

APRIL 1973/\$1

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

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TIME

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HILTON

...AS THE POWs COME HOME

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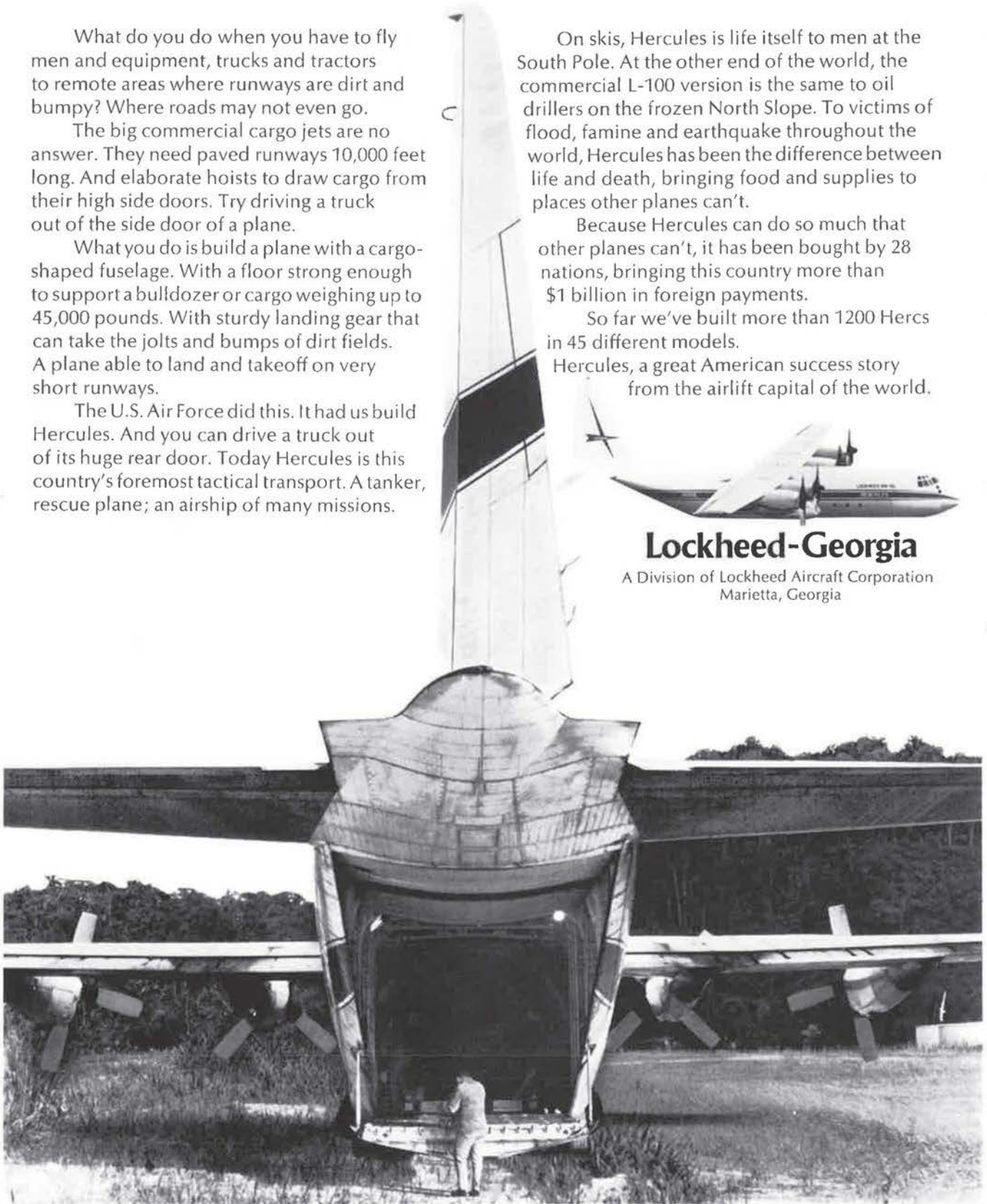
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The B-52's Message to Moscow

By Martin M. Ostrow

PRESIDENT OF THE AIR FORCE ASSOCIATION

AFTER years of war in Southeast Asia and the divisiveness and polarization that the war led to domestically, we have reached an honorable settlement in Vietnam. All of us can take special pride in the fact that it was won largely by airpower.

It was tac air and the B-52s that halted last year's massive invasion of South Vietnam by Hanoi. It was that same airpower that enabled the allied ground forces not only to hang on, but to turn the fortunes of war in favor of Saigon. It was US airpower that, last summer and fall, persuaded North Vietnam to enter into serious peace talks. And, finally, it was the B-52s, together with Air Force and Navy fighter-bombers, that persuaded Hanoi to return to the negotiating sessions and accept a cease-fire that met our objective of US disengagement with honor.

Military historians, for a long time to come, will argue how much shorter the war might have been had we used airpower—right from the start—in the way it was meant to be used. I don't think we will ever get a definitive answer to that question. At the same time, there can be no doubt that airpower was a crucial and decisive factor in fighting the Southeast Asian war and negotiating the cease-fire.

I am disturbed—as I know all members of AFA are—to hear and read unsupportable claims by airpower critics presented uncritically in the news media.

It is important, however, that we examine the B-52s' performance during Linebacker II, not only in an historical light, but also with an eye on what this operation can teach us about the future of the manned strategic bomber. I submit that there can't be any question about the effectiveness of this weapon, even under adverse conditions. A loss rate of about two percent, when you fly into the world's greatest concentration of air defenses, and when the enemy knows exactly where you will go because the targets are all packed into a very small area, is nothing short of excellent. These losses don't spell out the obsolescence of the manned bomber. They affirm its enduring value as an important combat-proven element of our strategic deterrence posture, the Triad.

At the heart of all the speculation by airpower critics is the claim that, because fifteen B-52s were shot down, the manned bomber is no longer a viable strategic weapon system and would not be able to carry out its assigned task in nuclear war.

Let's examine this allegation: In nuclear war, the B-52s would come in low in order to avoid radar detection until the very last moment. In spite of its admittedly excellent air defense capabilities, the Soviet Union could not possibly duplicate, over all possible penetration routes, the kind of defensive concentration

that the B-52s had to penetrate to get at military targets in the North Vietnamese heartland. This is especially true because their air defenses would have to function in a tough and disruptive nuclear environment.

It is, of course, also true that getting through to some of the targets in the Soviet Union would involve far greater distances and correspondingly longer exposure times. Some members of Congress and many media commentators have seized on this obvious fact as evidence that, because some of the B-52s were lost to North Vietnamese surface-to-air missiles, manned strategic bombers would not survive to reach their targets in the Soviet Union. This assumption, not unexpectedly, became the basis for the claim that manned strategic bombers, either the B-52 or the B-1, must be considered obsolete.

What are the answers to these allegations?

There is no doubt, and nobody in the Air Force has ever claimed otherwise, that if the B-52s, or even the B-1s, had to be used in a nuclear war against the Soviet Union, there would be *some* losses. This holds true for any weapon system; in war, nothing is 100 percent survivable. But think of the enormous nuclear destruction packed into a single bomber: One B-52 can attack and destroy twenty separate targets with its SRAM nuclear missiles, each carrying a warhead slightly larger than that of a Minuteman III.

We must remember also, as I am sure the Soviets do, that the B-1 will be more effective in terms of payload, penetration capability, range, speed, and survivability than even the most advanced version of the B-52—the "H" model. The B-52H, incidentally, was not used in Southeast Asia because it is assigned only to the strategic deterrence mission.

There are quite a few other considerations that enter the picture. In nuclear war, the penetrating aircraft would fight their way in by firing their semi-ballistic, 100-mile-range SRAM missiles to suppress enemy defenses.

Further, it can be assumed that we would use some of our ballistic missiles to overwhelm Soviet area defenses in order to aid in subsequent penetrations by the bomber force.

Finally, there is the matter of electronic countermeasures. While we can't talk about them in detail because of security considerations, it can be said that the ECM equipment and antennas on the B-52s in Southeast Asia were tailored to nuclear war operations—not to conventional war. In other words, our ECM equipment was meant for a penetration mode different from the one we used in North Vietnam.

Some news reports have suggested that the SAM system encountered in Southeast Asia is not the most

advanced equipment in the Soviet inventory. This is a half-truth. The SA-2 is the best surface-to-air missile against high-flying aircraft that the Soviets have in their inventory. It was designed for engagements at or near the altitudes at which the B-52 operated so successfully during Linebacker II. It is a fact that the Soviets have an SA-3 SAM, but that missile is optimized for attacks on low-flying aircraft. While it can also engage targets at high altitude, the SA-3 is limited to a shorter range from the launch site than is the SA-2.

It is significant that, by the time the North Vietnamese had decided to return to the conference table, our attack against their SAM sites and storage areas had reduced the number of SAM firings to a trickle. We had succeeded in defeating this weapon system even under conventional war conditions.

Now, let's summarize the performance of the B-52s. Linebacker II, in eleven days of around-the-clock attacks, destroyed eighty percent of North Vietnam's electrical power capacity and about twenty-five percent of its POL supplies.

In those eleven days, the B-52s attacked and re-attacked all key military targets in North Vietnam with great precision and with minimum impact on civilians and nonmilitary facilities. The latter point bears elaboration. According to the North Vietnamese, 1,318 civilians lost their lives during Linebacker II. The operation included 730 B-52 sorties and an even larger number of tactical fighter sorties.

AN AFA RESOLUTION

The following Resolution was adopted by the Board of Directors of the Air Force Association, meeting in Washington, D. C., on February 17, 1973:

WHEREAS, the bombing of military targets in the Hanoi-Haiphong areas of North Vietnam, directed by the President on December 18, 1972, broke the deadlock in the Paris negotiations, achieved a cease-fire, ended US military involvement in Vietnam under honorable conditions, and led to the return of US prisoners of war—the goals that had been sought for many years without success and at a cost of nearly 46,000 American lives; and

WHEREAS, this outcome was reached primarily through the wise and forceful use of US airpower; and

WHEREAS, the President undertook the final and decisive bombing campaign in the face of strong opposition and prophesies of dire failure; and

WHEREAS, he steadfastly continued the campaign until its objective had been achieved, despite a torrent of criticism and vilification both at home and abroad; and

WHEREAS, the cease-fire was signed at a time when the Vietnamization program had progressed to a point where the Republic of South Vietnam has a reasonable chance to survive as an independent, free nation;

NOW, THEREFORE, BE IT RESOLVED that the Air Force Association commends President Richard Nixon for his wise and courageous stand, which has achieved the principal US objectives in Vietnam; and

BE IT FURTHER RESOLVED that the Air Force Association supports the President's continuing efforts to bring lasting and honorable peace to Southeast Asia and throughout the world.

If we disregard the possibility that some of the North Vietnamese casualties were inflicted by tac air, the total of civilian fatalities amounts to fewer than two per B-52 sortie. This hardly warrants the use of the term "terror bombing" and stands in marked contrast to the actions of the Communist forces in South Vietnam.

Linebacker II, we must remember, was a conventional operation directed against approved military targets only, and to compare it to the area bombing raids of World War II is to play fast and loose with the facts.

If Linebacker II had been a "carpet-bombing" operation, as has been alleged by critics of airpower, the toll in civilian lives would have been many times greater, and there would have been no Hanoi and no Hai-phong remaining.

I believe that, had we bombed military targets in North Vietnam at the beginning of our involvement as heavily as we did during Linebacker II, the war might well have been over years ago. I also feel that the bombing was the most decisive factor in changing Hanoi's attitude on meeting our basic terms for a settlement of the conflict.

This argument gains added strength from the experience in Laos in January of this year, when the resumption of B-52 activities quickly led to a cease-fire that had proved so elusive before. The fact that two heavy bombardments led to two cease-fires makes an uncontestable case for the efficacy of airpower. I can't forecast, of course, how effective and how lasting a deterrent to violations of the Paris agreement the bombing will turn out to be.

I am certain of this, however: The bombing prevented North Vietnam from staging another offensive against South Vietnam. It did much to bring Hanoi back to meaningful and successful peace talks after a six-week stalemate. And it can't help but demonstrate to the North Vietnamese that if they flout the accord they entered into, the consequences may be grave, indeed.

In the last analysis, and perhaps most important in the long run, the bombing demonstrated to the Soviet Union that the Air Force's manned bombers and their dedicated professional crews represent a strategic deterrent force of proven and high reliability. Linebacker II has shown the Soviets that SAC's strategic bombers could penetrate the Soviet Union extremely effectively coming from east, west, south, or north, and that there simply is no economically feasible way of massing air defenses to block their approach routes.

It must also be clear to the Soviets that, while the B-52s had to go into North Vietnam again and again because of the limited effect of conventional munitions, a one-time penetration of Russia by nuclear-armed bombers would be sufficient to destroy that country.

In short, this lesson is crystal clear to the Soviets: The proven penetration capability of the B-52 today, and of the vastly more advanced B-1 in the years ahead, represents a formidable and reliable deterrent.

We of the Air Force Association have no more urgent and crucial task than to set the public record straight on this issue.

This is not just an historical exercise. It is a vital step in protecting the nation's future. The crucial turning point will be the decision about early funding of the B-1 program, which will be coming up in Congress about a year from now. It boils down to this: Will the House and the Senate vote to enter the aircraft into production?

On behalf of AFA, I make one firm commitment: We will do everything in our power to assure that the decision is affirmative. ■

The Phoenix

Gentlemen: . . . Congratulations on your editorial in the February issue of AIR FORCE entitled, "The B-52: The Phoenix That Never Was." It is the best analysis of the subject to date. . . .

LT. GEN. IRA C. EAKER,
USAF (RET.)
Washington, D. C.

Dresden Casualties

Gentlemen: In his February 1973 editorial, "The B-52: The Phoenix That Never Was," Executive Editor John L. Frisbee is on target, as usual. Unfortunately, in citing and comparing the casualty figures resulting from Linebacker II operations, he has given renewed publicity to a long-standing canard about the Dresden raids of February 1945.

In the period immediately after those raids, German propagandists issued several casualty estimates ranging between 70,000 and 250,000. In subsequent years, Communist sources seemed to finally agree on about 135,000 fatalities—a figure accepted and given wide publicity during the early 1960s in the English and American editions of David Irving's *Destruction of Dresden*. The claims received additional weight from General Eaker's introduction to the American edition, because he specifically accepted and cited the figure of 135,000.

In the spring of 1966, two separate documents were found in the Dresden and West German archives that agreed with each other, and listed greatly reduced casualty figures. Shortly thereafter, the former mayor of Dresden acknowledged that documents available to him since 1964 revealed fatalities of only 35,000—as compared to the usually accepted figure of 135,000. On the basis of this new evidence, Mr. Irving, in a letter to *The (London) Times* on July 7, 1966, publicly admitted the likelihood and his acceptance of the lower figure.

Perhaps publication in AIR FORCE Magazine of these facts on the Dresden raid will aid and assist a little in putting to rest this twenty-

eight-year-old propagandistic fabrication.

MAX ROSENBERG
Deputy Chief Historian
Office of Air Force History
Washington, D. C.

• *Our thanks to Historian Rosenberg for helping to explode another World War II myth. This footnote to history encourages us to believe that, as historical studies done by the Office of Air Force History become available to the general public, that Office will become widely recognized as the definitive source for airpower history.*—THE EDITORS

Retirement Woes

Gentlemen: Having read "What's in Prospect for Military Retirement" [by Maj. Robert W. Hunter, December '72 issue], and the companion articles in *DoD Commanders' Digest*, I feel it behooves every career government employee, not just military, to realize the impact of this proposal. While sympathetic to the problems of skyrocketing retirement costs, many members now on board have endured real hardships (TDYs, remote and isolated assignments, alerts, and combat) that were eased somewhat by the anticipated carrot in the form of military retirement. Granted, in the late '60s we began receiving compensation resulting in equitable wages in 1973 as compared to the private sector, but who in private industry put up with the rigors of military life as it existed in the past eight years? Can this really be equated?

On the practical side, it appears inevitable that an adjustment will have to be made. If the proposed retirement plan (with the exception of the Social Security integration) were adopted and military pay continues to be adjusted when civil servants receive their annual adjustment, this proposal then has merit. The tie-in of military with Civil Service compensation, fought for tooth and nail by the late L. Mendel Rivers, is also under fire in Congress.

Although it was some years back when the military was directed to

contribute to FICA (Social Security), one argument was that this would supplement military retirement at age sixty-five. Now, however, we find that Uncle Sam really considers this as part of our military retirement. So, instead of receiving the full amount earned as everyone else does, the military, under this proposal, only receives half. What a low blow! What next!

MAJ. JOHN R. ALLEN
APO New York

Thanks From the Chief

Gentlemen: Please pass on my sincere appreciation to Maj. Bob Hunter for the fine piece on the Guard and Reserve in your January issue ["The Reserve Forces and the Total Force Concept"]. It was evident that he had accomplished a great deal of research, in addition to his reporting and interpreting of my remarks during the visit with him.

It's not often that the Guard or Reserve have the opportunity for such extensive coverage in a first-class magazine. Speaking on behalf of the USAFR, I appreciated the chance to tell our side of the story.

MAJ. GEN. HOMER I. LEWIS
Chief of Air Force Reserve
Washington, D. C.

Tac Air Lessons of WW II

Gentlemen: General Kuter's article in the February issue ["God-dammit, Georgie!"] was beautifully done and long overdue, in my opinion.

I was in the middle of the issues he described. My group, the 33d Fighter Group, was flying those umbrellas over Sened Station, Gafsa, and the forward location of the 1st Armored Division at the time of the breakthrough. I spent many hours talking to P. L. Williams, CG of the 12th Air Support Command, about the need to get off of these air umbrellas and go after the German Air Force so that we could gain the needed air superiority. We were so split up and divided, the Germans were able to maintain local air superiority.

I remember General Kuter's

visits at Thelepte and our discussions about the employment of our tactical airpower based on the British experience in the western desert. In my judgment, the most far-reaching thing to come out of the Casablanca Conference was the decision to create the Northwest African Strategic and Tactical Air Forces. This decision gave us the coequality of air and ground forces that was badly needed in II Corps and the other areas of the theater of operation.

General Kuter's article is most timely because of a lack of appreciation of the fundamentals of tactical air doctrine. There are few left in any of the services who fought during the early days of World War II when we didn't have air superiority. Consequently, the current generation of air, ground, and sea commanders have had no exposure to the disastrous consequences of not having air superiority.

From my experience in Vietnam, I see nothing that has changed the fundamentals of our tactical air doctrine. If we have air superiority, our Army can't lose. It is only a matter of time until it will prevail in battle. World War II, Korea, and even Vietnam demonstrated this point. This may not be the case in another war unless we have enough airpower to create the air superiority that will enable our Army to live.

I want to express my appreciation to General Kuter for setting the historical record straight. His article contributes to a better understanding of our tactical air doctrine and why it is so basic to the future. He hasn't lost any of those intellectual characteristics which, in my book, make him one of the great airmen of our times.

GEN. WILLIAM W. MOMYER
Commander
Hq. Tactical Air Command
Langley AFB, Va.

JCS and the MC

Gentlemen: I have noted with particular interest a photograph of the "Joint Chiefs of Staff" on page 15 of your February 1973 issue. Included in the group picture is the Commandant of the Marine Corps.

It has always been my understanding that the legislation establishing the Joint Chiefs of Staff organization provided that the JCS Committee would be composed of a Chairman plus the Chiefs of the three services. I further understood

that, by subsequent legislation, the Commandant of the Marines was authorized to participate in JCS deliberations of particular interest to his Corps.

Has there been further legislative action which provides for a fifth (or sixth) member of the Joint Chiefs? If any increase in the size of the JCS is contemplated, it would seem that the most logical choice would be the Commander of the Air Force's strategic bomber and missile force.

THOMAS C. DARCY
Tequesta, Fla.

• *While it is true that the Commandant of the Marine Corps is not a permanent member of the Joint Chiefs as defined by legislation, and is granted coequal status only in discussing matters pertaining to the Marine Corps, through tradition and courtesy he is regarded as a member. Seldom is he not present when the Chiefs deliberate.*—THE EDITORS

Un-unique Contention

Gentlemen: Capt. Robert F. Colwell, Department of History, USAF Academy, reviews Walt Rostow's *The Diffusion of Power* on page 16 of your January issue. Walt Rostow's statement "that the Johnson Administration was aware of the general outlines of the enemy's plans for the massive 1968 Tet offensive as early as November-December 1967" is labeled a "contention" and a "unique assertion."

I'm surprised that a retired navigator, electrical engineer, Air Force officer, currently employed in the data processing division of a bank, can contribute in the field of history to Captain Colwell. Perhaps the contention must remain an assertion until documents become available, but it is not unique. Please refer to pages 10-11 of Theodore H. White's *The Making of the President—1968*.

Further, a professor of history should not seem so incredulous, and the matter is far more serious than even the unnecessary exposure of troops.

LT. COL. DONALD D. BISHOP,
USAF (RET.)
Sudbury, Mass.

A POW's Homecoming

Gentlemen: My deepest gratitude to your staff for a constant show of concern in print and action.

There are no words to express the gratitude in my heart for the

thousands of Air Force and Air Force-connected men and women whose devotion to duty and their fellow airmen has given our family constant security over these many years. I am proud to be an Air Force wife and in this small way wish to say thank you with my complete heart.

To our many dear friends who have shared our long vigil and have given my daughters and myself endless love and support, I can only say God bless you for caring.

To our President and the men who guide our country, I thank you for your every consideration given our men and their families.

To my fellow Americans, I thank you for your never-ending support that gave me hope and strength.

To my fellow POW/MIA wives, I shall be forever grateful for the standard of courage you have set. I weep because not all of you can share in this joy of homecoming, but I shall thank God forever that there were men willing to sacrifice their lives in the hope of a lasting peace.

May God bless you all and God bless America.

PHYLLIS D. HIVNER
Austin, Tex.

• *Mrs. Hivner's husband, Lt. Col. James O. Hivner, was in the first group of POWs released February 12. He had been a prisoner since October 5, 1965.*—THE EDITORS

Honor to an Adopted Land

Gentlemen: The unloved Vietnam War is hopefully at an end. And as the wife of an Air Force colonel, retired, I have a few thoughts on the subject.

I am not an American citizen. But as a small child in England in WW II, I very much appreciated the sacrifice made by the thousands of Americans who came to my country, and in so doing helped to end another unloved war. No war is nice, as anyone who has experienced it can testify. But, again, I want to render my thanks to the American serviceman for his role in Vietnam.

There is no sacrifice too great that this country can make for its fighting men. There is no compensation possible for the men who died in the mud, far from home. Or for the men who flew endless missions, or for those who sat for years in POW camps.

The only way I can possibly

Airmail

thank them and show my appreciation is to make them all a pledge. That as long as I live, I will never see anyone sully the Stars and Stripes for which they all fought so gallantly. Nor will I keep company with those who have only derogatory remarks to pass about this great country. And no matter in which part of the world I may find myself, I will bring up my children to honor their flag, their uniform, and their country, the United States of America.

PATRICIA DERHAM PHINNEY
Richland, Wash.

The Gee Bee Story

Gentlemen: This is to convey my heartiest congratulations to you and Colonel Prouty for the excellent article, "Jimmy Doolittle and the Gee Bee." Being native to the area described and personally acquainted with some of the persons mentioned, it was all the more vivid for me.

Incidentally, the "small airfield on Liberty Street, near the city dump," was where Harry Herman and Charlie Antaya taught many local college students how to fly Piper Cubs in 1940 and later. (The smoke from the dump was most useful at times for wind direction.)

Please encourage Colonel Prouty and others to recount more such well put together adventures. The true ones are all the more interesting!

KENNETH S. MCALPINE
Arlington, Va.

Gentlemen: I look forward to most all the articles in your magazine every month and find them quite authentic and, indeed, interesting. You deserve a round of applause.

In the interest of keeping the facts straight, I must take exception to the statement in the Gee Bee story by Col. L. Fletcher Prouty, wherein he indicated that Lowell R. Bayles crashed at Cleveland, Ohio, attempting to break the landplane speed record. Not so. Mr. Bayles' luck ran out in the Model Z at Detroit's Wayne County Airport in Michigan. That beautiful Gee Bee, maroon and cream, #4, was plagued with aileron flut-

ter during a high-speed pass. The heavy Wasp engine they installed was just too much for the airframe, and without the aileron, lateral control was lost. The loss of the gas cap could very well have been a contributing factor.

I enjoyed Colonel Prouty's article very much, as I have been an air race buff for many years and a great admirer of the Gee Bee line of air machines, and, therefore, felt he would want this discrepancy brought to his attention.

LT. COL. JOHN E. HUEFNER,
USAFR (RET.)
Merion Station, Pa.

Gentlemen: I enjoyed the article on the Gee Bee racers in the February issue. There was an error, however, on the death of Lowell Bayles.

The site of the speed record attempt and subsequent crash was Wayne County Airport, Mich. (now Detroit Metro), not Cleveland. The complete history of the Gee Bee racers is contained in the book *The Gee Bee Story*, by Charles Mandrake, published by Robert Longo, Wichita, Kan., in 1956.

FREDERICK A. MULHEISEN
Trenton, Mich.

