in behalf of Air Force NCOs and enlisted personnel. Chief Master Sergeant of the Air Force **Richard D. Kisling** was guest speaker.

COMING EVENTS . . . Tucson Chapter's Thirteenth Annual Air Force Appreciation Luncheon, Tucson, Ariz., March 16 . . . **Iron Gate Chapter's Tenth National Air Force Salute**, Americana Hotel, New York City, March 23 . . . **California AFA Convention**, Palm Springs, April 6-8 . . . **Colorado AFA Convention**, Pueblo, May 12 . . . **New Hampshire AFA Convention**, Pease AFB, May 19 . . . **AFA's Annual Dinner honoring the Outstanding Squadron at the Air Force Academy**, The Broadmoor, Colorado Springs, Colo., June 2 . . . **New York AFA Convention**, The Treadway Inn, Niagara Falls, June 8-9 . . . **Virginia AFA Convention**, June 16 . . . **Pennsylvania AFA Convention**, The Viking Motor Inn, Pittsburgh, June 22-23 . . . **Texas AFA Convention**, San Antonio, June 29-30. ■

AFA STATE CONTACTS

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma, Tuscaloosa): **John H. Haire**, 2604 Bonita Circle, Huntsville, Ala. 35801 (phone 453-5499).

ALASKA (Anchorage, Fairbanks, Kenai): **V. R. Davis**, 2317 Turnagain Parkway, Anchorage, Alaska 99503 (phone 277-6801).

ARIZONA (Phoenix, Tucson): **William P. Chandler**, One S. Norton Ave., Tucson, Ariz. 85719 (phone 624-8385).

ARKANSAS (Blytheville, Fort Smith, Little Rock): **Frank A. Bailey**, 605 Ivory Dr., Little Rock, Ark. 72205 (phone 988-3432).

CALIFORNIA (Apple Valley, Burbank, Edwards, Fairfield, Fresno, Harbor City, Hawthorne, Long Beach, Los Angeles, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Santa Barbara, Santa Clara County, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Stanley Hyrn**, 10 Shady Lane, Monterey, Calif. 93940 (phone 372-7111, ext. 310).

COLORADO (Boulder, Colorado Springs, Denver, Pueblo): **Roy A. Haug**, Mt. Bell 1st Nat'l Bank Bldg., Rm. 402, Pikes Peak at Tejon, Colorado Springs, Colo. 80903 (phone 636-4296).

CONNECTICUT (East Hartford, Torrington): **John McCaffery**, 117 Bridge St., Groton, Conn. 06340 (phone 739-7922).

DELAWARE (Dover, Wilmington): **Franklin R. Welch**, Greater Wilmington Airport, Bldg. 1504, Wilmington, Del. 19720.

DISTRICT OF COLUMBIA (Washington, D. C.): **Tom Turner**, c/o Fairchild Industries, Germantown, Md. 20767 (phone 948-9600).

FLORIDA (Bartow, Broward, Daytona Beach, Ft. Walton Beach, Gainesville, Homestead, Jacksonville,

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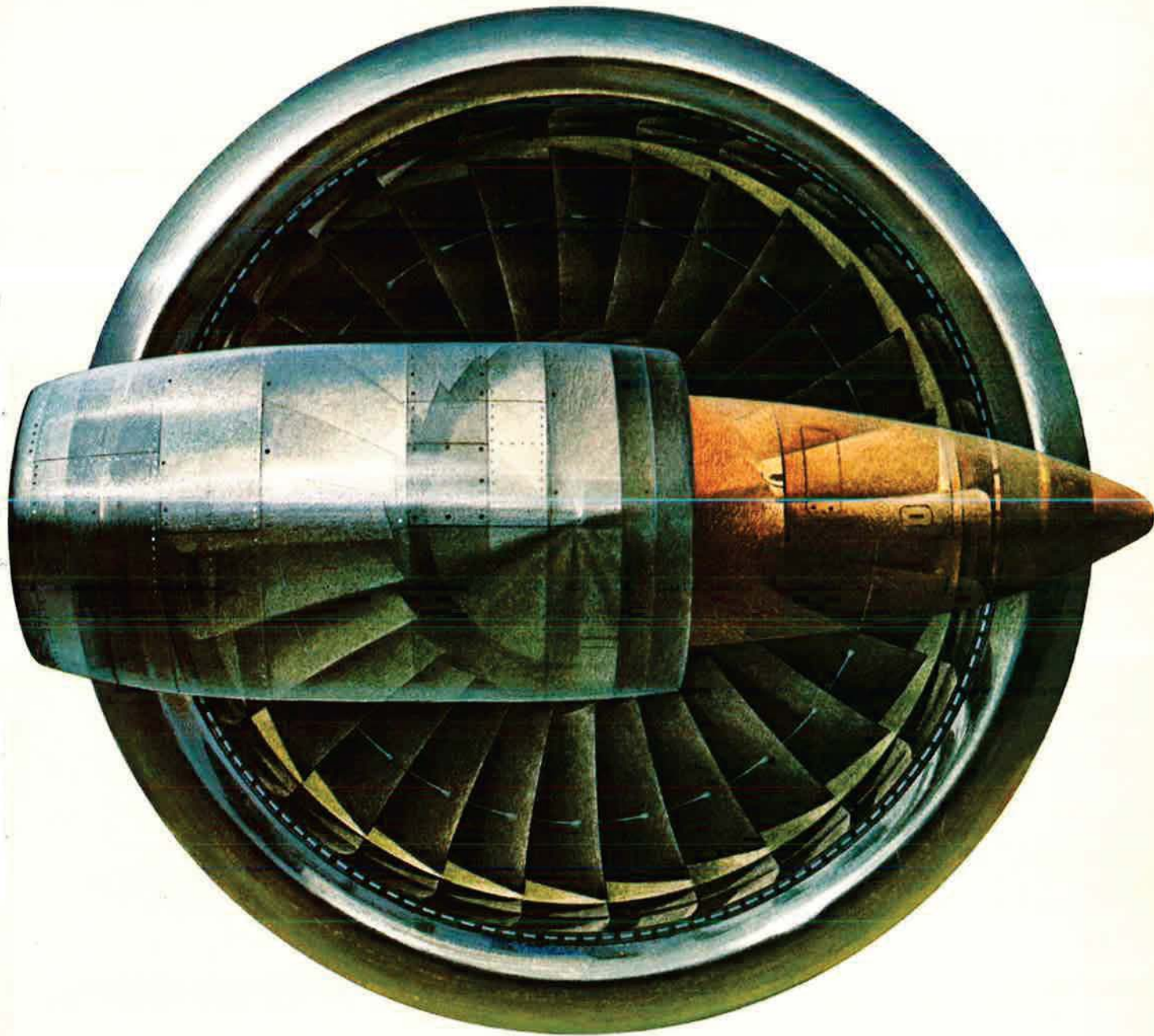
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Los Angeles to New York	170 minutes
New York to London	4 hr, 47 min.
Time to Climb	
3,000 Meters	34.52 sec.
6,000 Meters	48.78 sec.
9,000 Meters	61.62 sec.
12,000 Meters	77.15 sec.
15,000 Meters	114.54 sec.
20,000 Meters	178.50 sec.
25,000 Meters	230.44 sec.
30,000 Meters	371.43 sec.

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