• *Mandrake's book, The Gee Bee Story corroborates the fact that Bayles was killed at the Wayne County Airport near Detroit while attempting to set a new world speed record. In his account of the accident, he records "... Besides the physical evidence at the crash scene, a motion picture of the crash was inspected, frame by frame, and the final conclusion was that a loose gas tank cap started the trouble. Apparently the cap blew off, striking the pyralin cockpit cover. The canopy shattered inward, momentarily blinding Bayles and causing him to lose control of the plane for an instant. It may even be that the shock knocked him unconscious for it was sufficient to tear off his goggles. . . . The outer half of the [right] wing folded up and the plane rolled to the right at least twice before it hit." C. R. Roseberry, in The Challenging Skies, remarks: "The Gee Bees were holy terrors for speed but they were dynamite to fly. Every Gee Bee ever built ended up in a crash of some kind."*—THE EDITORS

UNIT REUNIONS

3d Strategic Air Depot

Sponsors of a reunion of the 3d Strategic Air Depot, 2d Air Division,

8th AF, are trying to locate all former members. The Air Depot, stationed at Watton and Griston, England, during 1943-45, consisted of the 31st and 46th Air Depot Groups, 52d Station Complement, 913d Signal, 89th Repair, and 93d Supply Squadrons, and other units. The reunion is to be held in St. Louis, Mo., July 20-22, at the Sheraton-Jefferson Hotel. Only 200 of the 1,500 men stationed at the 3d SAD have been reached. Anyone interested in attending, or with information on the whereabouts of former members, please contact

Wilton O. Harman
6862 Louisville St.
New Orleans, La. 70124

12th Bomb Group (M), WW II

The "Earthquakers" reunion will be held June 22-24 at El Paso, Tex. Contact

Howard J. Gibbs
1408 Southwest National
Bank Bldg.
El Paso, Tex. 79901
Phone: (915) 542-1881

Class 41D

The third annual dinner reunion of Flying Class 41D will be held May 26 at 6:00 p.m. at the Officers' Club, Randolph AFB, San Antonio, Tex. All members of Flying Class 41D, regardless of where they graduated, are invited to attend. Contact

Lt. Col. R. G. Toler, USAF (Ret.)
11031 Whisper Valley
San Antonio, Tex. 78230

407th Bomb Squadron

The sixth reunion of the 407th Bomb Squadron, 92d Bomb Group, will be held August 6-9 in Amherst, Ohio. Members of the other squadrons in the group are also invited to attend. For further information contact

George L. Reynolds
710 Stewart Ave.
Columbus, Ohio 43206

451st Bomb Sqdn. Association

The Silver Anniversary Reunion of the 451st Bomb Squadron Association will be held in Washington, D. C., in September 1973. The 451st was one of four (449th, 450th, 451st, and 452d) Squadrons of the famed 322d Bombardment Group, 9th Air Force, located at Great Saling, near Braintree, England, and later at Beauvais-Tille, France. For reunion details contact

Paul F. Hillery, Pres.
451st Bomb Sqdn. Assoc.
5503 Southampton Dr.
Springfield, Va. 22151
Phone: (703) 461-9206 or
AUTOVON 284-6171

463d Service Sqdn.

Would like to contact members of the 463d Service Squadron, 309th Service Group, to make plans for a reunion.

Edward A. Ellis
321 Clearfield Ave.
Norristown, Pa. 19401

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Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

A Fine Dish of Crow

WASHINGTON, D. C., MARCH 2

As Kenneth Crawford, a distinguished journalist of the old school, has pointed out, you can't make 'em eat crow. But you can try.

For this reason, there are certain items that should be in the record. One example is that between 1969 and 1972, there were eighty-seven legislative proposals in Congress that would have forced an end to the war in Vietnam on a less satisfactory basis than it was ended in early 1973. This effort was more or less climaxed by Sen. George McGovern's 1972 Presidential campaign proposals that would have pulled the US out unilaterally, without the prisoners of war, with the South Vietnamese disarmed, and with an end to our economic assistance. The voters turned this one down last November, resoundingly.

The eighty-seven measures offered in Congress, many legislators are convinced, actually lengthened the war by encouraging North Vietnam to hold out. Visits to North Vietnam by such dissenters as Ramsey Clark, Jane Fonda, and their entourages gave the enemy a chance to get the message back that they expected to hold out until the war critics in Congress—and the press—could effect their goals. In general, here were the goals, as expressed in most of the resolutions:

- Force US withdrawal by a certain date, regardless of the military and political situation and with no protection for the POWs or the South Vietnamese.
- Cut off or limit money to supply our forces.
- Forbid the President to carry out military operations.

A substantial part of the crow on the table, still awaiting diners, is quite fresh. It is no older than the climactic bombing campaign of late December and early January. Senate Democratic leader Mike Mansfield said it was going to prolong the war. President Nixon was accused of being out of his mind. Editorial writers and columnists threw up their hands in despair. They said we had ruined relations with Moscow and left America standing before the world with bloody hands. News reports and speeches from Congress spoke of carpet bombing and the needless murder of helpless women and children.

During this orgasm, a few members of the House of Representatives, led by Michael Harrington of Massachusetts, offered four resolutions that now stand dead in the record. Their purpose was to force the Department of Defense to supply detailed information on the bombing effort. They demanded the number of sorties, the tonnage, particulars on aircraft losses, personnel lost, North Vietnamese casualties, damage, and the complete costs. The Pentagon's viewpoint was that the Armed Services Committee, of which Mr.

The Wayward Press

There is current, in the bookstalls, a tome with the title *Soldier*. Authorship is credited to Lt. Col. Anthony B. Herbert, USA (Ret.), with James T. Wooten. Herbert is a former Army officer who is mad at the Army. Wooten is a reporter for the *New York Times* who has been Herbert's most active publicist. They have serious credibility problems.

For example, S. L. A. Marshall, himself a retired Army officer, says Herbert was relieved of a battalion command in Vietnam after his superiors found he could not tell the truth. Since late 1971, and his resignation, Herbert has been getting a lot of help from some television producers, newspapers, wire services, and magazines in his private war with the Army.

There are a few notable exceptions, but most of the media have been blowing the Herbert trumpet without even a suspicion that it may be terribly uncertain.

Marshall is able to write with authority about the war in Korea. Reading Herbert's account of his adventures in that war, where he was a private, Marshall finds "not one thing he reports squares with first-hand knowledge of what happened." To cite a single instance, Herbert claims that on November 26, 1950, he stood ten miles from the Yalu River with C Company, 23d Infantry, and looked out over a valley that harbored a human sea of Chinese.

"He did, did he?" queries Marshall. "The 23d Regiment never got to

within 125 miles of the Yalu. That outfit barely got up to the line of the Chongchon River. There, on the night of November 25, it was hit and torn asunder by the Chinese Communist Army. The attack was a total surprise. No one in the 23d knew that the Chinese were at hand. No one then or later during the battle in the north saw a human sea of Chinese." Marshall has other examples.

For most of 1972, Herbert has been working a poor man's Chautauqua circuit, speaking at colleges and prep schools, accusing the Army of having nincompoop leadership. Mingled with this have been frequent appearances on TV talk shows, where show biz characters welcome him as a hero. These appearances result in

Harrington had been a member, had the benefit of elaborate briefings at closed sessions, and it was not in the national interest to make these records public at the time.

In late February, Mr. Harrington tried to withdraw his request and discovered that under the rules of the House, the committee was required to act. It was forced to approve or disapprove the resolutions. To this end, a hearing was held on February 28. The chief witness was Dennis J. Doolin, Deputy Assistant Secretary for International Security Affairs. Mr. Doolin supplied the statistics requested. Under questioning, he estimated that the compilation of this material for Mr. Harrington and his sympathizers consumed more than 1,000 man-hours of Pentagon labor at a cost of about \$10,000. Neither Mr. Harrington nor any of his fellow sponsors was present at the meeting to hear the information they had demanded. The press virtually ignored the session, which was open, and it is unlikely the voters of Massachusetts are aware of what happened.

Principal spokesman for the war critics was a new member of the Armed Services Committee, Rep. Ronald V. Dellums of California. His questions were based on the assumption that the bombing had been indiscriminate and futile. The testimony was to the opposite. Said Mr. Doolin, at one point, "That bombing was so precise that the citizens of Hanoi used to come out to watch the show" as the military targets were picked off.

A more extensive review of the bombing effort was made public a few days earlier by the House Committee on Appropriations. The Chairman, George H. Mahon of Texas, released a declassified transcript of hearings held in January, where Adm. Thomas H. Moorer, Chairman of the Joint Chiefs of Staff, gave a detailed report on the air action. In most fundamentals, his description did not differ from Mr. Doolin's and was more complete.

Admiral Moorer's presentation was illustrated with about seventy slides, many of them photographs of

target areas. The pictures were selected from thousands of negatives on hand in the Pentagon, none of which have been released to the public at this writing.

From the printed text, it is clear that the photos show the target areas and document the precision of the bombing. Here are some examples:

"[Slide] Now I will show you [the] impact. . . . I am going to address this by target systems.

"First, the railroad targets struck. This shows you the railroad complex in North Vietnam. Here is the main railroad that picks up the cargo which is shipped in down at Fort Bayard."

(Fort Bayard is in China. After Haiphong was mined, ships were diverted to that port, and supplies moved by truck and rail into North Vietnam.)

"It also brings material directly from Soviet Russia as well as China. It comes down here to Kep, where it branches off and goes over to a place called Thai Nguyen. This road comes down and meets with the northwest road. . . . They all cross the Red River at this one place, the Doumer Bridge, and then extend on down toward Vinh and the southern panhandle.

"Here is the bomb-damage assessment that we obtained on these railroads: 383 rail cars, fourteen steam locomotives, 191 storage warehouse buildings, two railroad bridges, twenty-nine vehicles, five 5,000-gallon POL tanks, and a large number of supplies. I can show you some pictures of these targets.

"[Slide] This is the Hanoi railroad yard in downtown Hanoi which was struck by smart bombs; that is, laser-guided bombs. You can see here the impact right on the target. This has been used by the North Vietnamese for years as a sanctuary in the sense that they bring all their railroad cars into Hanoi and position them there until they can get them out under the cover of darkness. . . .

"[Slide] I have another picture of the railroad shops showing the warehouse area, which was also hit, as you see, by these laser-guided bombs which went right into the target area.

"[Slide] Next, Gia Lam, which is two miles north,

hundreds of clippings in small newspapers around the country, some of them published on campuses. AIR FORCE Magazine has gone through the record, and some of the material is astounding. In one university magazine, Herbert tells how upset he was over the conduct of the military services at the time of the Bay of Pigs incident. He even tried to confer with the Chairman of the Joint Chiefs of Staff, but could not see him because that officer was having a tantrum. The Chairman, he says, was Gen. William C. Westmoreland. Well, General Westmoreland never was Chairman of JCS, and, at the time of the Bay of Pigs incident, he was Superintendent of the Military Academy at West Point.

One of the few commendable jobs done on Herbert and his pipe dreams was by the CBS television network on February 4. In the program called "60 Minutes," CBS reporters, sensing an opportunity to do some investigative reporting neglected by their

peers, interviewed some of the people Herbert has been attacking. They came up with evidence that the man does not tell the truth—or, at least, the whole truth. We have no room to review the program, but there was plenty of hard evidence uncovered indicating that Herbert has either a deplorable memory or a vivid imagination.

At this writing, he is in some trouble with the US Senate. One of his TV promoters is an ABC show star named Dick Cavett. This man arranged a confrontation between Herbert and Sen. Barry Goldwater, during which the retired soldier called the Senator an ass. Herbert also promised, on the show, to produce some documents that Mr. Goldwater could use to launch an investigation by the Senate Armed Services Committee. Herbert now has said, in another TV program, that he doesn't have the documents. Asked whether he is sorry he called Mr. Goldwater an ass, he said, "No, I did it with forethought."

Herbert's argument with the Army

is of little concern to this writer. It is the press with which we are concerned. Its performance in this case has been on the level of quack medical practitioners. With few exceptions, it has told Herbert's story without questioning the man's reliability. The *New York Times*, *Playboy*, and *Life* magazines, a long list of television outlets, the major wire services, all stand guilty of lax professionalism.

When CBS stepped into the void, and checked some anecdotes in *Soldier* with the persons involved, they were told time and again that no reporters had ever tried to confirm Herbert's assertions. There has been no word from Mr. Wooten, the *Times* reporter who has his byline on the book with Herbert. A review in Mr. Wooten's paper praises the volume. Another review, in the *Army Times*, says the book is a hoax, "filled with half-truths and outright lies." If the hoax is a success, it is the press that was hoaxed, and, in its turn, the public.

Airpower In the News

across the river from Hanoi. This simply shows you the impact on the rail cars and on the whole area of these cars that were jammed up. . . .

"[Slide] In the next picture I show you the Kinh No complex. The Kinh No complex is where the railroad from Thai Nguyen and the northwest railroad come together. It is the largest complex that the North Vietnamese have where they assemble and redistribute supplies. I will show you now a series of strikes on these spurs."

The next slides were aerial photos disclosing further rail interdiction, flatcars loaded with new bulldozers fresh out of China, warehouses, stores of lumber, a marshaling yard, and other targets. They were hit with precision.

He presented a slide showing the position of power plants.

"There are two big power plants," the Admiral said, "one at Uong Bi and one just northwest of Haiphong. . . . The big hydroelectric power plant up here was hit by smart bombs. Only the generator room was hit. It was put out of commission. It has not been used since that time. . . . This is the Hanoi power plant which was hit by smart bombs. As you can see, all of the bombs went into a very small area which makes up the generator room and the boiler house. This is the power plant that supplies the majority of power to Hanoi. . . ."

Another slide illustrated the effort put on POL.

"We struck just two POL parks, one at Haiphong and one up here in Hanoi. We have done significant damage to both of them. . . . You can see the big storage tanks were destroyed. They like to take the fifty-five-gallon drums out and disperse them over the countryside, including right on the dikes. These are 200 drums burning, and there are thirty-nine twenty-one-metric-ton tanks destroyed in this general area in Haiphong."

The next subject was airfields.

Admiral Moorer said they were hit to cut down on the MIG threat. There were ten airfields, generally in the Hanoi area. The commentary:

"There were some aircraft struck: IL-18, a transport airplane; AN-24, also a transport; two helicopters; and two MIGs. We do not know really how



Testimony on details of last December's bombing campaign in North Vietnam was given by Adm. Thomas H. Moorer, Chairman of the Joint Chiefs of Staff. He used photographs not yet released to the public.

many we struck, because they are normally camouflaged and it is very difficult to get a picture of them. Some of them are in caves that may have been hit. . . . Here is [a picture] of Hoa Lac airfield, nineteen miles east of Hanoi. It shows the cuts in the runway. The next is the Hanoi Gia Lam airfield northeast of Hanoi. You can see the terminal area. Some aircraft were hit here. A destroyed aircraft is seen here. . . .

"I might comment, Mr. Chairman: You read that this is a commercial field. It is a commercial field in the sense that transports go in there, but it is also the field where they have stationed all of their best MIGs, the MIG-21M. There, planes are taking off continuously to intercept our aircraft. . . .

"We also struck the SAM sites. . . . I believe I said that the B-52 aircraft that went down in North Vietnam went down in this general area. As you can see, it is because of the unprecedented concentration of surface-to-air missiles in that area.

"I would point out that the SA-2 was designed to shoot down the B-52. . . . Despite the fact that this was the case, the kill rate of the SAMs was just about the same for the B-52 as it has been for all aircraft. . . . This [slide] shows you a typical SAM site. You can see the launchers here. You can see one launcher damaged and the radar and the support vans, all mobile, in this case burning. . . . Over 1,000 SAMs were fired in this period.

". . . we now estimate the electric power is down to between 17,000 and 24,000 kilowatts from 92,000 kilowatts."

Chairman Mahon asked the Admiral how he explains the surge of criticism of the bombing.

"I do not know that I can explain fully why we have this criticism," the JCS Chairman replied. "We have always had a double standard. For instance, the North Vietnamese report that they lost somewhere between 1,300 and 1,600 personnel in the course of these attacks. This has caused considerable comment.

"On the other hand, no one seemed to be concerned at all over the fact that the North Vietnamese killed 25,000 South Vietnamese in the first weeks of their recent reinvasion. Only forty-eight hours ago, for no reason at all, they let fly with several rockets into a small village around the delta and killed several people who were not even close to a military target."

The Admiral was asked to assess the mission results. He called them excellent, in military terms, adding that the airpower of the Navy, Air Force, and Marines "certainly demonstrated a very high degree of effectiveness and competence measured in any way."

Another question was about the loss rate in the B-52 operation. The answer was that it ran about two percent, and the prediction had been three percent.

Having shown the pictures, Admiral Moorer had to face a key question from Rep. Joseph P. Addabbo: Why can't these pictures be shown to the public. . . . Why must these pictures remain classified?

"Well, Sir," the witness replied, "the decision as to the dissemination of information is, of course, always made by the Secretary of Defense. . . . There are certain photographic techniques involved in this that are classified in nature, but we frequently get that kind of question: Why can't we tell the American people because the North Vietnamese know it?"

The result of this policy is that a distorted version of the story has been disseminated by North Vietnam through the mouths of our Ramsey Clarks. Some time the pictures will be released. They will constitute another mess of crow that the dissenters will not eat. ■

SCIENCE/SCOPE

Pilots of the U.S. Air Force's B-1 supersonic bomber will be able to fly "blind" night or day with the aid of its FLIR (Forward-Looking Infrared) system. FLIR produces a TV-like image on a cockpit display from thermal radiation of ground objects. Three FLIR sets are being built by Hughes under contract to the Boeing Company's Wichita Division, which is responsible for the Electro-Optical Viewing Subsystem (EVS). The equipment will be essentially the same as the Hughes FLIR for the B-52 bomber.

Computer-controlled automatic test units built by Hughes will be used initially by the German Air Force to check the inertial navigators and navigation computers aboard its F-4 Phantom aircraft. The German Ministry of Defense ordered ten of the systems following the successful operation of similar equipment on the F-104G navigation system. The German Air Force commander at Landsberg reported that manual maintenance tests were reduced from six hours to approximately one and training of test station operators from several months to less than two weeks. The new equipment is modular in design, so that new requirements can be met without major system design changes and with minimal addition of adaptive equipment.

A new data terminal display console developed by Hughes to monitor and control the Naval Tactical Data System (NTDS) computers was delivered to the U.S. Navy recently. Designed to make functional changes in NTDS equipment assignments as required, the Monitor Control Console (MCC) combines a data terminal with a CRT display and typewriter keyboard. It is one of more than 1700 varying types of NTDS consoles built by Hughes. The MCC is the first to incorporate microprocessing techniques made possible by MSI/LSI technology. NTDS uses radars, computers, and communications equipment to gather, process, and exhibit action within tactical combat zones instantaneously on the display consoles.

Quicker turn-arounds for jetliners and substantial improvements in aircraft and manpower utilization are being achieved by Eastern Airlines on aircraft circuit tests made with a Hughes-built Flexible Automatic Circuit Tester (FACT). Based at Miami International Airport, Eastern's FACT system is housed in an air-conditioned van which rolls up to the jetliner, where technicians attach cables from the aircraft's connectors to the six portable remotely-operated FACT'switch modules. Tests are performed automatically by computer-generated punched-tape programs.

Production of the U.S. Army's Manpack radio has been resumed under an 18-month contract from the Army's Electronics Command for 341 sets and 591 battery packs and accessories. Manpack is a 16,000-channel, transistorized, single-sideband transceiver which weighs only 14½ pounds, complete with wet or dry battery pack. Hughes has built more than 5,000 Manpack radios for the Armed Forces since 1965.

Continuous wave and multitone signals in the 20 and 30 GHz frequencies will be transmitted from a Hughes-built electronics unit aboard NASA's ATS-F satellite, scheduled for launch in 1974. Object of the millimeter-wave experiment is to investigate meteorological and atmospheric effects on signal quality in uncrowded frequency regions proposed for use as earth-satellite communications channels.

Creating a new world with electronics

HUGHES

HUGHES AIRCRAFT COMPANY

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

WASHINGTON, D. C., MARCH 6

An Air Force sergeant last winter became the first B-52 gunner in history to destroy an enemy aircraft in combat.

In December 1972, while on a mission over North Vietnam near Hanoi, SSgt. Samuel O. Turner, a fire-control operator, was aboard a B-52 in the first wave attacking a target. "We were a few ships back from the lead aircraft," said Sergeant Turner in describing the action. "As we approached our target area, numerous surface-to-air missiles began coming up and exploding around us. We did not divert or turn back. We had our target and planned to hit it regardless.

"As we drew nearer to the tar-

get, the intensity of the SAMs picked up. They were lighting up the sky. They seemed everywhere.

"We released our bombs over the target and had just proceeded outbound when we learned that there were MIG aircraft airborne near a particular reference point.

"Our navigator told us the reference point was in our area, and before long we learned the enemy fighter had us on its radar. As he closed on us, I picked him up on my radar when he was a few miles from our aircraft. A few seconds later, the fighter 'locked on' to us, meaning the fighter pilot was in a position to make a firing pass.

"As the MIG closed in, I also locked on him. He came in low in a

rapid climb. As the MIG came into firing range, I fired a burst. There was a gigantic explosion," and the MIG disappeared from sight and off the radarscope. A second MIG that had been following the first broke off and hightailed it.

The MIG kill was later confirmed by personnel aboard another B-52.

Sergeant Turner, an eleven-year Air Force veteran who hails from Atlanta, Ga., was awarded the Silver Star for his deed.



The Air Force has received the first of thirty new helicopters to be assigned to various Aerospace Rescue and Recovery Service (ARRS) units throughout the US.

The first HH-1H Huey, built by Bell Helicopter Co., Fort Worth, Tex., was delivered to the 1550th Aircrew Training and Test Wing at Hill AFB, Utah. By midsummer, five other units will be equipped with the Huey. They are located at Holloman AFB, N. M.; K. I. Sawyer AFB, Mich.; Mountain Home AFB, Idaho; Plattsburgh AFB, N. Y.; and Edwards AFB, Calif.

The Huey has a 120-mile radius of action, including a thirty-minute hover time. Its top speed is 125 mph, and it can carry five passengers, which would include parascuemen and medical technicians, plus its two-man crew.

Equipped with hoist, 200 feet of cable, and other rescue gear, the Huey will replace Kaman-built HH-43 Huskies, which will be retired from the inventory.



The Dutch are draining the huge Zuider Zee for land use and, as the water recedes, are discovering a wealth of artifacts, some dating back to the Spanish Armada.

Of special interest are the hundreds of aircraft that crashed in the famed body of water during World War II, when Holland was a main entry point for Allied bomber streams attacking targets



The Air Force's new F-15 Eagle, an air-superiority fighter due to enter the operational force in the mid-1970s, underwent its first aerial refueling in early February. The aircraft is currently being flight-tested at Edwards AFB, Calif.



The Air Force has accepted delivery of the first HH-1H Huey helicopter, designed for a rescue role with Aerospace Rescue and Recovery Service units. Built by Bell Helicopter Co., the Huey can carry five passengers and a crew of two.

on the Continent. The area was heavily defended by German fighter units.

Among the aircraft uncovered thus far are a World War I aircraft, whose tires were still inflated; a World War II Messerschmitt, bearing markings indicating fifty-three bomber kills; a Spitfire still containing the remains of its pilot (a Belgian, on whose body were found identity cards and other personal possessions preserved more than twenty-five years; the pilot had been married only fourteen days before his last mission); and the B-17 pictured below.

The remains of 350 ships sunk during the wars with Spain that lasted from 1568 to 1648 also have been located.

In some areas of the south, it was the first snowstorm most people remembered seeing, and the resulting élan produced an army of snowmen and hill sliders.

But in other places, as in much of South Carolina where seventeen inches fell that day in February, people discovered that snow can kill.

Before engaging in evacuation and other measures to aid the neighboring civilian population, Shaw AFB personnel first had to dig out themselves; snowdrifts three and four feet deep had to be removed before even helicopters could lift off on rescue operations.

With the roadnet paralyzed, the choppers proved invaluable. CH-3E Jolly Greens of the 703d Tactical

Air Support Squadron made more than 232 landings, carrying more than 10,000 pounds of emergency supplies, and HH-43 Huskies of the 44th ARRS's Detachment 9 flew search and rescue missions.

The Shaw Disaster Preparedness Team, the Base Motor Pool, and the 728th Tactical Air Control Squadron teamed up with local civil defense authorities, providing men and equipment to get ground transport around the Sumter, S. C., community moving again.

Before the threat passed, days later, hundreds of stranded motorists had been rescued, and many other essential acts—from transporting doctors to air evacuation of the critically ill—had been accomplished.

Civilian municipal authorities described the Shaw contribution during the emergency as "outstanding. We had all the cooperation in the world."



The Air Force has accepted delivery of the first Remotely Piloted Vehicle (RPV) designed specifically for a strike role.

Designated the BGM-34B Strike Support Weapon System, the RPV will undergo operational test and evaluation under a program conducted by the Tactical Air Command. As with other RPVs, the strike version is to be guided to its target by an operator situated in a rear-area control station (see October '70 issue, p. 40, for additional information on RPVs). The strike RPV is to be air-launched.

Beginning of the strike vehicle's test phase was termed by officials "a milestone of major significance" and "the beginning of a new era in RPV capabilities." RPVs are visualized as minimizing the risks to which manned aircraft are currently exposed in attacking heavily defended target areas.

Teledyne Ryan Aeronautical, builder of the strike RPV, is also investigating for the Air Force RPV capabilities related to reconnaissance and electronic warfare applications.



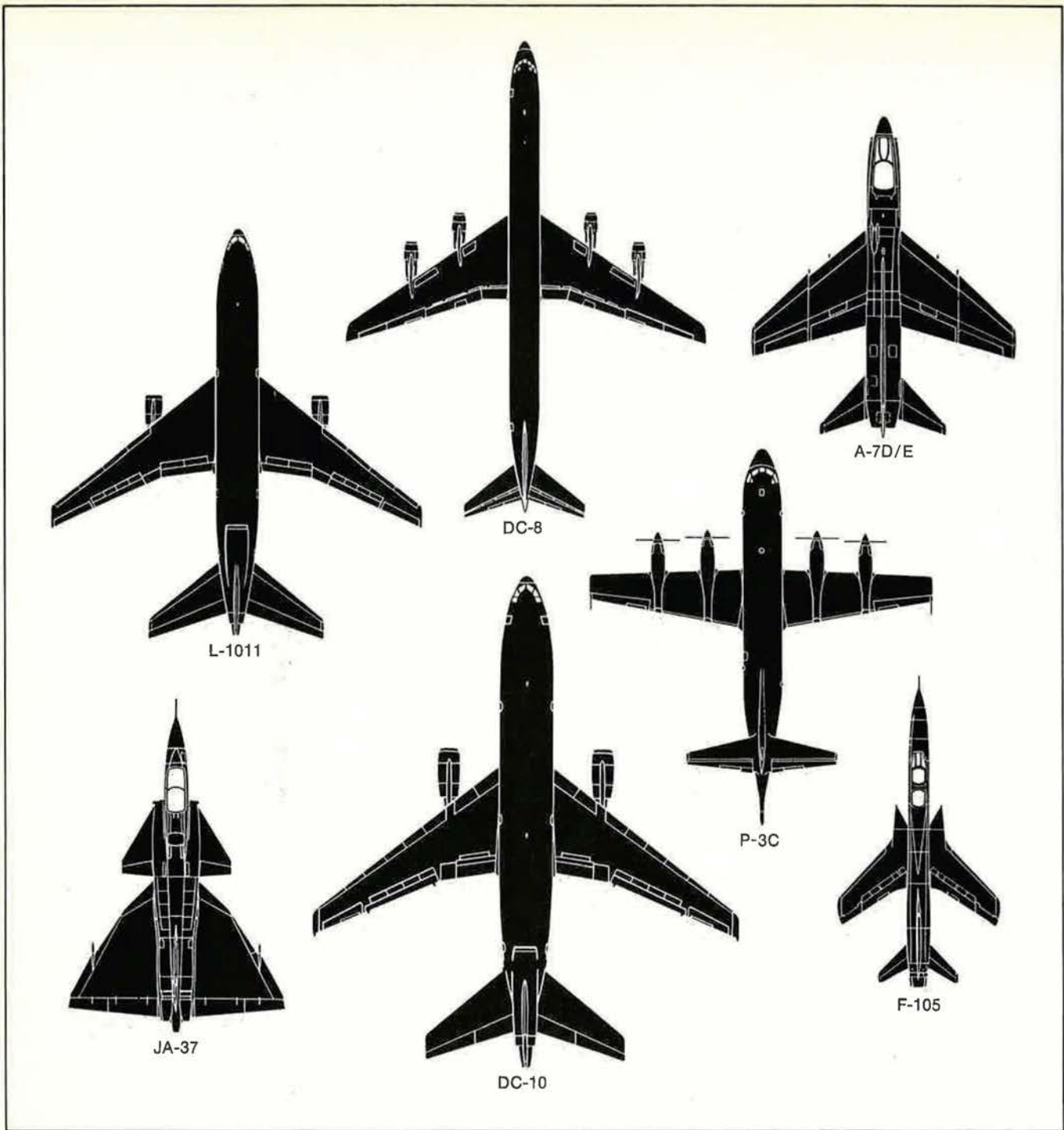
NASA has selected the three astronauts to man the US Apollo spacecraft that will operate with a Soviet Soyuz craft during the joint manned space mission scheduled to take place in 1975 (see also p. 54).

The mission is to include a ren-



—Wide World Photos

The draining of Holland's Zuider Zee has yielded an armada of airplanes downed in two World Wars, including the B-17 pictured here. The Dutch have located hundreds of aircraft so far, with many containing the remains of their crewmen. Spanish ships sunk between 1568 and 1648 have also been found.



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devious and docking of the Apollo and Soyuz in near earth orbit plus visits by the crews to each other's spacecraft.

The mission will mark a milestone in the career of Donald K. Slayton, one of the original seven Mercury astronauts, who was grounded in 1962 because of a minor heart ailment. Slayton has been assigned as docking module pilot. He was returned to flight status last spring.

The two other American crew members are Air Force Brig. Gen. Thomas P. Stafford, spacecraft commander, and Vance D. Brand, command module pilot. Astronaut Brand is a former Marine Corps pilot.

Mr. Slayton has served as director of flight crew operations at the Manned Spacecraft Center in Houston since 1963.

General Stafford is a veteran of three spaceflights.

The Soviet cosmonauts, thus far unnamed, are to visit the US to undertake preliminary training this summer; the American crew is to return the visit later this year.



A spokesman for the Air Line Pilots Association (ALPA) has called upon air travelers to help ensure that the government's new antihijacking screening requirements are met by airline and airport officials.

"Each of you," said ALPA President John J. O'Donnell, "can help by complaining—loudly and clearly"—to public officials and the news media "when you see lax enforcement of airport security. . . . Only through this kind of public support can flight crews provide you with any assurance that they can take you from place to place without the constant threat of being endangered by jet-age criminals."

Mr. O'Donnell also called for the stimulation of "people power" to support air-security legislation now before both houses of Congress.

It is ironic that the necessary costs of air-transport security—the air marshal program, the electronic screening devices, the armed guards at boarding gates all over the country—will run into untold millions of dollars and far outstrip any benefit the skyjackers derived from

AFA and the aerospace industry alike will miss Marcella Myers, right, AFA's long-time Manager of Industrial Services, who died of a heart attack on February 28. Here, she's shown in a 1972 photo with Dottie Flanagan, preparing for the AFA Convention.



A Tribute . . .

1913—Marcella Warner Myers—1973

When Marcella Warner Myers retired from her Air Force Association staff position last November 30, plans were laid for a testimonial party in mid-December that promised to top all of the many industry gatherings in her long career. No AFA affair could have stirred up more genuine interest in the aerospace industrial community than a tribute to Marcella Myers. She had served AFA for a quarter of a century, virtually all of those years as Manager of Industrial Services, a job that involved a close working relationship with AFA's Industrial Associate Companies, and particularly with their Washington representatives.

Marcella died of a heart attack at the age of fifty-nine, on February 28, almost on the eve of a scheduled departure for a dreamed-of retirement in her native Florida.

Between retirement and death, she was hospitalized much of the time, fighting the heart condition that had forced cancellation of the party in her honor. During this period of convalescence, and against doctor's orders, she frequently returned to the AFA offices—just to be sure things were going all right, and because she simply couldn't stay away. Her work, to an unusual degree, was her life, and even retirement and illness could not change that.

In an era when automated processing so often dominates the relationship between an organization and its people, personalized service has become a rare commodity. Marcella, to the people in AFA's Industrial Associate Companies, was the epitome of personalized service.

In responding to industry's requirements at AFA's major events, such as a National Convention, Marcella worried and cried and laughed and toiled long into the night, week after week, agonizing over the complexities involved in handling the seating arrangements for 2,500 people at a Convention banquet. But, as with each task she undertook, down deep she was thrilled with every minute of it.

When the word got out that Marcella's testimonial party could not be held, letters poured in from industry executives throughout the country, from companies big and small—letters that later were bound together between plush, white leather covers and presented to Marcella at her hospital bed just a few days before her death—letters that told in so many ways how such things as devotion to duty, dedication, and loyalty can have real meaning.

AFA has lost a loyal compatriot, the aerospace industry has lost a devoted House Mother, and the world has lost a rare and wonderful human being.

—JAMES H. STRAUBEL, EXECUTIVE DIRECTOR OF AFA

their acts. But the situation is not without precedent in history. Remember, "Millions for defense, but not one cent for tribute"?



Air bags to protect motorists are currently being evaluated, and the Navy is experimenting with such

inflatable devices in another area where the secondary effects of accidents are often fatal.

Helicopters are inherently unstable when not in flight because of large rotors and heavy engines mounted on top. When a chopper crash-lands at sea, it has a tendency to instantly flip over and take

Aerospace World

everybody aboard to the bottom. A survey indicates that most fatalities in water landings are drownings that might have been prevented if the aircraft had remained afloat.

The Navy has been studying this problem since 1958, but only recently has "air-bag technology" advanced enough to provide a possible solution.

Southwest Research Institute, San Antonio, Tex., is conducting research for the Navy to determine the feasibility of inflatable air bags to provide a few moments of life-saving buoyancy. An important side benefit would be the salvage of more of the costly helicopters now irretrievably lost, in many cases.



The US Army took another step toward an operational heavy lift helicopter (HLH) in February when it authorized the design, development, and flight evaluation of a prototype aircraft.

The HLH, being built by Boeing Co. under a \$56.5 million contract, is to have a payload capability of twenty-two and a half tons and will be able to transport all logistical containers required for military use plus most of the heavy equipment items in the inventories of Army airborne and airmobile divisions.

First flight of the HLH is to take place in the summer of 1975, about eighteen months earlier than originally planned. The HLH is to weigh two and a half times as much as the Army's current heavy lift vehicle, the CH-47C Chinook, also built by Boeing. The HLH is to have a new engine, the 8,000-hp XT701, "the most powerful flight-weight turboshaft engine under development in the free world."

Boeing forecasts extensive civilian/commercial applications for its HLH.



Israel has beefed up its naval firepower with the introduction of the new 400-ton, long-range missile boat dubbed *Reshef* (Flame).

The *Reshef*-class boat, of which an undisclosed number will be delivered to the Israeli Navy, is armed with seven Israeli-produced Gabriel missiles, two 76-mm guns, heavy-caliber machine guns, and

—Photo by Bill Belanger



Bayard Nicholas



Douglas A. Andrews

NEW AFA EAST COAST SALES MANAGER

Bayard Nicholas has been appointed East Coast Sales Manager for the Air Force Association and AIR FORCE Magazine, Charles E. Cruze, Director of Development, has announced.

In his new post, Mr. Nicholas will be responsible for advertising sales for AIR FORCE Magazine and two other publications—AEROSPACE INTERNATIONAL and WEHR UND WIRTSCHAFT—represented by AFA; the exhibit space sales for AFA's annual Aerospace Briefings and Displays; and the Industrial Associate program.

Mr. Nicholas' office address is 112 East 40th Street, New York, N. Y. 10016; telephone (212) 687-3544.

Mr. Nicholas replaces Douglas A. Andrews, retiring later this spring after more than twenty years with AFA.

Mr. Nicholas has a wide background in publishing and marketing, having served with McGraw Hill; Conover Mast Publications, Division of Cahners Publishing Co.; Harcourt Brace Jovanovich; and United Aircraft Corp.'s Pratt & Whitney Div. He is a graduate of Johns Hopkins University and attended Columbia University. A former member of the US Army Counterintelligence Corps, Mr. Nicholas is married and the father of five children. He resides in Stamford, Conn.

four depth charges. It has a speed of about thirty-two knots and is capable of operating in heavy seas and in an electronic countermea-

sures environment, Israeli officials said.

The *Reshef* boats are to be built totally in Israel except for their

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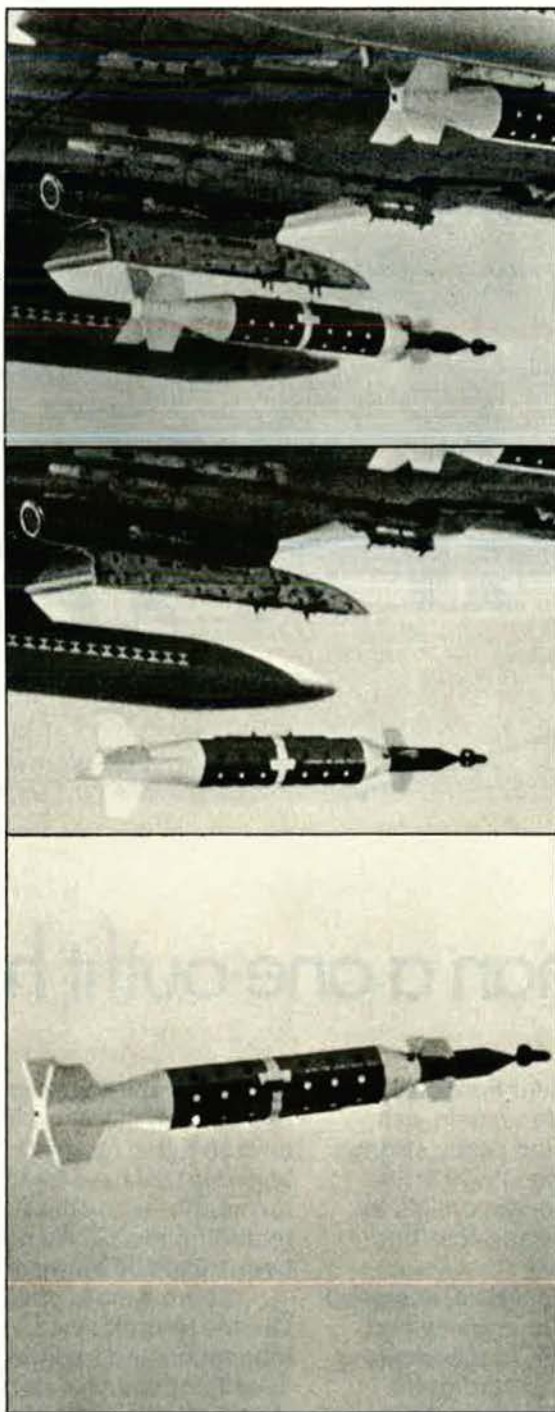
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Another current project is an air-to-ground munition with terminal homing to defeat hard-structure targets. In a realistic test just one of these devices demolished a giant reinforced concrete simulated bridge pier.

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Bronco. It's more than a one-outfit horse.

When the U.S. Marines, Navy and Air Force, as well as West Germany, Thailand and Venezuela, use the same airplane, it says something pretty strong about that airplane. But the Bronco OV-10 is like that. So versatile, capable and economical it's the choice of not only our own military services but growing numbers of allies as well.

Bronco is the first aircraft conceived, designed and built specifically for counter insurgency and limited war operations. It combines ruggedness, simplicity of operation and low cost, but at the same time fills the requirements for weapon delivery, reconnaissance and light transport.

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systems since it was established in 1950.

In fact, there are currently 1,500 operational aircraft flying for the U.S. and foreign military services that have been developed, produced and are supported by the Columbus Aircraft Division. Including the T-2 Buckeye jet trainer with 14 years, over 1,000,000 hours and 9,000 students behind it.

There's more planned for the future, too. Quality aircraft systems. Developed through innovation and experience, within budget and specifications, to meet any requirements. But then, our track record really speaks for itself.



Columbus Aircraft Division
Rockwell International

Aerospace World

Maybach 2,700-hp diesel engines, manufactured in West Germany.

The *Reshef* will be available for export sales at about \$10 million each, depending on the size of the order, officials said.



Currently being tested at a place called Tuktoyaktuk near the mouth of the Mackenzie River in Canada's Northwest Territories is an air-cushion vehicle with exceptional capabilities.

Built by Bell Aerospace Canada and operated by a commercial com-



Retiring after thirty-one years of active and Reserve duty, USAFR Col. Allan R. Scholin is awarded the Meritorious Service Medal by Col. C. E. Dannacher, Chief of Staff, AU. A former Associate Editor of AIR FORCE Magazine, Scholin is special assistant to the PAO, US Readiness Command, MacDill AFB, Fla.

pany during the tests, the Voyageur amphibious vehicle weighs forty gross tons and can operate "routinely at fifty-eight miles per hour over jagged, frozen, two-foot-high snowdrifts," a company official said. The weather in that part of the world averages more than twenty below zero during the winter.

The craft is being evaluated for northern community freighting needs and logistic support for oil, gas, and mineral exploration.

Basically a self-propelled cargo



USAF's Olympic Gold Medalist, Capt. Micki King, looks over Military Personnel Center's new MICROFORM program. Her Officer Effectiveness Reports are on microfilm held by Col. Paul S. Bundick, chief of the Center's Microfilm Division. When the project is completed, more than 200,000,000 personnel data images will be on microfilm.

deck, Voyageur rides on a four-foot-thick cushion of air and can traverse land, water, snow, ice, marshy areas, and tundra, which is impenetrable by conventional vehicles during the summer.

The craft can haul twenty-ton loads and can also be used as a helicopter landing deck.

With technology providing the means, few areas of today's world remain inaccessible and unknown to modern man. But, alas, for those who appreciate such things, a lot of the romance and mystery of far-away places is gone as well.



NEWS NOTES—One of aerospace's biggest names—North American Rockwell—has been changed to Rockwell International Corp., and its aerospace group is now called North American Aerospace Group.

The Air Force's 300th SRAM—destined for Griffiss AFB, Rome, N. Y.—was delivered ahead of schedule in February.

Headquarters of the Seventh Air Force in Southeast Asia has shifted from Tan Son Nhut Airfield, South Vietnam, to Nakhon

Phanom, in Thailand near the Laos border (see map, p. 64).

Jonathan Moore, formerly Counselor to the Department of Health, Education and Welfare, has been named by Secretary of Defense Elliot L. Richardson to be Special Assistant to the Secretary and the Deputy Secretary of Defense.

A USAF F-4 Phantom with no mechanical controls aboard used a Survivable Flight Control System to provide pure fly-by-wire flight control during a successful test earlier this year. This type of control system will reduce the vulnerability of an aircraft to battle damage.

Under Secretary of the Air Force John L. McLucas has received DoD's Distinguished Public Service Medal, its highest award to a civilian, for, among other things, his direction of the Air Force space program.

Tyndall AFB, Fla., and Westover AFB, Mass., have been named as two of the six finalists among military installations in the eleventh annual Secretary of Defense Natural Resources Conservation Award program. Final judging will take place in June. ■

Secretary of the Air Force Robert C. Seamans, Jr. (right), is congratulated by former DoD Secretary Melvin R. Laird on receiving DoD's highest tribute to a civilian—the Distinguished Public Service Medal. Dr. Seamans was cited as "an essential participant in the deliberations . . . on many of the most critical national security issues."



Airman's Bookshelf

Vietnam: Dissecting the Players

The Best and the Brightest, by David Halberstam. Random House, New York, N. Y., 1972. 688 pages. \$10.00.

If you wanted, in 1964, for instance, to raise a few hackles at any US military headquarters in the Pacific, you had only to mention Halberstam's latest piece in the *New York Times*. He was, in those days, a chief tormentor of the military, and especially of COMUSMACV. He kept up a steady drumfire of skepticism, doubt, and downright dissent on the official progress of the war. His stories had the virtue of a graceful style, and shortly his reputation was made. He became the very model of the bright, young, new-generation war correspondent, and, in due course, he won the Pulitzer Prize for his Vietnam stories.

Now, in this long and intricately constructed book, he has written a synthesis of what he knows and what he thinks about the US involvement in Vietnam.

The book is written around the cast of characters who are, in Halberstam's judgment, the principal players in this drama. Each character then becomes the subject of a profile as he enters the story. Some of these profiles are immensely interesting and, in my judgment, fair enough. Others are interesting and even suitable for framing by the subjects themselves. And some are downright cruel. These profiles are written in a musing, conversational style, almost as though a couple of reasonably detached fellows were carving up, over a drink, someone they both knew well. Perhaps that is how they were written. At any rate, they will bring back memories to anyone involved in those years (the book ends in 1968) of the Vietnam experience.

There is, just to pick a name at random, Averell Harriman. Here is a man Halberstam admires, and he has, in fact, got him about right. A fierce and arrogant old patrician who believed implicitly in the

rightness of his position and was inclined to think anyone a fool who did not agree. The thing that made this attitude interesting, or humiliating, or infuriating, depending on the circumstances, was his tendency to make these judgments public.

And the abrasive—to the military at least—Roger Hilsman. The Bundys, Mac and Bill. The ebullient Walt Rostow, the facile brainpicker and amanuensis of guerrilla warfare experts. Unfortunately, in those early days of Vietnam, there were too many snake-oil salesmen in the counterinsurgency business, and their brains got picked along with the rest.

There is a considerable section devoted to Gen. Maxwell Taylor, and here Halberstam appears ambivalent. The final judgment, as Halberstam reads the documents, is mixed. On Gen. Paul Harkins, General Westmoreland's predecessor at MACV, it is clearly unfavorable.

Then there are the Presidents, Kennedy and Johnson, one more tolerantly drawn than the other. There is Rusk, more or less gently demolished by Mr. Halberstam. And Robert McNamara. The author has done an exhaustive, almost bemused job of taking McNamara apart, bit by bit, through all the grinding years of his work-obsessed regime. His conclusion is laconic and final—"He was, there is no kinder or gentler word for it, a fool."

All these and a cast of many more through whose histories and inner thoughts you are exposed to the Vietnam War, from the Taylor-Rostow report to Lyndon Johnson's last unhappy days in the White House.

Curiously, no airman is considered important enough in this otherwise encyclopedic account for more than casual mention. No profiles, no dissection. And it is curious because his principal culprit turns out, in the end, to be airpower and the futility of bombing. That, and the whole idea of the war itself.

He fastens on this one aspect of the Vietnam campaign as though

it were a verity: Bombing failed in Vietnam, as it failed in World War II, as it always fails. It is a weakness in the book, a real weakness, even if it is a view that is shared by others with some enthusiasm.

But why is airpower so denigrated? In the years covered by this book, the air campaign was effective in direct relation to the targets it was allowed to hit. Those were the days of the "signals to Hanoi," the gradual stepping up of the sorties, the ever so deliberate, rolling toward Hanoi and Haiphong, always to veer away.

If there ever was a lesson learned, it is a negative one—the futility of the eyedropper application of military power. It is worth remembering, since it is not in this book, the siege of Khe Sanh in 1968—the Dien Bien Phu that did not come off—and the American airpower that saved the day. Had air failed there, everyone would know the name of that place.

I believe it is no coincidence that the President who finally ended this war, and not by a bugout, was the President who made the decision to use his Air Force, Navy, and Marine airpower effectively. But that must be the subject of another study, another book by another man.

It is, of course, too early for any book, however carefully researched, to have any historical perspective on Vietnam. This one is no exception. It is a story written by a thoroughly committed man, a man dead set against the war and its continuance on any basis. From that viewpoint, certain things get a little out of focus—things like the need for an honorable peace, for instance.

Halberstam does not really explore, even a little way, the possible consequences of easier outs to the war. Would it, in fact, have been all that easy simply to quit once we were engaged? A little euphoria, perhaps, after any peace, and maybe a celebration or two, but wouldn't there have been some terrific hangovers later on?

One very good thing will come to any reasonably open-minded person who reads *The Best and the Brightest*, and that is the fact that our involvement in Vietnam was, at the outset, considered by nearly all responsible people—and particularly responsible civilian people—as a logical and essential thing to do. It was entirely understandable that, as the years wore on, this enthusiasm dwindled and people changed their view, but the fact remains that they changed their view. They did not begin with it.

Nonetheless, this book is a real contribution to the Vietnam saga. Whatever you may think of the bias—best summarized by saying that of all the characters in this story the nearest thing to a hero is Daniel Ellsberg—it is a reasonable reflection of one mood of the time, and it does tally up the players—his term—in fairly complete fashion.

In summary, this is a very readable, even fascinating, account of seven years of the Vietnam War. The research is impressive, the facts are apparently correct, and the bias is there for all to see. It is not a dispassionate account.

—Reviewed by Gen. T. R. Milton, US Representative, NATO Military Committee. Between 1961 and 1965, General Milton served as Commander of Thirteenth Air Force at Clark AB, Philippines, and DCS/Plans and Operations, US Pacific Command.

Rebuttal to Revisionism

Peace in the Balance: The Future of American Foreign Policy, by Eugene V. Rostow. Simon and Schuster, New York, N. Y., 1972. 352 pages. \$8.95.

For those seeking a serious alternative to revisionism—the idea that the Truman Administration's cold-war policies committed America to the role of world policeman, which eventually led to Vietnam—Eugene Rostow's book should fill the need admirably. It might even elicit loud shrieks of joy.

Rostow—brother to Walt W. Rostow, Lyndon Johnson's national security adviser—tackles the matter head-on and leaves revisionists like Noam Chomsky, William Appleman Williams, and Carl Oglesby badly

battered. Was the cold war the fault of the United States? Did this country create the postwar confrontation because of its need for markets in the less-developed nations? Absurd, says Rostow. He presents a convincing case to shatter the idea that "capitalist economies will collapse unless they somehow subsidize the dumping of their 'surpluses' abroad, especially to the nonindustrialized countries, with which we have hardly any trade at all."

Rostow correctly emphasizes the role that America's involvement in Vietnam has played in the revisionist resurgence. The war thus generated a long look backward to its origins and then to the cold war in the post-World War II years. The Truman Administration, the revisionists charge, was to blame for getting the United States on the "imperialist" road.

Though in his counterattack Rostow focuses on the charge of economic imperialism, he might have emphasized the importance of World War II and its consequences to the evolution of the cold war. A case can be made that neither the United States nor the Soviet Union was totally to blame for the cold war, but that its origins lay in historical inevitability.

Considering the history and vastly different societal approaches of the two countries and their conflicting objectives after the Second World War, it seems, in retrospect, that a postwar confrontation would have been difficult if not impossible to avoid. Also, hindsight indicates that important if not crucial origins of the cold war go back to the period between the two world wars when much distrust evolved between America and Russia. The United States, it will be recalled, did not recognize the Soviet government until 1933.

Where does the United States go from here? Neither "conservative" nor "liberal" foreign policies should be the standard, says Eugene Rostow. The only appropriate criterion is the national interest, which should be conceived "in the perspective of the national character." Weighing this precept against recent history, he concludes that there is no "easy escape" from the kind of policy America has pursued since 1947.

Clearly, others would disagree. But few would argue with his definition of the goal of American

foreign policy—"a system of world politics assuring a state of general peace, a system within which the United States could continue to develop as a free and democratic society."

It all gets back to foreign policy as a safeguard for the national interest. That is the only test, says Rostow, that can justify sending American forces into battle.

—Reviewed by Herman S. Wolk, Office of Air Force History.

Japan: Militarism Revisited?

Black Star Over Japan, by Albert Axelbank. Hill and Wang, New York, N. Y., 1972. 228 pages. \$7.95.

Japan is rearming. Its constitution seems to forbid it, the Socialists denounce it, and students protest it, but the government says Japan's national interests demand it. Few Japanese oppose their own national interests, of course, but many have bitterly vivid memories of the last time Japan had strong armed forces. Once rearmed, is there any danger that Japan will again become a militaristic society? **Yes, claims the author, and it's starting to happen right now.**

Militarism was discredited by defeat, Axelbank says, but its roots are deep in Japanese society, and it was not wholly destroyed. Today, the same groups that led Japan down the path to war are again gaining influence and are once more encouraging the growth of militarism.

One such group is the *zaibatsu*, the huge corporations that again dominate Japan's economy. Mitsubishi Heavy Industries, producers during the war of the famed Zero fighter, are once more deep in the arms business; they would obviously benefit from expansion of the military. Some leading conservative politicians in the ruling Liberal Democratic Party are openly eager to revise the constitution to abolish the peace clause. Ultrationalist societies, the "double patriots" of prewar days, are still small but growing, and are now linked together in a network organized by a leading prewar ultrationalist leader. He has close links with conservative politicians.

For more than a quarter of a century, all these groups have existed harmlessly; the decision to

Airman's Bookshelf

rearm has brought them together. For different reasons, all agree that a stronger Japanese military force is desirable, and all are working to create one. It was this same sort of agreement, Axelbank says, that spawned militarism in prewar Japan, and is spawning it again today.

It may indeed, but only if one accepts Axelbank's definition of militarism. He seems to believe a state is militaristic if it has a conservative government, a productive arms industry, an independent foreign policy, and a trained, competent military. Japan in the 1970s will almost certainly reflect all these characteristics. So, too, did France under de Gaulle, Victorian England, and Ike's America, societies that were certainly not "militaristic."

Axelbank does not differentiate between moderate conservative policies and militaristic ones, and this very nearly destroys any value his book may have had. What remains of value are the facts and insights into Japanese politics and society that he provides, but even these betray his argument. He says militarism is rising in Japan; the facts he marshals show only that Japan is conservative, that the nation is rearming, and that many Japanese approve.

—Reviewed by Capt. James E. Weland, Department of History, US Air Force Academy.

China Is China

Dragon By The Tail, by John Paton Davies, Jr. W. W. Norton, New York, N. Y., 1972. 448 pages with notes and index. \$10.00.

Others have written that this is "an absolutely superb book"; that its author is "an exceptionally gifted writer." A first reading led the undersigned to similar conclusions. A second—carried out simultaneously with a rereading of Chennault's (with Robert B. Hotz's aid) *Way of a Fighter*, and frequent reference to such works as Truman's *Memoirs* and the Tuch-

man book in admiration of Stilwell—served to strengthen the judgment that John Paton Davies, Jr., indeed has written a book of very great worth. Surely, it is one that should be read with profit by all who seek understanding of China and its Communist government.

The strength of *Dragon By The Tail* is by no means compromised by the fact that Davies was a victim of that especially malignant American pestilence, McCarthyism; to the contrary, it is the final return in 1969 of his security clearance by the State Department that gives it special validity . . . that, and the bitterly ironic aspects today of US thought and action vis-à-vis mainland China.

What we have here is not solely one man's account of the paroxysms and convulsions of the Chinese giant since the turn of the century, and of American involvements and encounters with that giant. This, to be sure, is the main thrust of the work, presented in detail about both the events and the people involved by a man born and reared in China, who worked and lived there most of his life to the end of World War II.

In addition, there are lesser themes—for example, the bitter conflicts between Stilwell and Chennault, ending only when both were gone. During the war years, Davies was political adviser to Stilwell in China, and it is perhaps inevitable that Chennault comes off second best, although by no means altogether poorly. As he makes clear, Davies judges both men to have possessed that most rare quality, dynamic leadership that commands total loyalty. Each in his special way was an extraordinarily talented and tenacious fighter; each, differing only in degree, perhaps, was suspicious, secretive, and intolerant. Each was a good hater. To quote Stilwell, the motto of life was "you only live once and you have to live as you believe"; certainly, this applied equally to Chennault.

But, to repeat, the body of the Davies book is his account of what has happened in and to China over the years. He remains convinced that though Mao and Chou En-lai and their compatriots were committed to the Communist way of revolution, they were even more dedicated to being Chinese.

The book's closing sentences read: "The truth of the matter is that China has been since the fall of the

Empire a huge and seductive practical joke. The western businessmen, missionaries, and educators who had tried to modernize and Christianize it failed. The Japanese militarists who tried to conquer it failed. The Soviet rulers who tried to insinuate control over it failed. Chiang failed. Mao failed."

—Reviewed by Walter T. Bonney, former Director of Information for NASA, and later for Aerospace Corp. Mr. Bonney is now retired.

New Books in Brief

Aircraft of World War II, by Kenneth Munson. This second edition, first published in 1972, has an enlarged format, bigger pages, and more than 250 new photographs. *Aircraft of World War II* includes basic data and photographs of more than 300 of the principal aircraft of the period, together with brief notes on nearly 200 more experimental or minor operational types. Doubleday, Garden City, N. Y., 1973. 272 pages with index. \$6.95.

Annual of Power and Conflict 1971, edited by Brian Crozier. The annual has two overriding purposes: to narrate and explain the actions of the more important extremist groups throughout the world; and to assess the changes in the balance of political influence throughout the world in the year under review, 1971. Institute for the Study of Conflict, London, England, and the National Strategy Information Center, New York, N. Y., 1972. 141 pages with appendices, maps, and charts. \$4.00, including postage.

Jane's Historical Aircraft: 1902-1916. This book is a replica of part of the 1917 edition of *Jane's All the World's Aircraft*. It is reproduced in the belief that it is an historical document of outstanding interest, which provides a unique record of the early days of aviation. Doubleday, Garden City, N. Y., 1973. 96 pages with index and aeronautical dictionary. \$8.95.

Two recent releases in Ballantine's Illustrated History of the Violent Century Series are: *Death Railway*, by Clifford Kinvig; and *Student*, by A. H. Farrar-Hockley. Ballantine Books, New York, N. Y., 1973. Each volume 160 pages. \$1.00.

—BY CATHERINE BRATZ

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MIA/POW ACTION REPORT



—Department of Defense Photo

Symbolic of the POWs' captivity and return to freedom is USAF Col. Robinson Risner, in prison garb, left, and once again in Air Force blue.

It was a bittersweet moment in the nation's history. The day so many had worked so hard to bring about had arrived. And not even doubts about men still missing or about the shaky peace in Southeast Asia could diminish the jubilation as . . .

AND so in February of 1973, the men began to come home—home from the Hanoi Hilton, from the other prisons, and from the dank jungle camps of Southeast Asia.

If the release schedule is adhered to, and no further hitches develop, all prisoners are due to be free by the end of March. (See p. 29 for a list of USAF returnees.)

Most of the released POWs were in good shape physically and mentally, in far better condition than anyone had hoped, though many showed the effects of wounds and would require subsequent treatment.

For the most part, the men in the first contingent to be released were even jaunty as they deplaned at Travis AFB in California, the first stop in the States after it was determined that prolonged care at Clark Air Base in the Philippines wouldn't be necessary.

It was apparent that the POWs held in the North were generally in better health than the men imprisoned elsewhere. This was ascribed to the improved diets and facilities provided by the North Vietnamese in the latter stages of captivity, and to the strong leadership asserted under the military discipline that prevailed in the camps. (It was this very lack of self-imposed military discipline by US servicemen that helped bring about disaster in the POW camps of Korea.)

THE POWs RETURN

By William P. Schlitz
ASSISTANT MANAGING EDITOR,
AIR FORCE MAGAZINE

—Department of Defense photo



Standing tall and grim-visaged, POWs awaiting release endure the last few moments of captivity before . . .

—Department of Defense photo



expressing sheer joy at the prospect of returning home.

—Wide World Photos



The longest-held American pilot was Navy Lt. Cmdr. Everett Alvarez, Jr., shot down and captured on August 5, 1964. Here, now free again, he salutes CINCPAC Commander Adm. Noel Gaylor on deplaning at Clark Air Base in the Philippines.

In Southeast Asia, at least in North Vietnam, according to the sketchy information made public so far, the presence of discipline steadied morale and induced spiritual, emotional, and physical stability. So well organized were the POWs in some of the prisons that a series of courses in languages, mathematics, and various other "mind-expanding" subjects were taught by fellow POWs.

The men held prisoner by the Viet Cong in the South did not fare as well. A higher percentage showed the strain of years of confinement in a deprived and disease-laden atmosphere. When released to US authorities, many moved hesitantly and took longer to adjust to the newfound freedom. A US Foreign Service officer, Douglas Ramsey, cap-

—Wide World Photos



Together at the Academy, in combat, and in captivity, Air Force Capts. Edward Mechenbier and Kevin J. McManus depart Clark AB for home.

—Wide World Photos



Married only four days before their separation, Capt. Kevin McManus is reunited with his wife, Mary, after six years as a POW.

tured in South Vietnam in 1966, told of the ordeal of his seven years of imprisonment, most of which was spent in solitary confinement. He spoke of witnessing the death of other Americans, of the disease and poor diets in the camps. His manner was matter of fact and without bitterness when he remarked that some guards were "dogs, and I met some jewels. There were some I'd invite into my home now. There are others I'd invite behind the woodshed, and only one of us would return."

Answers in Appropriate Time

Once the excitement of homecoming had somewhat abated, the returnees appeared in small groups at news conferences around the country. Usually, they prefaced their remarks with a word of caution about questions they would not answer. "We don't want to say anything that might jeopardize the further release of POWs," said Air Force Col. Carlyle S. Harris, shot down and captured in April 1965.

"The answers will come out in appropriate time," said Navy Capt. Jeremiah A. Denton, the ranking officer in the first group of returnees, who was captured in July 1965.

Taboo also were questions about conditions within the camps in the North and treatment meted out by their captors; also held in abeyance was word of dissension among the POWs and the probability of disciplinary action against any POWs who might have cooperated too freely in making antiwar statements. Asked if there were any hostilities or differences between the POWs, USAF Capt. Terry M. Geloneck, a prisoner since December 1972, said, "None that I was aware of at all. I was tremendously amazed at the organization and the deep feelings—of comradeship—that the POWs had amongst themselves, particularly those that had been there a long time."

US Air Force Col. Robinson "Robbie" Risner was among the first contingent of POWs released. Shot down and captured in September 1965, he symbolized the attitude of most of the returnees. He, as did

others interviewed, declined to divulge the details of life in the prison camps and the treatment of prisoners by North Vietnamese captors until all the prisoners had been released.

In answer to the question, "Do you think we could have possibly ended the war sooner, perhaps by a year, two, three years?" Colonel Risner's answer was typical of the men interviewed: ". . . I have every confidence that our best minds—both military and civilian—were at work to end this war as quickly as possible. I don't for one moment believe that anyone wanted this war to be extended, and, therefore, if I believe in my country and in my President and in our military leaders as I do, then I have to believe everyone was exerting their utmost effort to end it as quickly as possible."

(According to Colonel Risner and other returnees, treatment by the North Vietnamese—including increasingly better diets—began to improve in October of 1969. In that month's issue of AIR FORCE Magazine there appeared a cover story entitled "The Forgotten Americans of the Vietnam War," a special report on the POWs by Louis R. Stockstill that was later reprinted by *Reader's Digest* and otherwise widely hailed by the media and MIA/POW organizations that had begun to spring up. A Nixon Administration decision earlier that year to denounce North Vietnam's treatment of the POWs—coupled with growing public attention in the US—eventually led to worldwide concern for the POWs.)

When queried about the controversial subject of the possibility of amnesty for those who fled the country rather than serve in the armed forces, Colonel Risner's opinion was also typical of the majority of the returnees: "As a military man, I cannot be in favor of amnesty for anyone who fails to serve his country in time of need."

It had been feared that men in captivity for many years would be affected detrimentally when faced with the "culture shock" of adjusting to the changes in America's lifestyles. It was a fear that failed to

materialize to any substantial degree. POW returnees responded good-naturedly to questions about it. Through the years, newly captured prisoners had brought word about changing times in the States. And so the POWs—except in the remote camps—were kept up to date. As to changes in style, one said, "I like clothes, and fashions, but when my wife handed me a can of hair spray, I drew the line."

Colonel Risner was asked what one thing has struck him as the most dramatic change in America during his absence. He responded: "I think the most dramatic thing is this new way of, and I think I quote it correctly, 'doing your own thing,' *but I like it!*"

Other Sources of Information

The POWs also got information about events occurring in the outside world by interpreting the statements made by the North Vietnamese. "We'd get some news on their squawk box, and we would assess it in terms of what they were saying bad," said Air Force Lt. Col. Alan L. Brunstrom, shot down and captured in April 1966. ". . . if they said that our government had forgotten us, then we knew that they were making that much bigger effort to do something for us. . . . Our first indication that the United States had landed a man on the moon came in a radio broadcast when they said that Neil Armstrong did not have to walk on the surface of the moon to know what the lunar landscape looked like, he could have walked on the lower part of North Vietnam. . . . This was just a slip that was made, and this was how we got most of our news."

Among news the North Vietnamese did give the prisoners was some word about the antiwar demonstrations taking place in the US. Those POWs interviewed on the subject voiced the opinion that the demonstrations helped to prolong the war. Several of the returned POWs had comments about the antiwar activists who visited Hanoi. "I feel they had a right to dissent," said Lt. Col. Thomas J. Curtis, shot

down and captured in September 1969. "That was one of the reasons I was sitting in jail there. However, I felt that they should have confined their dissension to the home port—the United States."

The returning prisoners were indignant at press reports that they had been coached on the flight from Hanoi by government officials on what sentiments to express upon arriving at Clark. The Navy's Captain Denton, the first POW to deplane at Clark, said that he had "perhaps a quarter of an hour to select what I considered appropriate words" to convey how he felt about his return home. "He got on the airplane's loudspeaker," said Air Force Captain Geloneck, "and merely told us what he was planning to say and asked for a thumbs up or thumbs down; and we all gave him the thumbs up. As far as I know, he was given no guidelines at all on what to say when he got home."

Truce Agreement in Laos

In late February, an agreement was arrived at to end the war in Laos. US officials made contact with the Pathet Lao to determine how many Americans are held as POWs in that area of SEA. Several hundred US servicemen are listed MIA there.

Reports indicate that the Pathet Lao will probably use the POWs in its hands as leverage to gain US support for the cease-fire, the cessation of bombing, and the withdrawal of US personnel and Thai units serving there (*see p. 62*).

In a matter related to POW releases and reflecting the friendlier relations between the US and mainland China, Peking will release two US pilots shot down when their aircraft strayed over China during missions to North Vietnam.

The two men are Air Force Maj. Philip Smith, shot down and captured in September 1965, and Navy Lt. Cmdr. Robert Flynn, a prisoner since August 1967. US officials were also informed that the Chinese will review the sentence of John Dow-

ney, who, charged with being a CIA agent, has been in prison in China since 1952.

League of Families Crisis

Not since the ground swell of agitation for a more militant stance on the war has the League of Families faced such a trying time. The League's leaders are concerned that the families of returned POWs will now drop from its ranks, and that those of MIAs will fall into apathy and inaction resulting from their deep discouragement.

The League is urging its members to stand firm. Its policy all along has been that the return of the POWs is but one objective, that accountability and identification of MIAs are still very much at issue. League leaders are calling for continuing support and are launching a campaign to keep accountability in the public eye.

Aware of the delicacy of the situation, with respect to the release of the POWs and the establishment of peace-keeping operations in Southeast Asia, the League is continuing to hope that supplemental lists of POWs from Laos and North Vietnam may be forthcoming: "We do not know how realistic it is to believe that we may get supplemental lists, but we must cling to that hope for a time, while our government continues to urge our former adversaries to produce additional names."

The League points out that fifty-three men listed officially as POWs have not turned up and have not been recorded by Hanoi as having died in captivity. "Naturally, where there is good evidence that they were captured, our government will have an opportunity to make strong representations on their behalf.

"At the same time, we will no doubt be receiving further intelligence about the fate of some of these men and the fate of some of the missing from the POWs who have returned." This information must be in hand before strong action can be taken, the League believes. ■



The senior Navy POW, Capt. James B. Stockdale, was shot down in September 1965.



USAF Col. Fred V. Cherry, seven years a POW, brings himself up to date via AIR FORCE Magazine while recuperating.

THE AIR FORCE MEN WHO ARE RETURNING HOME

The following 324 US Air Force personnel are listed by the North Vietnamese and Viet Cong as being repatriated (those who reportedly died in captivity are listed separately). The thirty-two names in bold-face type are men previously carried as missing in action. The six men whose names are preceded by an asterisk are being returned from Laos. The compilation of names in this form was done by the National League of Families of American Prisoners and Missing in Southeast Asia.

- Abbott, Maj. Joseph S.
Abbott, Capt. Robert A.
Abbott, Maj. Wilfred K.
Acosta, 1st Lt. Hector M.
Alexander, Maj. Fernando
Alpers, Capt. John H., Jr.
Anderson, Capt. John W.
Andrews, Capt. Anthony C.
Acuri, Lt. William Y.
Austin, Capt. William R.
Ayres, Capt. Timothy R.
- Bagley, Lt. Col. Bobby R.
Baker, Capt. David E.
Baker, Lt. Col. Elmo C.
Ballard, Lt. Col. Arthur T.
Barbay, Maj. Lawrence
Barnett, Lt. Col. Robert W.
Barrett, Capt. Thomas J.
Barrows, Capt. Henry C.
Bates, 1st Lt. Richard L.
Baugh, Maj. William J.
Bean, Col. James E.
Bean, Capt. William R., Jr.
Beekman, Capt. Will D.
Beens, Capt. Lynn R.
Berg, Maj. Kile D.
Berger, Maj. James R.
Bernasconi, Lt. Col. L. H.
Biss, Maj. Robert I.
Black, TSgt. Arthur N.
Blevins, Maj. John C.
Bliss, Capt. Ronald G.
Bolstad, Maj. Richard E.
Bomar, Lt. Col. Jack W.
Borling, Capt. John L.
Boyd, Maj. Charles G.
Boyer, Capt. Terry L.
Brazelton, Capt. Michael L.
Breckner, Lt. Col. William J., Jr.
Brenneman, Capt. Richard C.
Bridger, Capt. Barry B.
Brodak, Maj. John W.
Brown, Capt. Charles A., Jr.
Browning, Capt. Ralph T.
Brunson, Capt. Edward A.
Brunson, Lt. Cecil H.
Brunstrom, Lt. Col. Alan L.
Buchanan, Capt. Hubert E.
Burr, Maj. Arthur W.
Burns, Col. Donald R.
Burns, Capt. Michael T.
Burrroughs, Col. William D.
*Butcher, Capt. Jack M.
Butler, Capt. William W.
Byrne, Col. Ronald E., Jr.
Byrns, Capt. William G.
- Callaghan, Capt. Peter A.
Camerota, Capt. Peter P.
Campbell, Capt. Burton W.
Carrigan, Capt. Larry E.
Cerak, Capt. John P.
Certain, Capt. Robert G.
Chambers, Capt. Carl D.
Cheney, Capt. Kevin J.
Cherry, Lt. Col. Fred V.
Chesley, Capt. Larry J.
Clark, Capt. John W.
Clements, Lt. Col. James A.
Collins, Lt. Col. James Q.
Collins, Maj. Thomas E., III
Condon, Maj. James C.
Conlee, Lt. Col. William W.
Cook, TSgt. James R.
Copeland, Lt. Col. H. C.
Cordier, Maj. Kenneth W.
Cormier, SMSgt. Arthur
Craner, Lt. Col. Robert R.
Crecca, Capt. Joseph, Jr.
Crow, Col. Frederick A.
Crumpler, Col. Carl B.
Curtis, Lt. Col. Thomas J.
Cusimano, Capt. Samuel B.
Cutter, Capt. James D.
- Daughtrey, Maj. Robert N.
Davies, Capt. John O.
Day, Col. George E.
DeSpiegler, Maj. Gale A.
Dingee, Capt. David B.
Donald, Capt. Myron L.
Doughty, Lt. Col. Daniel J.
Dramesi, Lt. Col. John A.
Driscoll, Capt. Jerry D.
Drummond, Capt. David L.
Duart, Lt. Col. David H.
Dutton, Col. Richard A.
- Elander, Maj. William J., Jr.
Ellis, Capt. Jeffrey T.
Ellis, Capt. Leon F.
Everson, Lt. Col. David
- Fer, Capt. John
Finlay, Col. John S.
Fisher, Maj. Kenneth
Fleener, Col. Kenneth R.
Flesher, Maj. Hubert K.
Flom, Capt. Fredric L.
Flynn, Col. John P.
Forby, Lt. Col. Willis E.
Ford, Capt. David E.
Fowler, Capt. Henry P.
Francis, Capt. Richard L.
Fraser, Capt. Kenneth J.
Fulton, Capt. Richard J.
- Gaddis, Col. Norman C.
Galati, Lt. Ralph W.
Gauntt, Capt. William A.
Geloneck, Capt. Terry M.
Gerndt, Capt. Gerald L.
Gideon, Lt. Col. Willard S.
Giroux, Capt. Peter J.
*Gotner, Maj. Norbert A.
Gough, MSgt. James W.
Granger, Lt. Paul L.
Grant, Capt. David B.
Gray, Capt. David F.
Greene, Maj. Charles E.
Grutters, Capt. Guy D.
Guarino, Col. Lawrence N.
Guenther, Capt. Lynn
Gutterson, Col. Laird
Guy, Col. Theodore W.
- Hall, Lt. Col. George R.
Hall, Maj. Keith N.
Hanson, 1st Lt. Gregg O.
Hanton, Capt. Thomas J.
Harris, Lt. Col. Carlyle S.
Hatcher, Lt. Col. David B.
Hawley, Capt. Edwin A., Jr.
Heeren, Capt. Jerome D.
Heiliger, Maj. Donald L.
Henderson, Capt. William J.
Hess, Maj. Jay C.
Hildebrand, Maj. L. L.
Hill, Capt. Howard J.
Hinckley, Capt. Robert B.
Hiteshew, Lt. Col. James E.
Hivner, Lt. Col. James O.
Hoffson, Capt. Arthur T.
Horinek, Maj. Ramon A.
Hubbard, Capt. Edward L.
Hudson, 1st Lt. Robert M.
Hughes, Col. James L.
Hughey, Lt. Col. Kenneth R.
- Ingvalson, Lt. Col. Roger D.
- Jackson, Capt. Charles A.
James, Maj. Gobel D.
Jayroe, Lt. Col. Julius S.
Jeffcoat, Maj. Carl H.
Jeffrey, Maj. Robert D.
Jensen, Maj. Jay R.
Johnson, Maj. Harold E.
Johnson, Maj. Kenneth
Johnson, Maj. Richard E.
Johnson, Col. Samuel R.
Jones, Maj. Murphy N.
Jones, Capt. Robert C.
- Kari, Maj. Paul A.
Kasler, Col. James H.
Keirn, Lt. Col. Richard P.
Kerr, Capt. Michael S.
Kirk, Col. Thomas H. J.
Kiltinger, Col. J. W., Jr.
Klomann, Capt. Thomas J.
Kramer, Capt. Galand D.
Kula, Capt. James D.
- Labeau, Capt. Michael H.
*Leonard, Maj. Edward W., Jr.
Lamar, Col. James L.
Lane, Capt. Michael C.
Larson, Col. Gordon A.
Lasiter, Maj. Carl W.
Latella, Lt. George F.
Latham, Capt. James O.
Lebert, Capt. Ronald M.
Leblanc, MSgt. Louis E., Jr.
Lengyel, Capt. Lauren R.
Lewis, Capt. Frank D.
Lewis, Capt. Keith H.
Ligon, Col. Vernon P.
Lilly, Maj. Warren R.
Lockhart, Maj. Hayden J.
Logan, Capt. Donald K.
Lollar, SSgt. James L.
*Long, Capt. Stephen G.
Luna, Capt. Jose D.
Lurie, Lt. Col. Alan P.
- Madden, SSgt. Roy, Jr.
Madison, Lt. Col. Thomas M.
Makowski, Lt. Col. Louis F.
Marshall, Capt. Marion A.
Martini, Lt. Michael P.
Mastin, Capt. Ronald L.
Matsui, Capt. Melvin K.
Mayall, Lt. William T.
McCuiston, Maj. Michael K.
McDaniel, Maj. Norman A.
McDow, Lt. Richard J.
McKnight, Lt. Col. George G.
McManus, Capt. Kevin J.
McMurray, Capt. Frederick C.
McNish, Capt. Thomas M.
Means, Lt. Col. William H., Jr.
Mechenbier, Capt. Edward J.
Merritt, Col. Raymond J.
Meyer, Maj. Alton B.
Milligan, Capt. Joseph E.
Moe, Capt. Thomas N.
Monlux, Capt. Harold D.
Morgan, SSgt. Gary L.
Morgan, Lt. Col. Herschel S.
Mott, Capt. David P.
Murphy, Capt. John S., Jr.
Myers, Lt. Col. Armand J.
Myers, Capt. Glen L.
- Nagahiro, Lt. Col. James Y.
Nasmyth, Capt. John H., Jr.
Nevens, Capt. Martin J.
Newcombe, Capt. Wallace G.
Nix, Maj. Cowan G.
Norris, Maj. Thomas E.
North, Lt. Col. Kenneth W.
- Odell, Lt. Col. Donald E.
O'Neil, Lt. Col. James W.
- Padgett, Maj. James P.
Parrott, Maj. Thomas V.
Peel, Maj. Robert D.
Perkins, Maj. Glendon W.
Peterson, Maj. Douglas B.
Pitchford, Lt. Col. John J.
Pollack, Capt. Melvin
Pollard, Lt. Col. Ben M.
Price, 1st Lt. Larry D.
Purcell, Lt. Col. Robert B.
Pyle, Capt. Darrel E.
Pyle, Maj. Thomas S., II
- Ratzlaff, Capt. Brian M.
Ray, Capt. James E.
Reich, Lt. William J.
Reynolds, Maj. Jon A.
*Riess, Capt. Charles F.
Ringsdorf, Capt. Herbert B.
Risner, Col. Robinson
Robinson, Maj. Paul K., Jr.
Robinson, MSgt. William A.
Rose, Capt. George A.
Ruhling, Capt. Mark J.
Runyan, Col. Albert W.
- Sandwick, Lt. Col. Robert J.
Sawhill, Col. Robert R.
Schierman, Maj. Wesley D.
Schwertfeger, Capt. W. R.
Seeber, Lt. Col. Bruce G.
Seek, 1st Lt. Brian J.
Sehorn, Capt. James E.
Shanahan, Maj. Joseph F.
Shattuck, Lt. Col. Lewis W.
Shingaki, Maj. Tamotsy
Shively, Capt. James R.
Sienicki, Lt. Theodore S.
Sigler, Capt. Gary R.
Sima, Lt. Col. Thomas W.
Simonet, Col. Kenneth A.
Simpson, Capt. Richard T.
Singleton, Capt. Jerry A.
Stavay, Lt. Col. Dewey L.
Smith, Maj. Richard E.
Smith, Capt. Wayne O.
Spencer, Capt. William A.
Sponeberger, Capt. R. D.
Spoon, Capt. Donald R.
Stavay, Col. John E.
Sterling, Lt. Col. Thomas J.
Stirm, Lt. Col. Robert L.
*Stischer, Lt. Col. Walter M.
Stockman, Col. Hervey S.
Storey, Maj. Thomas G.
Stutz, Capt. Leroy W.
Sullivan, Lt. Col. Dwight E.
Sumpter, Lt. Col. Thomas W.
- Talley, Maj. Bernard L.
Talley, Lt. Col. William H.
Temperley, Maj. Russell E.
Terrell, Lt. Col. Irbly D.
Thorsness, Lt. Col. Leo K.
Tomes, Lt. Col. Jack H.
Torkelson, Capt. Loren H.
Trautman, Maj. Konrad W.
Trimble, Lt. Jack R.
Tyler, Maj. Charles R.
- Uyeyama, Maj. Terry J.
- Van Loan, Lt. Col. Jack L.
Vaughn, 1st Lt. Samuel R.
Vavroch, 1st Lt. Duane P.
Venanzi, Capt. Gerald S.
Vissotzky, Lt. Col. Raymond W.
Vogel, Lt. Col. Richard D.
- Waddell, Capt. Dewey W.
Waggoner, Maj. Robert F.
Walker, Capt. Hubert C.
Waltman, Lt. Col. Donald G.
Ward, Lt. Brian H.
Webb, Maj. Ronald J.
Wells, Lt. Kenneth
Wells, Lt. Col. Norman L.
Wendell, Maj. John H.
Williams, Capt. James W.
Wilson, Maj. Glenn H.
Wilson, Capt. Hal K., III
Wilson, Lt. William W.
Winn, Col. David W.
Writer, Capt. Lawrence D.
- Young, Lt. Col. James F.
Young, Capt. Myron A.
Yuill, Lt. Col. John H.
- Zuberbuhler, Capt. Rudolph U.

The following sixteen Air Force men are reported to have died in captivity

- Adams, SMSgt. Samuel
Atterberry, Maj. Edwin L.
Burdett, Col. Edward B.
Cobelli, Maj. Earl G.
- Diehl, Maj. William C.
Dodge, Col. Ward K.
Dusing, SMSgt. Charles G.
Grubb, Lt. Col. Wilmer N.
- Heggen, Lt. Col. Keith R.
Moore, SMSgt. Thomas
Newsom, Col. Benjamin B.
Pemberton, Col. Gene T.
- Schmidt, Col. Norman
Silan, Capt. Lance P.
Storz, Lt. Col. Ronald E.
Weskamp, Capt. Robert L.

The Making of a Defense Budget

Constitutional crisis? Or is it just a political squabble? President Nixon, looking at the deficit, has impounded some money, slowing down programs already voted by Congress. It has been done before by other Presidents, but this time there is a storm a-brewing on Capitol Hill. Some of the trouble, critics say, lies simply in the way the House and Senate handle appropriations bills. A review of the procedures still doesn't answer the key question:

Who's in Charge of the Money?

By **Claude Witze**
SENIOR EDITOR,
AIR FORCE MAGAZINE

THEY say there is a constitutional crisis impending, brought about because Congress and the White House are not able to agree on control of the nation's purse strings. The question appears to be: Who's in charge of the money?

President Nixon contends he has authority to refuse to spend funds appropriated by Congress. Congress is challenging this, in the courts and with legislative proposals. On the basis of past performance—Thomas Jefferson, Harry S. Truman, Dwight D. Eisenhower, and Lyndon B. Johnson all impounded funds whenever they

thought it a good idea—this Administration has not broken precedent. But what the Administration *has* done, without question, is step into a void and try to do something about spending priorities.

Congress thought it could do something about priorities, simply by appropriating money. This would hold if the money were unlimited, but it is not. Congress handles the annual budget in pieces and never gets down to stipulating which money should be spent first, despite all the shouting on the floor about the requirement that this be done. The executive branch has decided that it must fix priorities; through the power to control spending. That is how the constitutional crisis, if there is one, has come about. At the moment, there is no evidence the Defense Department's programs are involved to any great degree, but they will be, at least in future years. The extent will depend on how the debate goes and how the issue is resolved.

It is interesting, but not very important, to note that in this case the President is supported by such politically distant characters as Sen. William Proxmire, vice chairman of the Joint Economic Committee, and former Attorney General Ramsey Clark. He is opposed by Supreme Court Justice William H. Rehnquist and Sen. Sam J. Ervin, Jr., who is considered one of the top Washington authorities on the Constitution.

This reporter has been monitoring the Defense Department budget through the pangs of birth, and the inevitable surgery that follows, for twenty years. It is an annual exercise and a grubby one. Hours of plodding through statistics are relieved only in rare years, as in the Kennedy regime when the President took a walk in the rose garden with a powerful congressman and made him change his mind about an edict to the White House. The debate about Fiscal 1974, now under way, also is going to be different. You can count on that.

In order to understand what is taking place this year, it is essential to know how Congress determines its own prerogatives in this area and how it carries them out, if it does. Indeed, there is one school that argues whatever Congress is getting now, Congress deserves. This, the case goes, is because Congress has surrendered its powers so willingly in the past. Why did it surrender? Because it has had, for all practical purposes, no choice. The committees that are in charge of tax matters could not be more remote from the committees that are in charge of how the money shall be spent.

In the House of Representatives, the Ways and Means Committee, created in 1802, once had authority over spending. But, in 1865, the

Appropriations Committee was created, and that changed the picture. In the Senate, there is a parallel situation, with the Finance Committee examining tax proposals. It has a reputation as a "haven for special-interest tax schemes." The Senate also has an Appropriations Committee, working, piecemeal, in a world of its own. It was created in 1867. As budgets have grown more complex, particularly in the days since Franklin Roosevelt's New Deal, Congress has been successful in guarding its powers in the field of taxation, but totally unsuccessful in wedding that job to spending. The executive department's Bureau of the Budget, now the Office of Management and Budget (OMB), is in the driver's seat.

6,400 Budget Reviewers

The Pentagon's budget conception takes place about two years before the budget itself is sent to Capitol Hill as part of the President's federal budget. AIR FORCE Magazine asked the Defense Comptroller how many people are involved in the Pentagon's budget-review process. The answer is about 4,900 professional *civilian* personnel. On top of this, there are about 1,500 military persons involved. The total: 6,400. We did not seek similar figures from other departments, such as Health, Education and Welfare, which has a bigger budget than Defense.

OMB has a staff estimated at 700. Comptroller General Elmer B. Staats has testified that his General Accounting Office, an arm of Congress, has well over a thousand professionals assigned full time to Defense Department work. Presumably most of them are occupied checking on how DoD money is utilized, both by the department and its contractors.

Standing in line next to this army, the four most concerned congressional committees—Senate and House Armed Services and Senate and House Appropriations—have a corporal's guard of staff assistants. There are not more than eighty-five on the four staffs. In today's world, they are disarmed, as well, for they have no computers at their command. The staff veterans, in many cases, are legitimate experts.

There is no yardstick to measure the work load. The subcommittee on Defense of the House Appropriations Committee held fifty-six days of hearings on the Fiscal 1972 budget and published 8,296 pages of declassified testimony in nine volumes. For the same budget request, the Senate subcommittee held thirty days of hearings and published 4,873 pages in four volumes. The hearings on military posture, held by the House Armed Services Committee, usually are published in two volumes

and fill about 5,000 printed pages. The task is virtually duplicated by the Senate Armed Services Committee.

AIR FORCE Magazine does not keep any records on the output required to keep track of the rest of the federal budget, however cursory the examination, and it must be cursory in view of the magnitude of the job. It is assumed that the Defense budget gets more attention, and detailed attention, than other proposed expenditures.

It is only since the 1960s that the Armed Services Committees have gained substantial power. As the magnitude of the budget rose, the law was made to require that they authorize many military appropriation levels before the two Appropriation Committees fund the year's program. Almost all the action is in the flexible areas of research and development and procurement. It is estimated that about two-thirds of the Pentagon budget request does not require authorization by the Armed Services Committees. In this category are monies for operation and maintenance, retirement funds, salaries, and benefits.

Work of the Subcommittees

No picture of the burden is complete without note of what House Armed Services does in addition to authorization. There are four legislative subcommittees, plus special subcommittees and an investigating subcommittee. In one recent Congress, there were twenty-two special subcommittees. These looked into everything from US air defense to the M-16 rifle, an outbreak of meningitis at an Army installation, and survivors' benefits. In the 91st Congress, for example, these groups held 495 meetings and sent eighty-three bills to the floor. A similar record was set by the Senate Armed Services Committee.

The President's budget, in highly detailed form, goes to Congress at the start of the session. This year, it was at noon, on January 29. The budget looks like a massive telephone book. After some preliminary comments, most of them political, the committees and their subcommittees go to work. It is almost a rare day between February and June when there is not some hearing under way, usually behind locked doors, on one side of the Hill or the other. Defense witnesses, starting with the Secretary of Defense and the Chiefs of Staff, troop to the Capitol. They spend hours on the witness stands telling, for the most part, the same story to different audiences.

Most critical are the Defense subcommittees of the House and Senate Appropriations Com-

mittees. The parent committees have fifty-five and twenty-four members, respectively, and, in each case, about a dozen are assigned to the defense subcommittee. Of the two chambers, the House is considered more important, because appropriation bills originate in the House. This appears to be a custom, more than anything else, growing out of the fact that the law requires revenue bills to originate in the House, and spending bills have gone down the same track.

The House Appropriations Committee is divided into thirteen subcommittees, of which Defense is one. A common criticism is that this results in piecemeal consideration of the budget, and usually by Congressmen who may not be sufficiently critical of the Administration's requests. Decisions made by subcommittees rarely are overruled by the full committee.

Critics frequently make an issue of the vast power held by the appropriations subcommittees. The argument is that the full committee has no way of knowing what their product will be until it is laid upon the table. Then, fast action is required, usually without much discussion. The system, says one unhappy Congressman, "makes full committee meetings perfunctory to the point of being farcical." It is common for a full committee to approve a subcommittee's proposals, calling for the expenditure of billions, in a half hour. The fragmentation of committee work on the budget also is a target for critics, who find it impossible to consider priorities when the budget is voted upon in pieces.

The Inevitable Compromise

Another factor is the inevitable compromise. The House and Senate Appropriations Committees do not always agree. The House and Senate pass different versions of an appropriations measure, as recommended by their respective committees. Then, the bill goes to conference. The conferees normally are the ranking members of the House and Senate subcommittees that worked on the bill. They meet until they resolve their differences. It is a chore that may take one session or be stretched out over several weeks. When agreement is reached, first the House, and then the Senate, vote on the final measure and send it to the White House for the President's signature.

During this process, it should be emphasized, the input to the subcommittees does not come entirely from the agency involved. Regardless of which part of the budget is being considered—agriculture, defense, foreign op-

erations, housing and urban development, interior, public works, or transportation—the subcommittee staff provides much of its own expertise. They analyze the proposed budget for their particular area and, at the first hearings, accept the input of the agency involved.

Then, there is an effort to hear the opinions of other responsible persons. Sometimes trade associations, unions, private firms, and others with an interest are heard. GAO audit reports are put into the record, as well as research by the Library of Congress and news stories from newspapers and periodicals.

There also is no denying that outside pressure groups make their presence known. Suppose that the House Appropriations Committee deletes the request for funds to build an aircraft carrier, and the House accepts that decision. Almost at once, friends of the carrier project will try to persuade members of the Senate that the funding should be restored, and foes will press the other way. On some issues, this argument can get heated, as it did not long ago over the question of the anti-ballistic missile.

The real climax takes place in the Senate subcommittee, when it is ready to "mark up the bill." At this point, the Defense Appropriations Subcommittee, for example, sits down to determine the exact amount that will be allocated to each item. The professional staff has prepared a "side slip," which is a long memorandum—it can go to hundreds of pages—that is a boiled-down report on what was learned during the hearings and staff studies.

The markup of the bill can take a day or it can take weeks, depending on the amount of controversy. Then, the markup is passed to the full Appropriations Committee, and it is marked up again, sometimes with changes, but rarely drastic changes. The full committee then submits a report to the Senate, along with the proposed bill.

Under the system, this process is gone through for thirteen separate appropriations bills. Naturally, some observers believe the control of Congress over spending would be tighter if there were a single omnibus bill, because then everyone would know the total being considered, which they do not know under these circumstances. It was tried once, in 1951, and dropped as unwieldy.

Less Than Total Power

Much is made of the fact that the Appropriations Committees of the two branches of Congress do not have total power. Maurice P. Pujol, a member of the Senate Committee staff, complains that the procedures used by Con-



Chairman of the Senate Appropriations Committee is Arkansas Democrat John L. McClellan, who anticipates a budget deficit of at least \$12.7 billion and considers the nation's present fiscal policy unsound.

gress are to blame for much of its failure to control spending.

"Congressional control would be considerably enhanced," Pujol has written, "if all actions that result in expenditure were centralized in the appropriations committees of the House and Senate, so that the appropriations committees would review the total obligational and spending program. When control over spending is diffused within Congress to the extent it is today, there really is no specific responsibility."

What he is saying is that the real question of priorities among fragments of the budget never comes up for discussion in Congress, as it must in the OMB, an arm of the White House. Congress has a tendency to look at a problem and pass open-ended legislation without knowing how much it will cost. A recent example was the law providing benefits for miners suffering from black lung disease. Nobody knows how many miners or survivors will collect. Hence, nobody knows how much it will cost, least of all the appropriations committees. It is estimated that more than half of the federal budget is mandated this way. Last year, Congress considered a budget of \$271 billion, but only \$178 billion of that was scrutinized by the committees.

Bringing the focus back to defense questions, there are changing attitudes in Congress. From the establishment of DoD in 1947, for at least twenty years it was the House Appropriations Committee that chopped away at the Pentagon's proposals. Now it is the Senate Appropriations Committee. Until 1967, the Senate committee would wait until the House committee had finished its hearings before starting its own. Now the hearings are simultaneous, and the Senate group is doing more original work.

Chairman of the House Appropriations Committee and its Defense Subcommittee is Rep. George H. Mahon of Texas. He has been in this job since it was created in 1947 and, according to statistics in *Congressional Quarterly*, has not lost a floor fight on a defense appropriations bill since 1958. At the same time, Mr. Mahon is not without his critics. They accuse him of failing to use his howitzer power to strengthen his hold on the budget. His subcommittee chairmen, this argument goes, are not subject to proper discipline and are inclined to run independent of the full committee.

Mr. Mahon's counterpart in the Senate now is John L. McClellan of Arkansas, who replaced Allen J. Ellender of Louisiana when he died last year. On February 6, Mr. McClellan addressed the Senate in a speech that was

largely ignored by the press. He clearly is alarmed by the prospect of dealing with the new Fiscal 1974 budget. He anticipates thirteen or more appropriation bills, taking care of about \$172 billion out of the President's \$288 billion budget. The remaining \$116 billion requires no action. He anticipates a deficit of at least \$12.7 billion. The fiscal policy, says the chairman, is not sound.

Mr. McClellan pleads for restraint. He does not condemn President Nixon for withholding funds from some programs, but suggests that the decision be reviewed and modified "to permit an orderly phased-out termination." He says he wants to cooperate with the White House and recognizes the challenge to Congress. The chairman says he will ask each of his appropriations subcommittees to establish its own ceiling, after considering how much money is coming in and what is accepted as essential outlay.

Changing Attitudes

It is not true, as some of the young Turks keep proclaiming, that the attitude of Congress does not change. The hearings and debates on defense matters are not like they were twenty years ago. The members are critical, they seek more information, and they demand better justification. And it is not true that old men hold the floor alone. The newcomers are speaking up, not always with success, but they are allowed to speak.

When this reporter first went on the beat, it was said that Carl Vinson—the "Admiral"—didn't know the names of junior members on his House Armed Services Committee. Well, today's chairman, F. Edward Hébert, knows every one of them and never fails to give them at least five minutes of hearing time to express themselves. Usually, they get a lot more than five minutes and sometimes use it to criticize Mr. Hébert, a forensic exercise that old Carl Vinson would have found little short of rude.

In Vinson's day, a dissenting view in a committee report was almost unheard of. Now, they are expected. They are carried to the floor and come up for a vote in the form of an amendment. The amendments rarely are accepted.

The hearings, by Armed Services and Appropriations, are more extensive than ever.

Our winter apprehension, that a constitutional crisis threatens, sounds a bit like the cry of an alarmist. Congress is more flexible than it gets credit for being, and not even the political facts of life in 1973 will keep it from changing its procedures, if those changes are essential. ■

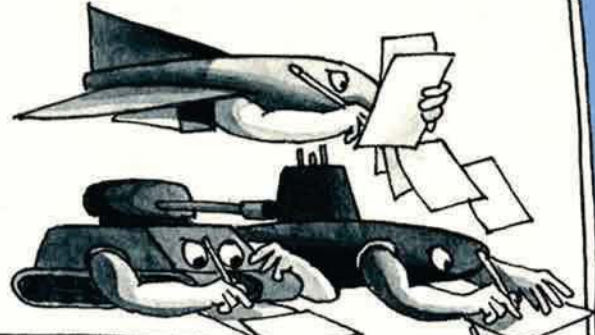


Rep. George H. Mahon, Democrat from Texas, has been Chairman of the House Appropriations Committee and its Defense Subcommittee since 1947. It is said that since 1958, he's never lost a floor fight on a defense appropriation bill.

"THE MAKING OF A DEFENSE BUDGET"

THE making of a defense budget is a two-year struggle. The cycle starts in widely scattered elements of the Defense Department, and the results are brought together by the second busiest man in the Pentagon—the DoD Comptroller. Then the Pentagon's proposals (which for Fiscal '74 ask for 28.4 percent of the total federal budget) go to the White House, by way of the Office of Management and Budget (OMB). There they are further refined and prepared for Congress. On the Hill, ponderous machinery accepts inputs from a multitude of sources. This is where our particular brand of democracy makes itself felt as Senators and Representatives listen to the demands of constituents, the military services, economists, technologists, industry, and lobbyists of every hue and persuasion. In the end, the product is a compromise. And who is in final charge of the money? Apparently, it is the President, but Congress isn't always happy with the way he sometimes refuses to sign checks. Here's AIR FORCE Magazine's idea of what the cycle looks like and how it works. The artist is Dill Cole.

The services determine their needs ...



which are consolidated ...

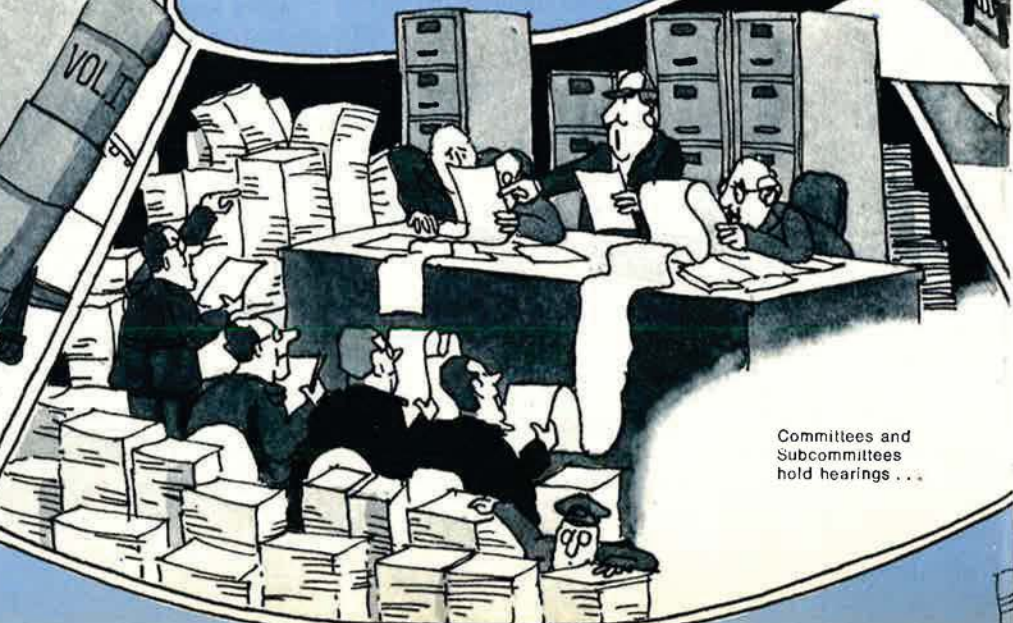


and reviewed by OMB and GAO.

Then the President presents the budget ...



to Congress, whose ...



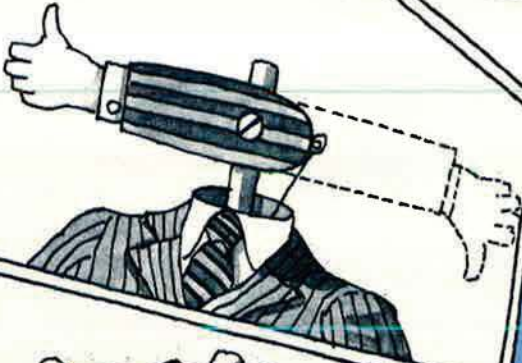
Committees and Subcommittees hold hearings ...



The House and Senate work out their differences ...



and finally make their decisions.



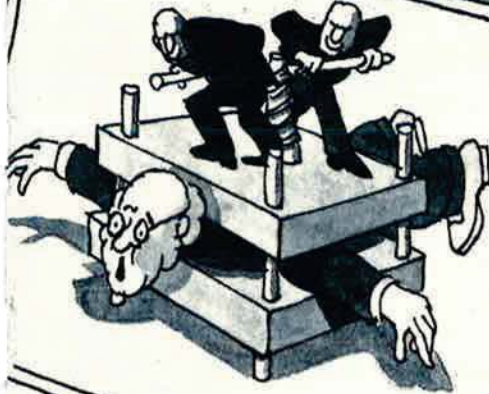
and draft legislation ...



which goes to the White House for signature,



and pressure groups ...



whereupon the money ...

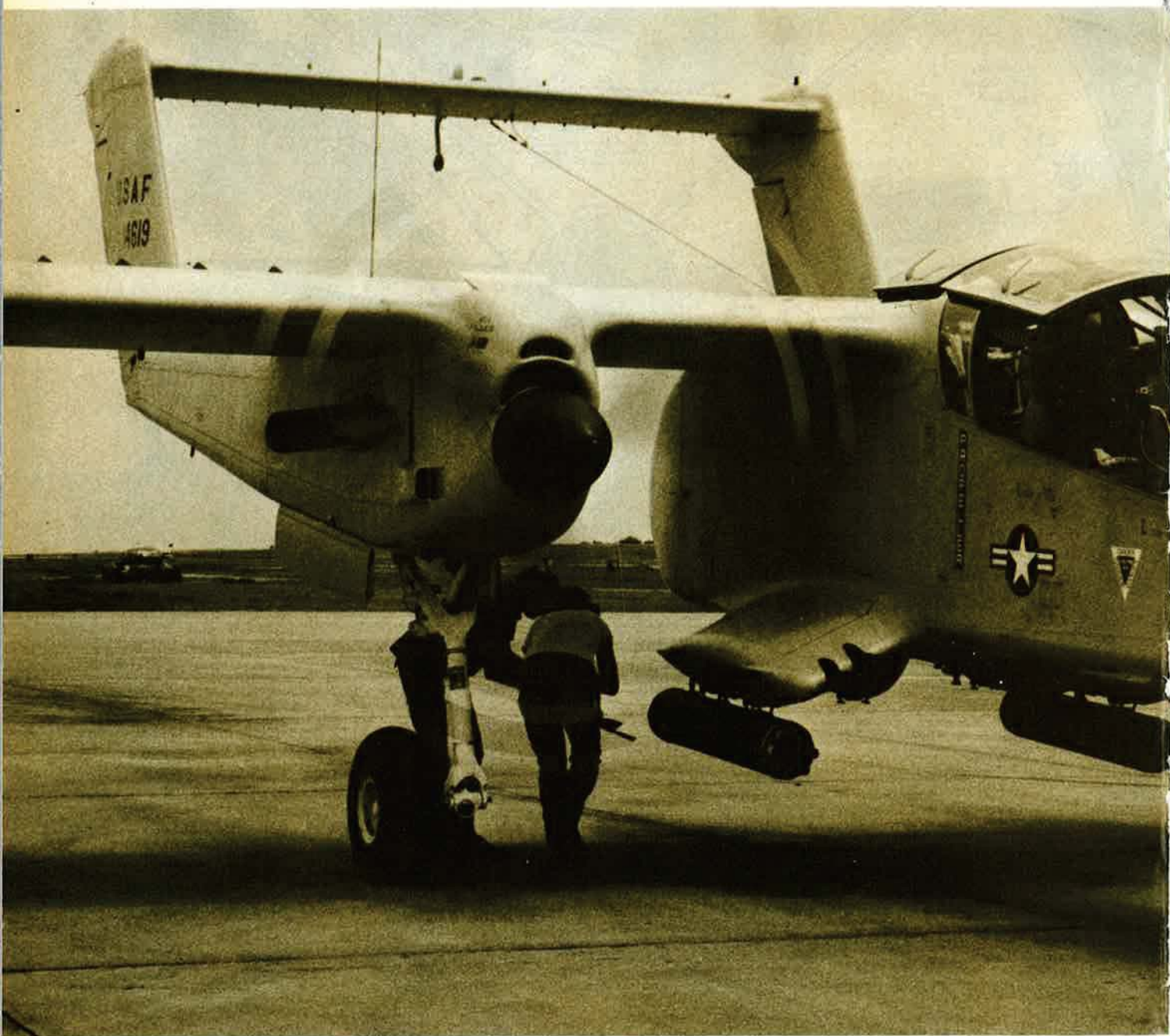


and listen to experts ...



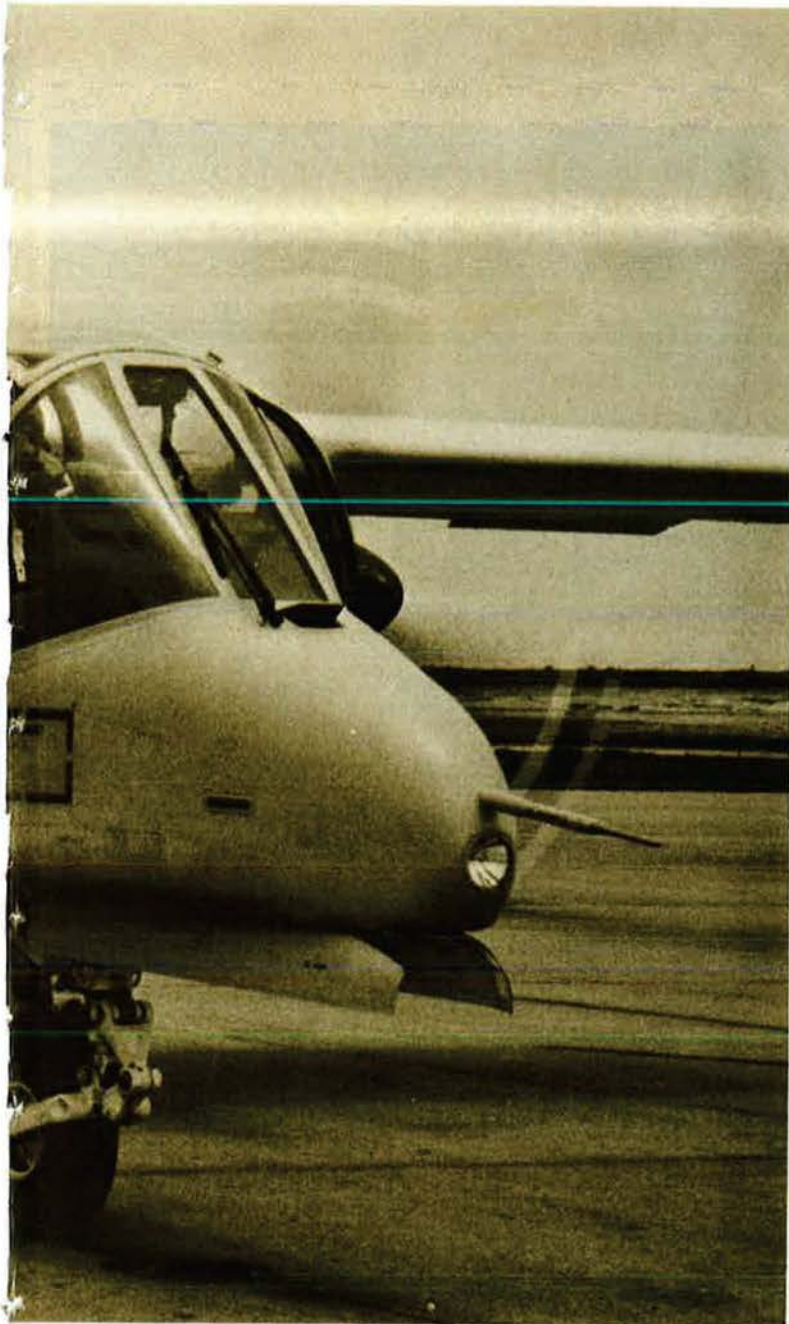
may or may not be spent, as the President chooses.





PILOT REPORT

By Capt. Henry S. Bartos, USAF



An OV-10 instructor pilot who flew the Bronco in SEA tells about this "double-breasted hummingbird," a counterinsurgency aircraft that's not only outstanding in its primary FAC role, but also can fight its way out of some pretty hot spots when the chips are down. The bird itself, its unique qualities, and its tactics are all here in . . .

THE OV-10:

USAF'S BATTLING BRONCO

A "double-breasted hummingbird" came into my life, and I found my calling. I had been selected for B-52 training when along came a program called Palace Cobra, and I was picked to attend OV-10 school instead.

My first reaction? What the heck is an OV-10?

Only later did I discover that this sweet little double-breasted hummingbird was my cup of tea.

The North American Rockwell OV-10A Bronco is one of the new-

est aircraft in the Air Force inventory. Although the aircraft was designed for counterinsurgency work, the Air Force has found the OV-10 ideally suited for the forward air controller (FAC) mission. The Bronco, tailored to modern limited

THE OV-10:

war and counterinsurgency needs, operates in the medium to low segment of the performance spectrum. Since it is faster and more tactically versatile than helicopters and slower but more maneuverable than jets, the OV-10 can handle close-in tactics not possible with either choppers or jets.

After having flown more than 1,800 hours in the Bronco, of which 840 were logged in the Republic of South Vietnam, I can personally attest to this bird's outstanding ability to find and hit battlefield targets close to friendly troops.

Tailored to Its Task

Let me give you a more comprehensive view of my double-breasted hummingbird. The Bronco's performance, features, and equipment match the functional capabilities needed for the integrated air-ground battlefield team. The ability to operate up near the frontline ground troops provides the FAC with a better understanding of the tactical situation and decreases response time. The OV-10's maneuverability and survival features permit close-in, low-altitude tactics. This ability to get in close, combined with exceptional visibility, results in better target acquisition, quick attack, and delivery accuracy.

For coordination and tactical control effectiveness, the Bronco has more than adequate communications and navigation equipment. The FAC can orbit a suspected enemy position and use a VHF-FM radio system to coordinate with friendly ground forces and a UHF set to communicate with attack aircraft and/or the tactical air control agency. If needed, he can switch to a long-range, high-frequency, single sideband (HF-SSB) system.

OV-10 Bronco—Facts and Figures	
Designer and Manufacturer	North American Aerospace Group, Rockwell International. Development contract: October 1964. Production contract: October 1966.
Type	Two-seat, multipurpose, counterinsurgency aircraft.
First Delivery to USAF	June 1967.
First USAF Combat Mission	July 1968.
Wingspan	40 feet.
Length	41 feet, 7 inches.
Height	15 feet, 2 inches.
Weight	7,000 pounds empty, 9,900 pounds normal takeoff.
Top Speed	242 knots (279 mph).
Service Ceiling	28,000 feet.
Internal Fuel Capacity	252 gallons.
Normal Mission Duration	3½ hours in FAC role.
Ferry Range	1,200 nm with 150-gallon, jettisonable external tank.
STOL Capability	Takeoff distance at 11,500 pounds—1,000 feet. Over 50-foot obstacle—1,500 feet. Landing distance at 9,200 pounds—500 to 600 feet.
Powerplant	Two Garrett AiResearch T76-G-410/411 turboprop engines, 715 shp each.
Armament	Four 7.62-mm M-60 machine guns, plus 4 hard points under fuselage for rocket pods or other ordnance, 600-pound capacity each.
Other Users	US Marine Corps; West German, Thai, and Venezuelan Air Forces.

In the navigational aids department, the OV-10 has a gyro compass, direction finder, and TACAN to indicate distance, bearing, and ground position. It also has an IFF and electronic beacon (TACAN plus a strong UHF signal) that permits positive homing on the OV-10 by fighter aircraft.

Another important factor of FAC coordination is the ability to operate from austere forward areas. This

calls for a bird with STOL performance, a rough field gear, and a low support/maintenance requirement.

Most of my flying in SEA was from forward areas. The unpleasant thought of "Charlie" waiting to take a potshot at me from the shelter of the tall rubber trees that surrounded most of the rough strips persuaded me to use maximum-performance takeoffs. Often, I would return to my forward operating loca-

tion at a relatively safe altitude and tightly orbit home plate without passing the ends of the landing strip.

The unique knuckled-under landing gear can take more punishment and abuse than a pilot can. North American says the OV-10 landing gear has been demonstrated at speeds up to ninety-five knots on a specially constructed field so rough that automobiles can't go faster than thirteen mph on it without loss of control. I believe it.

As for steering, the OV-10 has hydraulically controlled nosewheel steering and brakes on each wheel. Also, by increasing or decreasing engine power, the plane can be easily steered. With this variety of steering capabilities, she can pivot on a dime. Normally, the brakes are not needed, because the props can be reversed.

Usually, only a crew chief is required at the forward area to refuel, arm, and inspect the Bronco. The JP-4 fuel the aircraft uses is readily available at forward operating locations.

Another important feature built into the OV-10 is its unsurpassed visibility. A primary requisite of effective air/ground operations is the ability to see the expertly concealed enemy. This was especially true in SEA, where "Charlie" had had years of experience in hiding from airborne eyes.

The tandem cockpit arrangement was designed to give both the pilot and observer unobstructed panoramic visibility on both sides of the bird. The canopy has minimum support structure overhead, allowing uninterrupted ground scanning—even when the Bronco is in a steep turn. It sort of makes you feel like a big, bare eyeball, relentlessly searching for that telltale sign.

OV-10 Tactics in SEA

Although the enemy could expertly conceal himself in the jungle, we FACs knew a few tricks, too. In fact, we were much like the Indian scouts employed by the cavalry in the old West. We would look for recently used trails, a river with a muddied spot (indicating a recent

crossing), a telltale wisp of smoke from the jungle, or even the type of clothing hanging on a line in a small village. This could be done only with the Bronco's superb visibility, coupled with an outstanding maneuverability and wide performance range.

Normally, I would fly low (about 1,500 feet) and slow (about 120 knots) for maximum visibility, but at the same time, I would keep my nose moving to prevent "Charlie" from drawing a bead on me.

After precisely locating the coordinates of a preplanned strike zone, I would call the nearest ground force "friendlies" to let them know what I was doing and ask them to identify their position. If they were secure, they would "pop some smoke"—or, if insecure, they would lay a panel on the ground. After getting clearances from the friendlies and from Brigade Headquarters, the scheduled fighters would arrive. The white top of the OV-10 is easily spotted by the fighter jocks, or, if needed, I could use the Bronco's smoke generator.

When the fighter jocks were briefed and ready for me to mark the target, I would pick up my airspeed, roll in from any direction with a "split S" or an aileron roll, and head right into the target. I'd keep my tracking time to a minimum, because as you track the target, the enemy tracks you. I would snap in a marker rocket and pull right off. The OV-10 is stressed for six Gs and will almost swap ends with you.

Then I would clear the fighter to "Hit my smoke!" After the fighter jocks did their bombs-away bit, I'd give them a damage assessment and send them on their way.

Although preplanned air-strike targets are selected by Army intelligence, the FAC must be extremely careful about the location of friendlies to ensure their safety. FACs have to be expert map readers and can readily plot out six-digit coordinates within 100 meters in heavy foliage.

After a preplanned strike, I would "V-R around" (visual recce) until I spotted something or heard

from a ground radio operator requesting support.

From dawn to dusk, FACs are airborne to direct preplanned air strikes and support ground forces as needed. For example, friendlies on patrol might encounter and engage "Charlie," and we would have bombs on them within thirty minutes. If immediate firepower is required, the Bronco carries four



The OV-10's landing gear was tested at ninety-five knots on this torture course.

pods of rockets, which include fourteen "Willie Petes" (white phosphorous smoke rockets) and fourteen H-E rockets (high-explosive shrapnel rockets). In addition, four M-60 machine guns with 2,000 rounds of 7.62-mm ammo are mounted and ready for the FAC to use.

The Willie Petes are used for marking targets. The H-E rockets are quite effective—especially when two or three are fired simultaneously into an area. With the sta-

THE OV-10:



In addition to its four rocket pods, the OV-10 carries four 7.62-mm machine guns—a lot of sting for a “hummingbird.”

The author, Capt. Henry S. (Hank) Bartos, was commissioned in 1966 through the AFROTC program at the University of South Carolina. After 300 hours in B-52s, he completed OV-10 training at Hurlburt Field, Fla., in early 1969, prior to his tour as a FAC in Southeast Asia, where he logged 840 combat hours in the OV-10. Captain Bartos is now an instructor pilot and functional check pilot in the OV-10 at Hurlburt Field. With 1,850 hours in the Bronco, he is ranked fifth in the Air Force in OV-10 flying time. Below: Captain Bartos.



bility of the OV-10, rockets can be delivered with pinpoint accuracy.

This ordnance isn't thrown around haphazardly. It is used only when an emergency situation comes up, and then clearances must be obtained before using the ordnance. The FAC's primary mission is to find worthwhile targets and direct air strikes against them.

Fighting With the 1st Air Cav

I spent the first half of my SEA tour with the 2d Brigade of the 1st Air Cavalry Division, and the other half with the division's 3d Brigade. The 1st Air Cav always went where there was plenty of action. I went with them and flew out of the Army airfields—sometimes on short and narrow PSP runways made of steel matting, or on aluminum runways, and occasionally on a 3,000-foot dirt strip surrounded by rubber trees.

The quick attack capabilities of my hummingbird came in handy when in a high wind situation my smoke would blow away before the lead fighter could roll in, or if my Willie Pete hit into a marshy area. Then I could roll right back in to mark again with no trouble at all.

Because of the Bronco's exceptional maneuverability and visibility, I could zoom off my mark, watch the Number One fighter's bombs hit my smoke, and see Number Two roll in all at the same time.

The high degree of survivability engineered into the OV-10 made me feel a lot more confident while flying in a combat situation. A respectable capability to absorb small-arms fire is provided by 328 pounds of armor plate behind and beneath each seat. In addition, the OV-10 has a bullet-resistant windshield, self-sealing fuel tanks, and redundancy in flight and control systems. It also has dual engines that give it a single-engine flyaway capability.

Another important feature of survivability is evasion. The Bronco's high maneuverability and high load factor (strength) allow you to take violent evasive maneuvers. And, of course, its ordnance load makes an enemy think twice before he takes potshots from the ground.

Although I have never had the opportunity to “ride the seat,” if the need to punch out should ever arise, I would feel safer in the OV-10 than in any other aircraft. The LW-3B ejection seats in the Bronco will get you out alive at zero altitude and at all speeds from stop to maximum. Its recovery capability, including high sink rate and off-horizontal ejections at speeds less than 200 knots, exceeds all other contemporary escape systems. The firing sequence allows the pilot to automatically eject the back-seater.

The FAC job is probably the most rewarding in the Air Force. You get to see what is going on—to be with the Army and know what the real picture is like. You are there when prisoners are interrogated. You get to see and know the people living in your working area. You feel their appreciation.

I like being a FAC, and I'm proud of the OV-10 Bronco, my double-breasted hummingbird. Sure, it's rough eating out of a mess kit and living under Army field conditions, but when you help a soldier in a tight spot, that makes it all worthwhile. Ask a soldier. He'll tell you what I mean. ■

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Artist's impression of the Boeing 707-LRPA in the configuration proposed for service in Canada

BOEING

THE BOEING COMPANY; *Head Office: PO Box 3707, Seattle, Washington 98124, USA*

BOEING 707-LRPA

On 1 November 1972 the Canadian Government issued a Request for Proposals for a long-range patrol aircraft (LRPA) to replace the fleet of Canadair CL-28 Argus piston-engined aircraft that currently fulfil this rôle in the Canadian Armed Forces' Maritime Air Command. To obtain maximum utility from this \$750 million programme, the Canadians desire that the new aircraft should, in addition to the basic maritime reconnaissance rôle, be capable of other duties that range from Arctic surveillance to wildlife management and cataloguing tasks, including land-resources exploration, troop

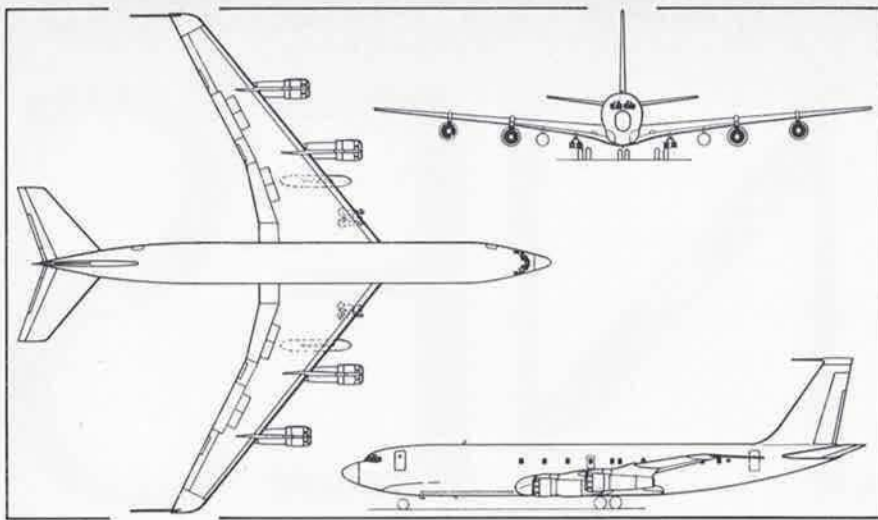
transport, and flight refuelling of fighter aircraft. It is reported that Australia is interested in a similar type of aircraft to replace its force of Lockheed SP-2H Neptunes.

To meet the Canadian requirement, The Boeing Company has proposed a specially-developed version of its Model 707-320C; and to demonstrate the potential of such an aircraft has modified a Model 720 acquired from a charter operator. Details of the 707-320C and 720, which are basically similar in construction, can be found in the 1972-73 and 1970-71 *Jane's*, respectively.

The current ASW mission calls for an aircraft able to operate for long periods at extreme low altitudes, but it is envisaged that the advanced ASW missions of the 1980s will require also adequate performance in a high-altitude environment. Flight tests completed as a company-financed programme by

the 720 test-bed aircraft have demonstrated both capabilities. It has flown for long periods at only 200 ft (60 m) above the ocean surface, performed 40° banks, dropped sonobuoys successfully from altitudes up to 40,000 ft (12,200 m) at a speed of 400 knots (460 mph; 740 km/h), and has demonstrated the capability of remaining on station for 8-10 hr at a range of 1,000 nm (1,150 miles; 1,850 km) from its base.

Aware of the pending requirement of the Canadian Government, Boeing acquired the second-hand Model 720 in the Autumn of 1971 and immediately began to prepare it as a test-bed aircraft. More than four months were devoted to structural modifications and the installation of new equipment to provide magnetic anomaly detection (MAD), sonobuoy storage and launch facilities, new automatic flight control and navigation systems,



Boeing 707-LRPA, as configured to meet the requirements of Canada's Maritime Air Command (Roy J. Grainge)

tactical crew stations, and crew comfort accommodation. Flight testing in the new configuration began on 6 April 1972; since then, in addition to completing the first phase of the military flight test programme, the 720 has demonstrated its versatility by gathering ocean current data for a research project being carried out by the Canadian Department of Environment.

The requirement for MAD has been met by installation of dual wingtip-mounted booms, the tips of which are designed to accept either AN/ASQ 10 or AN/ASQ 501 detector heads. Tests have been made with three different boom lengths, allowing location of each detector 5 ft, 8 ft, or 10 ft (1.52 m, 2.44 m, or 3.05 m) aft of the wing trailing-edge. It has been established that this dual system gives improved target detection and localisation capability by comparison with the usual single tail "sting". CAE nine-term compensating systems are installed, with all system controls located at the electronic sensor operator's station. Automatic calibration of the MAD system can be effected in flight by coupling the autopilot to the on-board tactical computer.

Search equipment, to customer's requirements, can include radar in a nose installation or medium-resolution side-looking radar, which would offer almost all-weather capability for searches in the Arctic.

Two sonobuoy launch tubes, of Boeing design and construction, have been installed.

One of these is mounted vertically and the other at 30° to the vertical, and storage racks are provided for up to 100 sonobuoys. Thirty entirely-successful in-flight launches have been made, including cartridge-assisted launches at altitudes between 1,000 and 40,000 ft (300 and 12,200 m) and speeds up to 400 knots (460 mph; 740 km/h) TAS, and free-fall launches at altitudes below 3,000 ft (915 m) at airspeeds from 180 to 240 knots (207-276 mph; 333-444 km/h). Satisfactory separation from the aircraft has been obtained under all conditions.

To enhance safe operation and reduce the pilot's work-load, particularly during long periods of low-level tactical operation, Boeing have evolved a new automatic flight control system, using as its basis the advanced Sperry SPZ-1 autopilot developed for the Boeing 747. The system has two independent channels, each deriving their inputs from independent sensors, an inertial platform, and an air data computer. These independent channels drive dual hydraulic control servos, which ensure a fail-passive condition in the event of a system failure. The system has demonstrated excellent handling characteristics during prolonged low-level manoeuvres with the control-wheel steering and altitude-hold modes. Accurate altitude control has been demonstrated during rapid manoeuvres and during changes to power or flap settings.

Dual flight-path angle and radar altimeter inputs serve to operate a low-altitude monitor

and warning system, installed to increase safety during let-down and low-level operation. In addition, the SPZ-1 offers such facilities as all-weather auto-landings, compatibility with an inertial navigation system (INS), cruise altitude hold, and airways navigation performance.

Another component of the flight control system is a turn co-ordinator which reduces side-slip effectively up to the maximum roll rate; this feature is combined with a yaw damper. An auto-throttle is provided, to control the airspeed throughout the entire flight envelope.

Navigation equipment in the test-bed aircraft includes dual INS, Doppler, Omega, UHF ADF (sonobuoy), dual air data computers, a flight director, and a vertical camera for position fixing. Controls and associated displays are installed at the radar navigator's console. A new cathode-ray tube display is being developed by IBM for installation in any future production 707-LRPAs. This will be located on the pilot's centre instrument panel and will provide information to improve the precision of tactical manoeuvres, assist descent to a surface target, and aid all-weather landings.

The lower cargo bays of the 707 provide ample room for sensors or other equipment requiring a downward look; and the large cabin could accommodate some cargo in addition to the installed specialised equipment. To provide for the carriage of troops, it is intended that some of the equipment should be easily removable.

No provision is to be made for installed armament; but four underwing pylons in-board of the engines would be able to accommodate a variety of stores, including bombs, missiles, and surveillance pods.

The accompanying half-tone illustrations depict the Model 720 test-bed aircraft. The artist's impression (*opening page*) and three-view drawing depict the 707-LRPA configured to meet the Canadian requirement. Alternative versions have been projected by Boeing, including an ASW aircraft with search radar in a "droop-nose" radome.

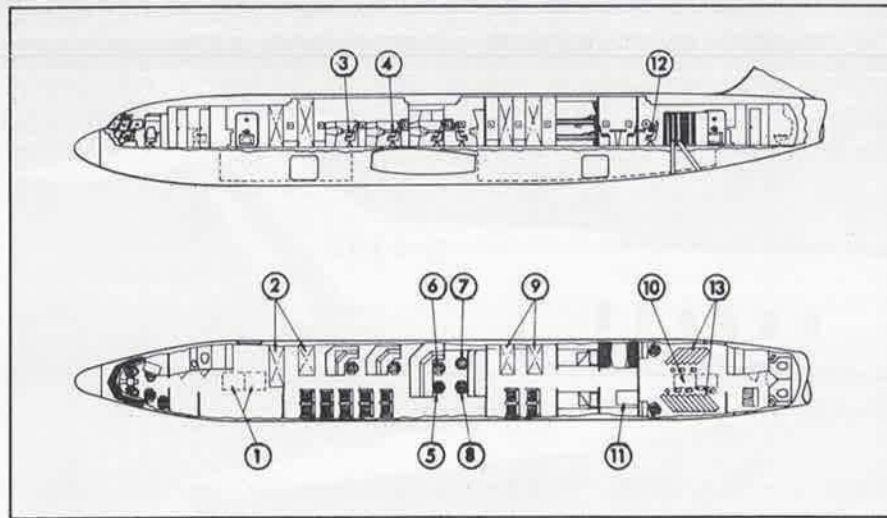
The interior drawing shows the proposed interior layout of the Model 707-LRPA: 1 & 10, life-raft stowage; 2 & 9, avionics racks; 3, radio operator's position; 4, radar/navigation officer's position; 5, 6, 7, & 8, crew-members' seats in the tactical operation station; 11, emergency escape hatch, aft of bunks in crew rest area; 12, look-out/ordnance stations, port and starboard; 13, sonobuoy stowage and launch tubes. Lockers, galleys, and a toilet are provided immediately aft of the flight deck, on the starboard side, with others aft of the sonobuoy area. Cabin windows at normal airline spacing could be provided at customer's option.

Boeing 720 test-bed modified to demonstrate the potential of the company's ASW projects, which would be based on the generally-similar 707-320C airframe



The Boeing 720 test-bed, here taking off, has demonstrated its ability to operate for long periods at low altitude and also to perform well in a high-altitude environment





Cutaway of proposed layout of 707-LRPA cabin, showing disposition of equipment and crew facilities (see explanation in text) (Roy J. Grainge)

HAWKER SIDDELEY
HAWKER SIDDELEY AVIATION LTD;
 Head Office: Richmond Road, Kingston
 upon Thames, Surrey KT2 5QS, England

**HAWKER SIDDELEY 125/BEECHCRAFT
 HAWKER BH 125**

The Hawker Siddeley (formerly de Havilland) 125 is a twin-jet business aircraft which is also suitable for use by armed forces in the communications rôle, as a troop carrier, as an ambulance aircraft, for airways inspection, and as an economical trainer for pilots, navigators, and specialised radio and radar operators. All Series of HS 125s can operate from unpaved runways without modification.

The HS 125 was developed as a private venture, and the first of two prototypes flew for the first time on 13 August 1962. Deliveries to customers began in September 1964. The 100th aircraft came off the assembly line at Hawker Siddeley Aviation's Chester factory in July 1966, and sales passed the 300 mark in October 1972.

Up to mid-November 1972 a total of 321 HS 125s had been sold, more than 80 per cent of them for export, including 201 in North America. One British company operates nine HS 125s, and 12 other operators have fleets of two or more. The Series 2 navigation trainer version serves as the Dominie T. Mk 1 with the RAF, whose No. 32 Squadron also operates five HS 125 Series 400s in the communications rôle under the designation CC. Mk 1. The HS 125 has also been supplied in the communications rôle to the air forces of Brazil (ten), Ghana (one), Malaysia (two), and South Africa (seven, known in SAAF service as the *Mercurius*); and the Argentine Navy has one for calibration and other duties. Qantas purchased two HS 125 Series 3s for pilot training. Aircraft supplied to the Australian Department of Civil Aviation, the Brazilian government, and the South African Department of Civil Aviation are extensively equipped for airways inspection and calibration of radio aids.

In December 1969 it was announced that Hawker Siddeley Aviation and Beech Aircraft Corporation of the US had joined forces to design, build, and market a family of jet executive aircraft, starting with the joint marketing of the HS 125 Series 400 (which in America is known as the **Beechcraft Hawker BH 125-400**). The companies are now concentrating primarily on the larger, faster, and higher-powered HS 125

Series 600 (BH 125-600), as described below.

Production of the Hawker Siddeley 125 Series 1 (8 built), 1A (64 built), 1B (13 built), 2 (RAF Dominie T. Mk 1, 20 built), 3 (2 built), 3A (12 built), 3B (15 built), 3A-R and 3A-RA (20 built), and 3B-RA (16 built), has ended, and these versions have been described in previous editions of *Jane's*. The latest versions are:

HS 125 Srs 400A (BH 125-400) and 400B. Developments of Srs 3A-RA (for US, Canadian, and Mexican markets, where it is known as the BH 125-400) and Srs 3B-RA (world markets except the US, Canada, and Mexico) respectively. Integral airstair door, and improvements to flight deck, cabin, vestibule, and exterior appearance. Max T-O weight 23,300 lb (10,568 kg). First announced in September 1968. Main production, of more than 100 aircraft, has ended, but this version continues to be available to order. Sales include 32 to Beech for equipping and furnishing as BH 125-400s. Described in 1972-73 *Jane's*.

HS 125 Srs 600A (BH 125-600) and 600B. Larger, faster development of Series 400, with 20 per cent greater payload, for North American markets (Srs 600A/BH 125-600) and the rest of the world (Srs 600B). Changes compared with Srs 400 include more powerful Viper 601 engines, strengthened wings with modified control surfaces, lengthened fuselage (seating a maximum of 14 passengers), taller main fin and extended ventral fin, additional fuel

tank in extended dorsal fin, deletion of cockpit canopy fairing, and other detail improvements. First of two development aircraft (G-AYBH) flew for the first time on 21 January 1971, and second (G-AZHS) on 25 November 1971. Certificated by ARB (Special category) on 4 August 1971, and by FAA (Srs 600A) on 17 August 1972. In production, with deliveries scheduled to begin in early 1973. Orders up to mid-October 1972 included two (XX505 and XX506) for No. 32 Squadron, RAF, one each for civilian customers in the UK and Africa, and 41 (with five more on option) for Beech Aircraft Corporation. The BH 125-600s are furnished and equipped under Beech contract to customer requirements.

The description which follows applies specifically to the Series 600 version.

TYPE: Twin-jet business transport aircraft.
WINGS: Cantilever low-wing monoplane.

Thickness/chord ratio 14% at root, 11% at tip. Dihedral 2°. Incidence 2° 6' at root, -0° 24' at tip. Sweepback 20° at quarter-chord. Wings built in one piece and dished to pass under fuselage, to which they are attached by four vertical links, a side link, and a drag spigot. All-metal two-spar fail-safe structure, with partial centre spar of approx two-thirds span, sealed to form integral fuel tankage which is divided into two compartments by centre-line rib. Skins are single-piece units on each of the upper and lower semi-spans. Detachable leading-edges. Fence on each upper surface at approx two-thirds span. Mass-balanced ailerons, operated manually by cable linkage. Trim tab and geared tab in port aileron, two geared tabs in starboard aileron. Aileron fences to improve lateral stability. Large, four-position double-slotted flaps (45° travel compared with 50° on Srs 400), actuated hydraulically via a screw-jack on each flap. Mechanically-operated hydraulic cutout prevents asymmetric operation of the flaps. Flat-plate spoilers above and below each wing, forming part of flap shrouds, provide lift-dumping facility during landing, and have interconnected controls to prevent asymmetric operation. TKS liquid system, using porous stainless steel leading-edge panels, for de-icing or anti-icing.

FUSELAGE: All-metal semi-monocoque fail-safe structure, making extensive use of Redux bonding. Constant circular cross-section over much of its length. Compared with Srs 400, the Srs 600 has an extra 2 ft 0 in (0.61 m) cabin section added forward of the wings, and 12 cabin windows instead of 10; the nose radome is redesigned and is 6 in (15 cm) longer.

TAIL UNIT: Cantilever all-metal structure, with fixed-incidence tailplane mounted on

Hawker Siddeley 125 Srs 600A/Beechcraft Hawker BH 125-600 twin-jet business aircraft





Hawker Siddeley 125 Srs 600A/Beechcraft Hawker BH 125-600 business aircraft (two Rolls-Royce Bristol Viper 601-22 turbojet engines)

fin. Small fairings on tailplane under-surface to eliminate turbulence around elevator hinge cutouts. Triangular ventral fin, and extended dorsal fin. Control surfaces operated manually via cable linkage. Tabs in rudder and each elevator. TKS liquid de-icing or anti-icing of fin and tailplane leading-edges.

LANDING GEAR: Retractable tricycle type, with twin wheels on each unit. Hydraulic retraction of all units into fuselage, nose-wheels forward, main wheels inward. Oleo-pneumatic shock-absorbers. Fully-casting nose unit, steerable 45° to left or right, Dunlop main wheels and 10-ply tyres, size 23 x 7, pressure 122 lb/sq in (8.58 kg/cm²). Dunlop nosewheels and 10-ply tyres, size 18 x 4¼, pressure 75 lb/sq in (5.26 kg/cm²). Dunlop double-disc hydraulic brakes with Maxaret anti-skid units on all main wheels.

POWER PLANT: Two Rolls-Royce Bristol Viper 601-22 turbojet engines (each 3,750 lb; 1,701 kg st), pod-mounted on sides of rear fuselage. Hot-air anti-icing of intake lips and bullets. Integral fuel tanks in wings, with total capacity of 1,025 Imp gallons (4,660 litres). Overwing refuelling point near each wingtip. Rear under-fuselage tank of 112 Imp gallons (509 litres) capacity, with refuelling point on starboard side, and 50 Imp gallon (227 litre) dorsal fin tank, raising overall total capacity to 1,187 Imp gallons (1,425 US gallons; 5,396 litres), of which 1,179 Imp gallons (1,416 US gallons; 5,359 litres) are usable. Self-contained engine re-oiling system, capacity 27 Imp pints (15.5 litres).

ACCOMMODATION: Crew of two on flight deck, which is fully soundproofed, insulated, and air-conditioned. Optional fold-away seat for third crew member. Standard executive layout has seating for six or eight passengers, with fore and aft baggage compartments, refreshment bar and coat compartment (forward), and toilet (aft). Compared with Srs 400, there are smoother-line roof panels, with individual recessed lights and air louvres. Cabin restyling offers the operator a choice of interchangeable furnishing units to suit individual requirements. The new, wider seats, which on Srs 600A swivel through 180°, are adjustable fore and aft and sideways, have adjustable lumbar support, and can be reclined hydraulically up to 40°. Typical executive furnishing

includes a couch for three persons and three to five individual seats, foldaway conference table and individual foldaway wall tables. Alternative high-density layout is available, seating up to 14 passengers. Outward-opening door at front on port side, with integral stairs. Emergency exit over wing on starboard side. Windshield demisting by engine bleed air; electrical windshield anti-icing, with methanol spray backup.

SYSTEMS: AiResearch air-conditioning and pressurisation system. Max cabin differential 8.36 lb/sq in (0.58 kg/cm²), maintaining S/L cabin pressure up to 21,500 ft (6,550 m). Oxygen system standard, with drop-out masks for passengers. Hydraulic system, pressure 2,300-3,000 lb/sq in (160-210 kg/cm²), for operation of landing gear, main-wheel doors, flaps, spoilers, nosewheel steering, main-wheel brakes, and anti-skid units. Two accumulators provide emergency hydraulic power for wheel brakes in case of a main system failure. Independent auxiliary system for lowering landing gear and flaps in the event of a main system failure. DC electrical system utilises two 300A 9kW engine-driven starter-generators and two 24V 25Ah batteries. A 24V 3.5Ah battery provides separate power for igniter and starter control circuits. AC electrical system includes two 115V 2.5kVA 400 Hz three-phase rotary inverters and one 250VA solid-state standby inverter for avionics, and one engine-driven 115V 3kVA frequency-wild alternator for windshield anti-icing. Ground power receptacle on starboard side at rear of fuselage for 28V external DC supply. AiResearch GTCP-30-92 auxiliary power unit optional. Engine ice protection system supplied by engine bleed air. Graviner triple FD Firewire fire warning system and two BCF engine fire extinguishers.

ELECTRONICS AND EQUIPMENT: Standard equipment includes full dual controls, full blind-flying instrumentation, complete ice protection system, stick-shaker stall warning, and electrically-heated rudder auto-bias to apply corrective rudder during asymmetric engine power conditions. A spring and g weight are included in the elevator circuit to reduce variations in stick force to a minimum over a wide CG range. Compared with the Srs 400, the layout of flight deck instrumentation has been completely redesigned, all systems

(including the electrical and ice protection systems) have been refined, and a new central warning system is incorporated. A combined slot-stereo tape unit and FM/AM self-seeking radio are fitted as standard, together with storage for additional tape cartridges, magazines, and stationery. Comprehensive electronics, available to customer's requirements, include an automatic flight system comprising autopilot (typically, Sperry SP40C or Bendix PB60 for Srs 600A, Collins AP104 for Srs 600A and 600B), flight director and compass; dual VHF nav/com; HF com; dual ADF; marker; ATC transponder; DME; and weather radar. Doppler, Decca Navigator, flight data recorder, and passenger address system may also be installed. Equipment for ICAO Category 2 low weather minima operation is also available as an option. A feature console is provided for fitting customer-specified optional items such as time clocks, digital readouts, and a telephone.

DIMENSIONS, EXTERNAL:

Wing span	47 ft 0 in (14.33 m)
Wing chord (mean)	7 ft 6¼ in (2.29 m)
Wing aspect ratio	6.25
Length overall	50 ft 5¼ in (15.39 m)
Height overall	17 ft 3 in (5.26 m)
Fuselage: Max diameter	6 ft 4 in (1.93 m)
Tailplane span	20 ft 0 in (6.10 m)
Wheel track (c/1 of shock struts)	9 ft 2 in (2.79 m)
Wheelbase	20 ft 9½ in (6.34 m)
Passenger door (fwd, port):	
Height	4 ft 3 in (1.30 m)
Width	2 ft 3 in (0.69 m)
Height to sill	3 ft 6 in (1.07 m)
Emergency exit (overwing, stbd):	
Height	3 ft 0 in (0.91 m)
Width	1 ft 8 in (0.51 m)

DIMENSIONS, INTERNAL:

Cabin (excluding flight deck):	
Length	21 ft 4 in (6.50 m)
Max width	5 ft 11 in (1.80 m)
Max height	5 ft 9 in (1.75 m)
Floor area	55.0 sq ft (5.11 m ²)
Volume	628.0 cu ft (17.8 m ³)
Baggage compartment (fwd)	29.6 cu ft (0.84 m ³)
Baggage compartment (aft)	10.0 cu ft (0.28 m ³)

AREAS:

Wings, gross	353.0 sq ft (32.8 m ²)
Fin, incl dorsal fin	57.15 sq ft (5.31 m ²)
Ventral fin	6.61 sq ft (0.61 m ²)

Horizontal tail surfaces
(total) 100.0 sq ft (9.29 m²)

WEIGHTS AND LOADING:

Weight empty 12,225 lb (5,545 kg)
Typical operating weight,
empty 13,430 lb (6,092 kg)
Max payload:
BH 125-600 2,297 lb (1,042 kg)
Srs 600B 2,310 lb (1,048 kg)

Max T-O and ramp weight
25,000 lb (11,340 kg)

Max zero-fuel weight 15,550 lb (7,053 kg)
Max landing weight 22,000 lb (9,979 kg)
Max wing loading 70.8 lb/sq ft (346 kg/m²)

PERFORMANCE (initial certification, at max
T-O weight except where indicated):

Max design diving speed
370 knots (426 mph; 686 km/h) IAS
Max design Mach number in dive
0.825 IAS

Max operating speed:

*fuselage fuel tanks empty
300 knots (345 mph; 555 km/h) IAS
fuel in fuselage fuel tanks
280 knots (322 mph; 519 km/h) IAS

*Max operating Mach number 0.755 IAS

Max cruising speed at 27,000 ft (8,230 m)
450 knots (518 mph; 834 km/h) TAS

Econ cruising speed at 39,000 ft (11,890 m)
402 knots (463 mph; 745 km/h) TAS

Rough-air speed
230 knots (265 mph; 426 km/h) IAS

Landing gear operating speed
220 knots (253 mph; 407 km/h) IAS

Flap operating speed:
T-O 220 knots (253 mph; 407 km/h) IAS
approach
175 knots (201.5 mph; 324 km/h) IAS

landing
160 knots (184 mph; 296.5 km/h) IAS

Stalling speed
80 knots (92 mph; 148 km/h) EAS

Max rate of climb at S/L:
both engines 4,900 ft (1,493 m)/min
one engine out 1,380 ft (420 m)/min

Service ceiling 41,000 ft (12,500 m)

T-O run 4,400 ft (1,341 m)

T-O balanced field length
5,350 ft (1,631 m)

Landing from 50 ft (15 m) at typical
landing weight (unfactored)
2,130 ft (649 m)

Landing run (scheduled performance):
BH 125-600 at typical landing weight
3,400 ft (1,036 m)

BH 125-600 at max landing weight
4,250 ft (1,295 m)

Srs 600B at 15,800 lb (7,167 kg)
landing weight 3,730 ft (1,137 m)

Min ground turning radius
20 ft 10 in (6.35 m)

Runway LCN requirement at max T-O
weight 10

Typical range with 1,000 lb (454 kg) pay-
load, 45 min reserves plus allowances
for T-O, approach, landing, and taxy-
ing 1,650 nm (1,900 miles; 3,057 km)

Range with max fuel and max payload,
reserves as above
1,560 nm (1,796 miles; 2,891 km)

HAWKER SIDDELEY

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HAWKER SIDDELEY TRIDENT

Three orders for the Trident have now
been placed by the Government of the Chi-
nese People's Republic on behalf of CAAC
(Civil Aviation Administration of China), the
state airline. Total Chinese orders by the
beginning of 1973 were for 20 Tridents, of
which 18 are Trident 2Es basically similar to

* to be increased to 320 knots (368.5 mph; 593 km/h)
and Mach 0.78 respectively before first customer
delivery.



Mock-up of the WSK-Mielec M-15 agricultural aircraft (Ivchenko AI-25 turboprop engine)
(Biil)

those already supplied to BEA (15) and
Cyprus Airways (2). The first of these was
flown for the first time on 21 October 1972,
and was officially accepted by the Chinese
Ambassador to the UK on 13 November.

The other two aircraft are of a new vari-
ant known as the Super 3B, which is exter-
nally identical to the 26 Trident 3Bs sup-
plied to BEA. Major differences between the
3B and Super 3B are a passenger seating ca-
pacity of 152 persons in the CAAC version,
and increases in fuel capacity, max T-O and
max zero-fuel weights, and an effective range
increase of 373 nm (430 miles; 692 km). The
additional 380 Imp gallons (1,727 litres) of
fuel is carried in the wing centre-section
tank, and increases the total usable fuel ca-
pacity to 6,000 Imp gallons (27,275 litres).

WEIGHTS:

Max T-O weight:
3B (BEA) 150,000 lb (68,040 kg)
Super 3B (CAAC) 158,000 lb (71,667 kg)

Max zero-fuel weight:
3B (BEA) 115,500 lb (52,395 kg)
Super 3B (CAAC) 117,500 lb (53,296 kg)

WSK-MIELEC

**WYTWORNIA SPRZETU KOMUNIKA-
CYJNEGO-MIELEC (TRANSPORT
EQUIPMENT MANUFACTURING CEN-
TRE, MIELEC); Address: Mielec, Poland**

WSK-MIELEC M-15

On 1 March 1971, an agreement was con-
cluded in Warsaw between the Polish and So-
viet Governments regarding the development
and production of new aviation products, in-
cluding large and medium-sized agricultural
aircraft, light single- and twin-engined heli-
copters, sailplanes, and powered sailplanes.
The USSR has not manufactured any spe-
cialised agricultural aircraft, apart from a
small quantity of An-2Ms, since it transferred
production to Poland of the Antonov An-2
in 1960. Consequently, following the 1971
agreement, one subject of discussion between
the Polish Ministry of Civil Aviation and
the Soviet Ministry of Aircraft Industry has
been the development of a new, large agri-
cultural aircraft known as the M-15, together
with associated agricultural and ground sup-
port equipment.

Initial design of this aircraft has been un-
dertaken by a new design bureau in Poland

known as WSK Delta, set up at Mielec un-
der chief designer K. Gocyla and Soviet chief
consulting engineer R. A. Ismailov of the
Antonov design bureau, and staffed by Polish
and Soviet specialists. The agricultural equip-
ment for the aircraft is being developed
jointly by the Instytut Lotnictwa at Warsaw
(see next item) and the Soviet Research In-
stitute of Special and Utility Aviation at
Krasnodar.

The M-15, a mock-up of which was com-
pleted in 1972, is of biplane configuration.
A flying prototype, designated LLP-M15
(Laboratorium Latajace Prototyp M-15; Fly-
ing Laboratory Prototype M-15), was under
construction in the Autumn of 1972, and as-
semblies and sub-assemblies were undergoing
testing at that time. A passenger-carrying
version has also been proposed, in which the
agricultural hoppers would be replaced by
enlarged between-wings fairings, equipped as
passenger cabins with nose baggage compart-
ments.

The following description is based upon
reports and illustrations which have appeared
in the Polish press:

TYPE: Prototype agricultural aircraft.

WINGS: Biplane wings, of all-metal construc-
tion and unequal span. The upper wing is
essentially that of the Antonov An-14 (see
1972-73 *Jane's*), having a constant-chord
centre-section and tapered outer panels;
the centre-section is faired to the top of
the engine pod. The shorter-span lower
wings are of generally similar planform
and are joined to the fuselage nacelle at
floor level. The entire trailing-edge of the
upper wing appears to be hinged, as on
the An-14. In line with each tailboom, and
occupying the full depth of the gap be-
tween the upper and lower wings, is a
narrow streamlined hopper for agricultural
chemical, and there is a single outward-
sloping bracing strut outboard of each
hopper fairing.

FUSELAGE: Central all-metal nacelle, of nar-
row rectangular section.

TAIL UNIT: Twin sweptback endplate fins
and rudders, bridged by a high-mounted
tailplane and full-span elevator, supported
on two slender tailbooms located at approx
one-quarter span on the trailing-edge of
the upper wing.

LANDING GEAR: Non-retractable tricycle type,
similar to that on the An-14. Nosewheel
steerable 50° to left or right.

POWER PLANT: One 3,306 lb (1,500 kg) st Ivchenko AI-25 turbopfan engine, mounted in a pod on top of the fuselage. Fuel in five tanks in the upper wing.

ACCOMMODATION: Pilot only, normally, in fully-enclosed compartment in extreme nose of fuselage. Provision for a cabin for a mechanic to the rear of the pilot's compartment.

EQUIPMENT: The two between-wings hoppers have a combined capacity for 638 Imp gallons (2,900 litres) of liquid or 4,850 lb (2,200 kg) of dry (powdered or granulated) chemical. Dispersal equipment, located in the lower wing trailing-edges and rear fuselage, is actuated by air bled from an APU.

DIMENSIONS, EXTERNAL:

Wing span:
 upper 72 ft 2¼ in (22.00 m)
 lower approx 49 ft 2½ in (15.00 m)
Length overall 41 ft 1¼ in (12.53 m)
Height overall 17 ft 0¾ in (5.20 m)

AREA:
Wings (total) 724.3 sq ft (67.2 m²)

WEIGHTS:
Weight empty 5,291 lb (2,400 kg)
Max T-O weight 11,684 lb (5,300 kg)

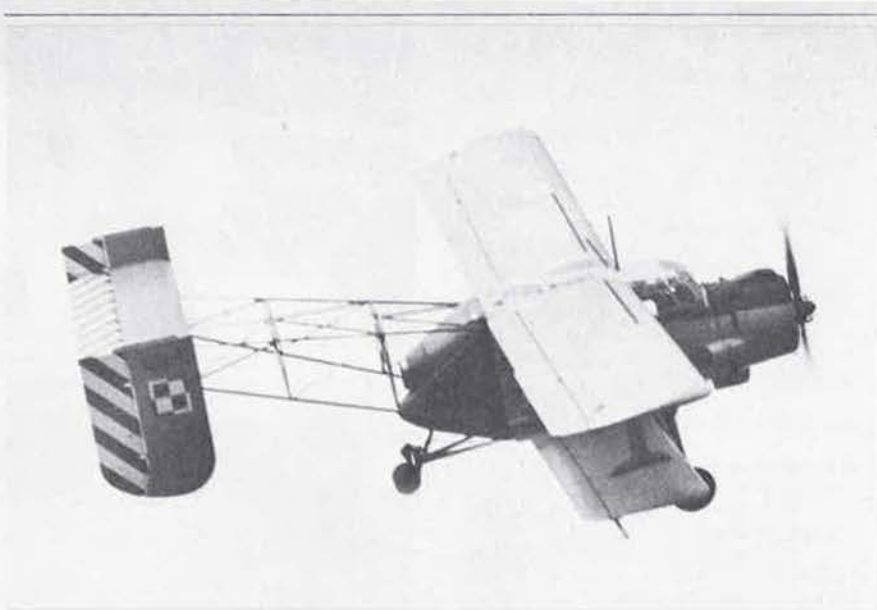
PERFORMANCE (estimated, at max T-O weight):
Operating speed
 75.5-97 knots (87-112 mph; 140-180 km/h)
Min flying speed
 approx 49 knots (56 mph; 90 km/h)

IL
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LALA-1

As a part of the Polish aircraft industry's general programme for the future development of specialised agricultural aircraft, the Instytut Lotnictwa has conducted experiments to determine the feasibility of producing a gas-turbine-engined aircraft of this type. For this purpose it has completed a test-bed aircraft, known as the Lala-1 (Latajace Laboratorium-1: Flying Laboratory-1), by modifying a WSK-Mielec-built Antonov An-2R agricultural biplane (serial number 12832).

The Lala-1 retains unaltered the existing



Lala-1 test-bed conversion of the Antonov An-2, which is contributing to the M-15 development programme (Biil)

An-2 installation of a 1,000 hp Shvetsov ASH-621R radial piston-engine driving a four-blade propeller. In addition, it is fitted with a 3,306 lb (1,500 kg) st Ivchenko AI-25 turbopfan engine, mounted behind the crew compartment. The air intake duct for this engine is mounted centrally on the starboard side of the fuselage, between the wings. The general appearance of the Lala-1 can be seen in the accompanying illustrations.

The major modifications to the An-2R airframe included: replacement of the fuselage rear section, from immediately aft of the wings, by an open-framework steel-truss structure to permit the escape of the AI-25 engine's exhaust gases; elevation of the horizontal tail surfaces and replacement of the original single vertical surfaces by twin fins and rudders; transfer forward of the tail-wheel (a twin-wheel unit on the Lala-1, with size 470 x 210 mm tyres), closer to the centre of gravity; provision of a cockpit door, which the standard An-2 does not

have, to the 2-man crew compartment; and provision of the necessary mounting, cowling, air intake duct, fuel system, starting system, and fire-extinguishing system for the turbopfan engine. The dispersal equipment for the agricultural chemicals is actuated by air from the compressor of an Ivchenko AI-9 APU.

After wind-tunnel tests of a one-fifth scale model, the full-size Lala-1 underwent ground tests in late 1971. It made its first flight on 10 February 1972, with only the piston-engine operating; first flight with both engines operating was made on 26 April 1972. Preliminary flight tests revealed that, with only the piston-engine operating, performance was inferior to the standard An-2 due to the aerodynamically unfavourable airframe modifications. With the turbopfan operating and the piston-engine idling, performance was approximately equal to that with the piston-engine only; and with both engines operating, performance was increased substantially. Handling qualities, including stalling, proved little different from those of the standard An-2.

The Lala-1 has been certificated, and will take its place in a multi-stage programme of agricultural aviation development, which will also include results obtained from the WSK-Mielec M-15 aircraft programme (see preceding item). The first stage will cover field trials, using standard spraying and dusting gear, to study the possible effects of the jet exhaust upon the distribution of chemicals. The second stage will be devoted chiefly to determining the effect of air pollution, from dust, dirt, and agricultural chemicals, upon the operation and service life of the AI-25 engine.

DIMENSIONS, EXTERNAL:

Wing span:
 upper 59 ft 7¼ in (18.17 m)
 lower 46 ft 8½ in (14.24 m)
Length overall:
 tail up 40 ft 0¼ in (12.20 m)
 tail down 40 ft 8¼ in (12.40 m)
Height overall:
 tail up 20 ft 7¾ in (6.29 m)
 tail down 13 ft 1½ in (4.00 m)
Tailplane span 23 ft 7½ in (7.20 m)
Wheel track 11 ft 0¼ in (3.36 m)
Wheelbase 14 ft 9¼ in (4.50 m)

AREAS:
Wings (total) 769.7 sq ft (71.51 m²)
Horizontal tail surfaces (total)
 134.55 sq ft (12.50 m²)

Lala-1 test-bed (1,000 hp Shvetsov ASH-621R radial piston-engine, plus Ivchenko AI-25 turbopfan engine behind crew compartment) (Biil)



Vertical tail surfaces (total)
93.65 sq ft (8.70 m²)

WEIGHTS:

Weight empty, without agricultural equipment 9,788 lb (4,440 kg)
Max T-O weight 12,235 lb (5,550 kg)
Max landing weight 11,574 lb (5,250 kg)

PERFORMANCE (at AUW of 12,125 lb; 5,500 kg, both engines operating, except where indicated):

Max permissible speed 107.5 knots (124 mph; 200 km/h)
Cruising speed 97 knots (112 mph; 180 km/h)
Minimum operating speed 65 knots (75 mph; 120 km/h)
Stalling speed, flaps down 32.5 knots (37.5 mph; 60 km/h)
Rate of climb at S/L:
both engines 1,378 ft (420 m)/min
ASh-62 engine only 196 ft (60 m)/min
Time to 14,760 ft (4,500 m) approx 10 min
T-O run, on grass 525 ft (160 m)
T-O to 50 ft (15 m) 885 ft (270 m)
Landing from 50 ft (15 m) 1,510 ft (460 m)
Landing run 690 ft (210 m)
Range, without chemical payload 237 nm (273 miles; 440 km)
Operating time, with 881 lb (400 kg) of chemical 20 min

SHORT

SHORT BROTHERS & HARLAND LTD;
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SHORT SD3-30

The SD3-30, details of which were announced on 5 September 1972, is a 30-passenger twin-turboprop transport aircraft designed primarily for commuter and regional air service operators, whose current 18/20-seat aircraft will require replacement in the mid-1970s by larger aircraft.

Design of the SD3-30 is derived from that of the Skyvan STOL utility transport, and it retains many of the latter type's well-proven characteristics, including the large cabin cross-section and structural fail-safe philosophy. The cabin is 7 ft 0 in (2.13 m) longer than that of the Skyvan Srs 3. Freight loading is facilitated by the low cabin floor level, and there is a choice of side or rear loading capability. Unit cost, based upon a production run of 150 aircraft, is estimated at less than \$1 million.

The SD3-30 will be certificated at first to FAR Pt 25 (US) and CAR Section D, Group A (UK) requirements. In addition, it will conform with CAB Pt 298 (US) and will meet the noise requirements of FAR Pt 36. Unrestricted maximum-weight operation will be achievable at S/L ambient temperatures up to ISA + 23°C.

A military version, the SD3-M, has also been announced. This will be capable of a variety of rôles, including the tactical transportation of troops, cargo, and vehicles, paratrooping, supply dropping, casualty evacuation, and search and rescue, and will be able to carry up to 34 troops or 8,000 lb (3,630 kg) of cargo.

Two prototype and three pre-production aircraft are to be built initially, and the first of these is scheduled to fly in the Spring of 1974.

The description below applies to both the SD3-30 and the SD3-M, except where a specific version is indicated.

TYPE: Twin-turboprop civil and military transport aircraft.

WINGS: Braced high-wing monoplane, of all-metal fail-safe construction, built in three sections. Wing sections NACA 63A series (modified). Thickness/chord ratio 18% at root, 14% on outer panels. Dihedral 3°

on outer panels. Centre-section, integral with top of centre-fuselage, has taper on leading- and trailing-edges, and is a two-spar single-cell box structure of light alloy with conventional skin and stringers. Strut-braced outer panels, which are pin-jointed to the centre-section, are standard Skyvan constant-chord units, built of light alloy and each consisting of a two-cell box with wing skins made up of a smooth outer skin bonded to a corrugated inner skin. All-metal single-slotted ailerons. Geared tabs in port and starboard ailerons, with manual trim on starboard aileron. All-metal single-slotted flaps, each in three sections. Primary control surfaces are rod-actuated. Sintered leading-edge anti-icing system standard.

FUSELAGE: Light alloy structure, built in three main portions: nose (including flight deck, nosewheel bay, and forward baggage compartment); centre portion (including main wing spar attachment frames and transverse beams which carry the main landing gear and associated fairings); and rear portion (including aft baggage compartment, optional rear-loading door, and tail unit attachment frames). Nose portion is of conventional skin-stringer design. Sides of centre and rear portions are each composed of a smooth outer skin bonded to a corrugated inner skin and stabilised by frames.

TAIL UNIT: Cantilever all-metal two-spar structure with twin fins and rudders, basically similar to that of the Skyvan. Fixed-incidence tailplane, with reinforced leading-edge. Full-span elevator, aerodynamically balanced by set-back hinges. Rudders each have an unshielded horn aerodynamic balance. Primary control surfaces are rod-actuated. Geared trim tabs in elevator and rudders. Sintered leading-edge anti-icing system standard.

LANDING GEAR: Retractable tricycle type, with single wheel on each unit. Main units carried on short sponsons, into which the wheels retract hydraulically. Oleo-pneumatic shock-absorbers. Main wheels are standard Fokker-VFW Friendship units; nosewheel is size 9.00 x 6 and is steerable. Normal tyre pressure (main units) 70 lb/sq in (4.9 kg/cm²), nose unit tyre pressure 60 lb/sq in (4.2 kg/cm²).

Special requirements for rough-field operation have been catered for in the design.

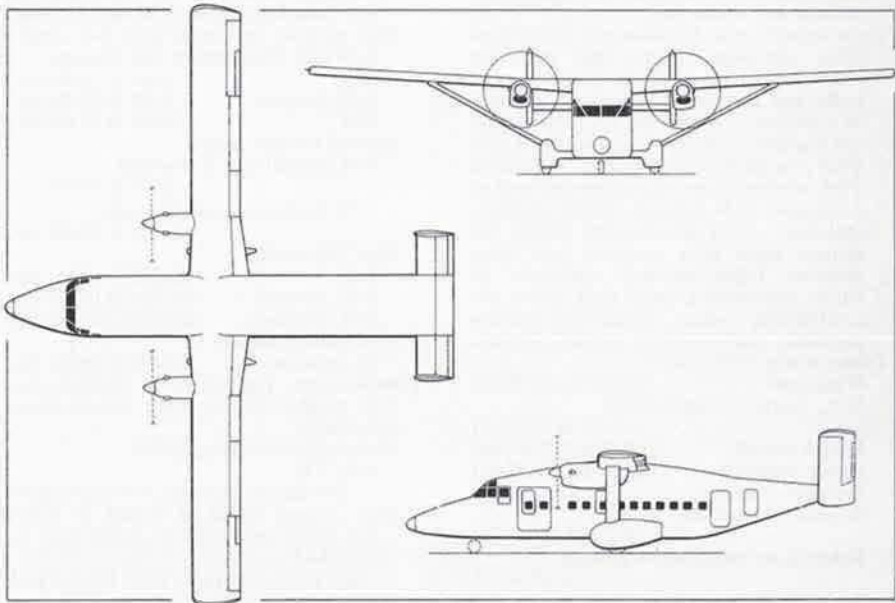
POWER PLANT: Two 1,070 shp (max con-

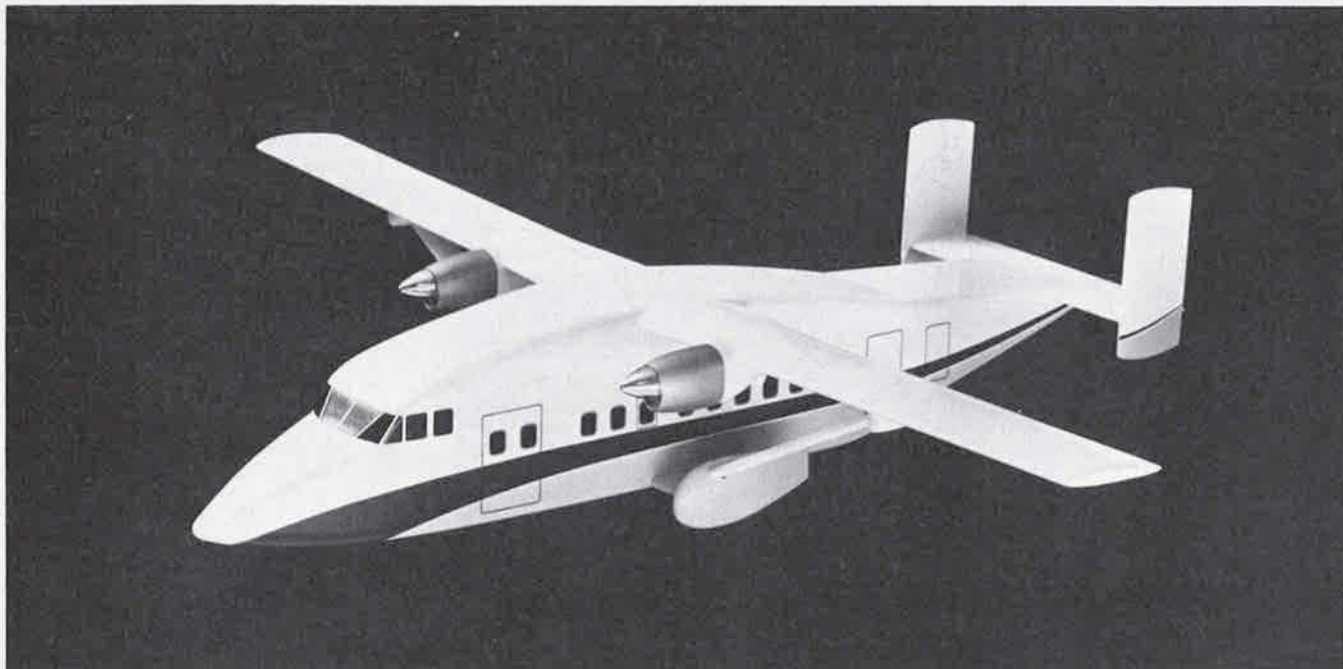
tinuous rating 1,000 shp) Pratt & Whitney (UACL) PT6A-45 turboprop engines, each driving a low-speed propeller. Fuel in main tanks in wing centre-section/fuselage fairing, total capacity 500 Imp gallons (2,273 litres). Normal cross-feed provisions to allow for pump failure. Provision to increase total fuel capacity for special requirements.

ACCOMMODATION (SD3-30): Crew of two on flight deck, plus cabin attendant; aircraft is functionally capable of one-pilot operation. Standard seating for 30 passengers, in ten rows of three at 28 in (71 cm) pitch, with wide aisle. Seat rails fitted to floor and side walls to facilitate changes in configuration. Galley, toilet, and cabin attendant's seat at rear, all of which are removable. Large overhead racks, which can be replaced by overhead baggage lockers at customer's option. Entire accommodation heated, ventilated, and sound-insulated. Baggage compartments in nose (40 cu ft; 1.13 m³) and to rear of cabin (80 cu ft; 2.27 m³), each with external access and capable of holding a combined total of 1,000 lb (454 kg) of baggage. Passenger door at rear of cabin on port side, which can be of airstair type at customer's option. Passenger version has two emergency exits on port side and two on starboard side. For mixed passenger/freight operation a bulkhead divides the cabin into a rear passenger area (typically for 19 persons) and a forward cargo compartment, the latter being loaded through a large port-side door, capable of admitting C and D size containers, or through an optional rear-loading door. In all-cargo configuration the cabin can accommodate up to seven D size containers, with ample space around them for additional freight. Cabin floor is flat throughout its entire length, and is designed for loads of 125 lb/sq ft (610.3 kg/m²) or 400 lb (181 kg) per foot in certain areas and 150 lb/sq ft (732.4 kg/m²) or 600 lb (272 kg) per foot run in way of main spars. Seat rails can be used as cargo lashing points.

ACCOMMODATION (SD3-M): Generally similar to SD3-30, but capable of accommodating up to 34 fully-equipped troops, or 26 fully-armed paratroopers and a despatcher, when used for personnel transport. Freighter version can carry up to 8,000 lb (3,630 kg) of cargo, and more

Short SD3-30 wide-bodied feederliner (Michael A. Badrocke)





Model of Short SD3-30 commercial transport (two 1,070 shp Pratt & Whitney PT6A-45 turboprop engines)

than 7,000 lb (3,175 kg) of supplies can be air-dropped. The SD3-M can also be operated as a vehicle transport, carrying Land-Rovers or similar vehicles; for casualty evacuation, carrying 15 stretchers and three medical attendants; for search and rescue, with up to 9 hr endurance; as a VIP STOL transport; and for aerial survey, border and coastal patrol.

SYSTEMS: Hydraulic system, pressure 2,500 lb/sq in (175 kg/cm²), operates flaps, landing gear, nosewheel steering, brakes (at lower pressure), and elevator trim assistance, and includes an emergency accumulator. No pneumatic system. Main electrical system, for general services, is 28V DC and is of the split-busbar type with cross-coupling for essential services. Special AC sources of 115V and 26V available at 400 Hz for certain instruments. TKS fluid anti-icing system for wing and tail leading-edges. Inertial anti-icing system for engine intake ducts, engine bleed air de-icing for inlet lips. Electrical mat de-icing for propellers, alcohol for windscreen.

ELECTRONICS AND EQUIPMENT: Dual controls, anti-icing system, and passenger safety equipment standard. Wide range of radio and navigation equipment available to customer's requirements. Typical standard equipment would comprise duplicated VHF communications system, duplicated VHF navigation system, glideslope/marker, duplicated ILS repeater, radio magnetic indicator, ADF, transponder, DME, PA system, flight data recorder, and voice recorder. Other optional equipment includes rear-loading cargo door, cabin air-conditioning system, airstair-type passenger door, and overhead baggage lockers.

DIMENSIONS, EXTERNAL:

Wing span 74 ft 9 in (22.78 m)
 Wing chord (standard mean) 6 ft 0.7 in (1.85 m)
 Length overall 56 ft 3 in (17.145 m)
 Height overall 15 ft 10 in (4.83 m)
 Propeller diameter 9 ft 3 in (2.82 m)
 Propeller ground clearance 5 ft 10 in (1.78 m)
 Cabin floor: height above ground 3 ft 1 in (0.94 m)

Passenger door (port, rear):
 Height 4 ft 8 in (1.42 m)
 Width 2 ft 4 in (0.71 m)
 Forward cargo door (port):
 Height 5 ft 7 in (1.70 m)
 Width 4 ft 2 in (1.27 m)
 Rear cargo door (under-fuselage, optional):
 Height 5 ft 9 in (1.75 m)
 Width 6 ft 6 in (1.98 m)

DIMENSIONS, INTERNAL:

Cabin: Max length 25 ft 7 in (7.80 m)
 Max width 6 ft 6 in (1.98 m)
 Max height 6 ft 6 in (1.98 m)
 Volume (all-cargo) 1,070 cu ft (30.30 m³)

Baggage compartments volume (total usable) 120 cu ft (3.40 m³)

AREA:

Wings, gross 453.0 sq ft (42.1 m²)

WEIGHTS:

Weight empty, equipped:
 3-30 for 30 passengers 12,288 lb (5,573 kg)

Fuel:

standard tanks only 4,000 lb (1,814 kg)
 with long-range tanks 5,200 lb (2,358 kg)

Max payload for normal max T-O weight:

3-30 with 30 passengers and baggage 5,940 lb (2,694 kg)
 3-30, freighter 7,500 lb (3,400 kg)
 3-M 8,000 lb (3,628 kg)

Max landing weight:

3-M, normal max T-O weight 3,700 lb (1,678 kg)
 3-M, overload max T-O weight 5,400 lb (2,449 kg)

Max T-O weight:

3-30 20,700 lb (9,387 kg)
 3-M, normal 20,700 lb (9,387 kg)
 3-M, overload 22,500 lb (10,204 kg)

Max landing weight:

all versions 20,400 lb (9,252 kg)

PERFORMANCE (estimated, at normal max T-O weight, ISA at S/L, except where indicated):

Max permissible diving speed:
 3-30, 3-M 248 knots (285 mph; 459 km/h) EAS
 Max cruising speed at 10,000 ft (3,050 m), A UW of 20,000 lb (9,072 kg):
 3-30, 3-M 200 knots (230 mph; 370.5 km/h) TAS

Econ cruising speed at 10,000 ft (3,050 m), A UW of 20,000 lb (9,072 kg):

3-30, 3-M 165 knots (190 mph; 305 km/h) TAS

Stalling speed, flaps and landing gear up:

3-30, 3-M 90 knots (103.5 mph; 167 km/h) EAS

Stalling speed, flaps and landing gear down:

3-30, 3-M 72 knots (82.5 mph; 133.5 km/h) EAS

Max rate of climb at S/L:

3-30 1,340 ft (408 m)/min

Service ceiling, one engine out, at A UW of 19,000 lb (8,618 kg):

3-30, 3-M 13,800 ft (4,205 m)

*T-O run:

3-M (STOL) 1,090 ft (332 m)

*T-O to 35 ft (10.7 m):

3-30, ISA 3,550 ft (1,082 m)

3-30, ISA + 20°C 4,220 ft (1,286 m)

*T-O to 50 ft (15 m):

3-M (STOL) 1,710 ft (521 m)

*Landing from 50 ft (15 m), A UW of 19,000 lb (8,618 kg):

3-30, ISA 3,520 ft (1,073 m)

3-30, ISA + 20°C 3,640 ft (1,110 m)

3-M (STOL) 1,775 ft (541 m)

*Landing run, A UW of 19,000 lb (8,618 kg):

3-M (STOL), minimum 740 ft (226 m)

Range with max payload:

3-30, passenger 300 nm (345 miles; 556 km)

Range at 10,000 ft (3,050 m), 45 min reserves:

3-30 (passenger) with 4,000 lb (1,815 kg) payload 800 nm (922 miles; 1,038 km)

3-M with 8,000 lb (3,630 kg) payload, no reserves 210 nm (242 miles; 389 km)

3-M with 8,000 lb (3,630 kg) payload, at overload max T-O weight, no reserves 450 nm (518 miles; 834 km)

Max range with long-range tanks:

3-M, no reserves 1,200 nm (1,382 miles; 2,224 km)

Max endurance:

3-M with standard tanks 7 hr

3-M with long-range tanks 9 hr

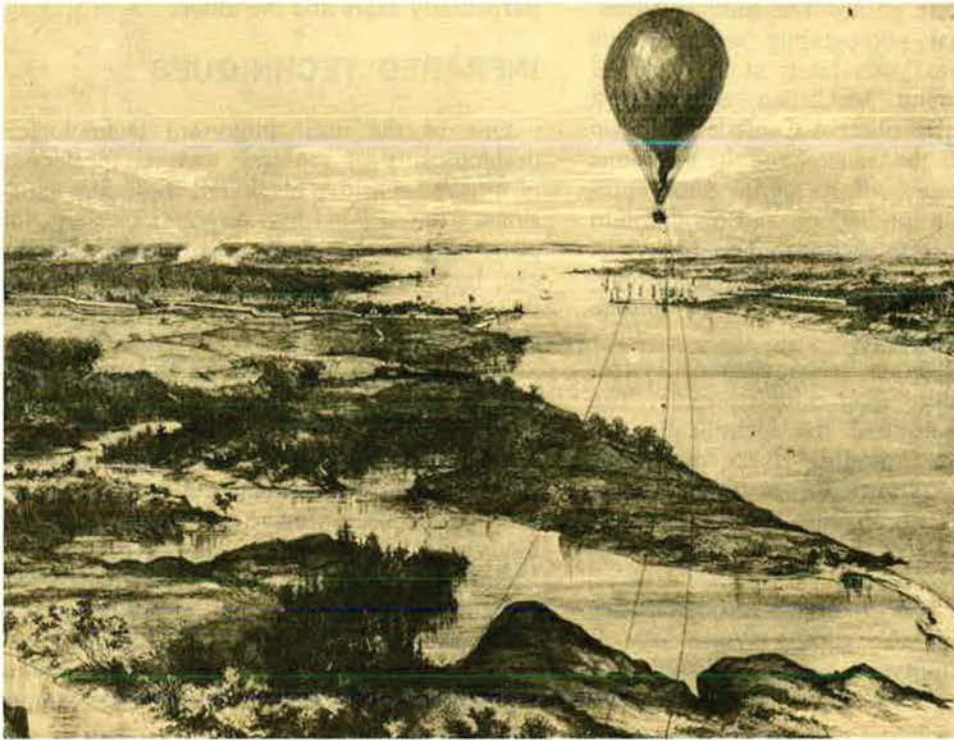
*T-O and landing figures are those for hard, dry runway; aircraft is also capable of operating from semi-prepared (3-30) or unprepared airstrips (3-M).

From Balloons To Satellites

The military, particularly the Air Force, has pioneered the development of remote sensors for reconnaissance work. Air Force-developed equipment and techniques are now being used in high-flying aircraft and satellites to catalog earth resources, improve agriculture and forestry, and clean up the environment. Their latest role is in NASA's Earth Resources Technology Satellite (ERTS), where . . .

USAF SENSORS HELP BUILD A BETTER WORLD

There's quite a contrast between the balloon's-eye view of Virginia (below, left) and ERTS satellite's view of Florida.



By Forrest M. Mims, III

THE Department of Defense has long been criticized for conducting research programs with only military applications in mind. In the case of remote sensing of the environment, however, this country's military planners and the Air Force in particular have played a very direct role in anticipating civil applications for both aircraft and space sensing systems.

Remote sensing is the gathering of information about an object from a distance. With such a broad definition, ordinary cameras, binoculars, telescopes, sophisticated electronic detectors, and even the human eye are all remote sensors. When remote sensing devices are properly utilized, particularly cameras and electronic detectors, a great deal of valuable environmental data can be quickly and conveniently collected. This is because landforms, plants, waterways, and other environmental features all have unique and distinguishable energy reflection and emission characteristics or "signatures."

A CENTURY OF SENSOR DEVELOPMENT

Military involvement in photographic remote sensing dates to the Civil War. The first known aerial photograph was made from a balloon tethered 1,200 feet over Boston in October 1860. Samuel A. King and J. W. Black used a clumsy wet-plate process to obtain the historic photo. The military implications of aerial photography soon became obvious, and two years later, at the siege of Richmond, General McClellan employed a tethered balloon to observe Confederate troop movements. Both the General and the balloonist had identical copies of an aerial photo previously shot from the balloon and divided into a grid of sixty-four sections. The balloonist telegraphed information about activity in specific areas to the ground in the first episode of aerial reconnaissance.

McClellan's balloon reconnaissance system demonstrated more than military value. The aerial photos permitted the identification of such features as swamps, rivers, and pine stands. While a knowledge of these terrain characteristics is of obvious tactical value in warfare, it is also of immense ecological importance.

The military role in aerial reconnaissance expanded considerably during World War I. The maneuverability of heavier-than-air craft gave planes an important advantage over balloon-based photographic platforms and greatly expanded the role of photography in intelligence gathering.

In the early years of the war, aerial photos were made with conventional cameras held over the side of open-cockpit aircraft, but the intelligence data derived from these photos soon became so important that more advanced photographic systems were developed. By 1918, French reconnaissance aircraft were shooting some 50,000 aerial photos per week, and strip-photography techniques were making possible more extensive ground coverage than ever before.

In the 1930s, the United States Department of Agriculture began a remote sensing program that used aerial photography to gather information about crop yields, timber re-

sources, soil, and for recreation and urban planning. Extensive developments in remote sensing technology, however, awaited the outbreak of World War II. The availability of high-altitude aircraft made necessary more advanced optical systems, improved resolution films, and better methods of photo interpretation. Under the leadership of such farsighted men as AAF Col. George W. Goddard, now a retired brigadier general, the United States developed a variety of advanced films and reconnaissance cameras, some incorporating very long telephoto lenses. Since reconnaissance from 30,000 feet had become common, photograph scales of 1:50,000 were frequently used and new interpretation techniques became necessary. Many of these techniques were later adapted for peacetime roles in remote sensing of both the earth and neighboring planets, particularly Mars and the moon.

INFRARED TECHNIQUES

One of the most important technological developments of the war was the perfection of infrared-sensitive black and white film emulsions. Conventional film responds to about the same range of wavelengths seen by the human eye, but the new infrared emulsions extended their red response well beyond that of the eye.

Since infrared film responds to longer wavelengths of light, it is able to penetrate haze far better than conventional film. Haze penetration became one of the film's most important jobs, but almost immediately it was discovered that under the proper conditions the new film could detect certain kinds of camouflage. Living vegetation has a relatively high reflectance in the photographic infrared, but the green paint used to simulate foliage has a low infrared reflectance. On infrared film, genuine vegetation appears in light shades while camouflage appears dark.

Since diseased or dead vegetation exhibits less infrared reflectance than living foliage, scientists experimenting with the new film soon found it to be exceedingly valuable for detecting fungus- and insect-infested crops and timber. More recently, infrared photography was considerably improved with the invention of an infrared-sensitive *color* film. While black and white film is valuable as both an ecological and military tool, interpretation is made difficult since the display is in gray tones.

Color infrared film presents a far more dramatic format with healthy vegetation appearing bright red, and diseased or dead foliage blue or purple. The film even permits some limited identification of timber types. Pines, for example, have less leaf reflectance than decidu-

ous trees such as oaks, elms, and cottonwoods, so a stand of pines appears on color infrared film in a somewhat darker tone. Healthy deciduous trees appear magenta or red, while healthy pines look bluish-purple. Dead leaves generally appear bright green.

Camouflage paint usually looks purple or blue on color infrared film, so a concealed structure surrounded by living foliage stands out as a blue spot in a field of red. This and other properties of the film delighted both Air Force intelligence officers and ecologists. While color infrared film was being used to spot camouflaged bunkers in Vietnam, it was applied in this country to find diseased crops and insect-infested timber.

In the 1950s, military efforts in infrared technology were expanded to include more electronic detection systems. Conventional infrared photographic film and viewing devices such as the Snooperscope were limited to a maximum wavelength response of about one micron, but new detectors made possible electronic "cameras" capable of sensing wavelengths out to twenty-five microns. Since all objects above the temperature of absolute zero emit various amounts of infrared radiation, the new electronic cameras made possible the imaging of objects in total darkness by the radiation they normally emit.

Infrared scanners, as these electronic cameras are called, are important from a military viewpoint since they detect scenes on the darkest night. Even human beings are clearly detected, and hot vehicle engines, fires, and factory equipment register as white areas on the output (either conventional photographic film or a TV display). Infrared scanners can even reveal where a vehicle has been parked, hours after its departure, because of the slightly cooler temperature where the shadow had been.

Infrared scanning systems are proving to have immense value in ecological applications as well. The electronic cameras have been used to find hot spots in forest fires, areas normally rendered invisible by dense smoke coverage. They are particularly suited for studying thermal patterns resulting from the mixing of power-plant-cooling effluent in bays and rivers. Infrared scanners can even be used to detect certain kinds of water pollution and accurately show its distribution on permanent photographic records.

SENSORS IN SPACE

Until October 4, 1957, when the Soviet Union launched Sputnik I, aerial remote sens-

ing was almost exclusively limited to aircraft, but the space age ushered in an entirely new set of possibilities. Where a high-altitude aircraft would have to expose some 500,000 photographs to cover the United States, an earth satellite could accomplish the same results with fewer than 500.

The Tiros program—the first weather satellite—exemplifies the military's farsightedness in finding civil applications for earth satellites. The Department of Defense's Advanced Research Projects Agency (ARPA)



Air Force Capt. John Carney inspects the camera port on his WB-57F aircraft at Kirtland AFB, N. M.

openly contracted for Tiros. While some aspects of the satellite itself were classified, ARPA released detailed descriptions of the remaining systems and components as well as the planned observations of cloud cover. The infrared sensors on the craft were designed by the Army Signal Research and Development Laboratories, while the primary responsibility for receiving and analyzing the televised signals was assigned to the Air Force's Cambridge Research Center and the United States Weather Bureau.

Tiros was an impressive success. All ten of the weather satellites were launched into

operational orbits, and nearly a million usable photographs were transmitted to earth. Modifications to successive satellites in the program capitalized on knowledge gained from earlier Tiros launches and resulted in systems with improved resolution and both visible and infrared photographic capability.

THE EARTH RESOURCES SATELLITES

In the summer of 1972, NASA launched the first Earth Resources Technology Satellite (ERTS-A). The one-ton, butterfly-shaped



This aerial infrared photo was taken by a WB-57F weather aircraft over northern New Mexico. Note how the trees and other vegetation appear light colored, a characteristic of infrared film due to the high reflectance of foliage in the photographic infrared.

By the mid '60s, the Air Force's classified Midas and Samos observation satellites equipped, respectively, with advanced infrared and television sensors demonstrated the feasibility of electronically transmitting very-high-resolution visible and infrared images from satellites. Also, the Air Force's Discoverer series showed that high-resolution photographic film could be routinely ejected and recovered from orbiting satellites. Capitalizing on its own experience with Nimbus, ESSA, and other observation satellites, and borrowing from state-of-the-art technology employed in Air Force satellites, NASA initiated the design of a craft that would be exclusively for remote sensing of the environment.

craft almost immediately began transmitting video data back to ground receiving stations from two sensing systems. One, the return beam vidicon, incorporates three identical television cameras that view the same area of earth through three different filters. When the signals from the cameras are returned to earth and superimposed, they provide a color image with a wavelength spread and appearance very much like that of color infrared film.

The second ERTS camera system is similar to the infrared scanners developed for Air Force reconnaissance roles. It incorporates a scanning mirror and four separate detectors, each designed to respond to a limited range of wavelengths. This multispectral scanner sys-

tem detects a range of wavelengths somewhat broader than that registered on color infrared film. Like the return-beam vidicon system, full-color images result when the electronically transmitted signals from all four detectors are superimposed.

Some 300 investigators in forty-three states and thirty-one foreign countries are directly participating in the ERTS program. The variety of experiments is truly impressive. The Army Corps of Engineers, for example, is using ERTS imagery in seven projects designed to evaluate water resources data. Surface water is easily detected by the ERTS sensors, and even moist soil can be pinpointed due to its characteristic reflection properties. The Corps hopes to obtain data on drainage patterns, snow cover and precipitation, sediment transport, beach erosion, waterway characteristics, water pollution, and the rehabilitation of streams and lakes.

The Department of Agriculture hopes to use ERTS photos to both the immediate and long-term advantage of farmers. In the former category, ERTS imagery can pinpoint a variety of crop diseases, insect damage, and soil-water contents. In the longer term, ERTS may assist in the evaluation of land productivity. Surface water mapping and soil evaluation may also prove valuable to agricultural planners.

Forestry experts are studying ERTS imagery to find diseased and insect-infested timber as well as to survey available timber resources. In an unexpected happening, some of the very first ERTS photos revealed several forest fires in Alaska.

The Environmental Protection Agency is using ERTS photos to study the feasibility of detecting pollution and keeping tabs on general environmental conditions. Some kinds of water pollution are easily revealed by high-altitude photography as are water-current patterns, smog, and other conditions. One unique environmental application for ERTS is the study of old strip-mining regions to evaluate the success of both natural and artificial reforestation.

The oceans play a vital role in the earth's energy cycle, and ERTS is supplying oceanographers with important information about chlorophyll distribution. Studies have shown that greener areas of ocean are far more productive than bluer ones, and ERTS may therefore yield information on new fishing grounds. Ships and aircraft can sample and photograph seawater to gain the same information, but ERTS provides data about large ocean areas with far more economy, efficiency, and speed.

There are many other important applica-

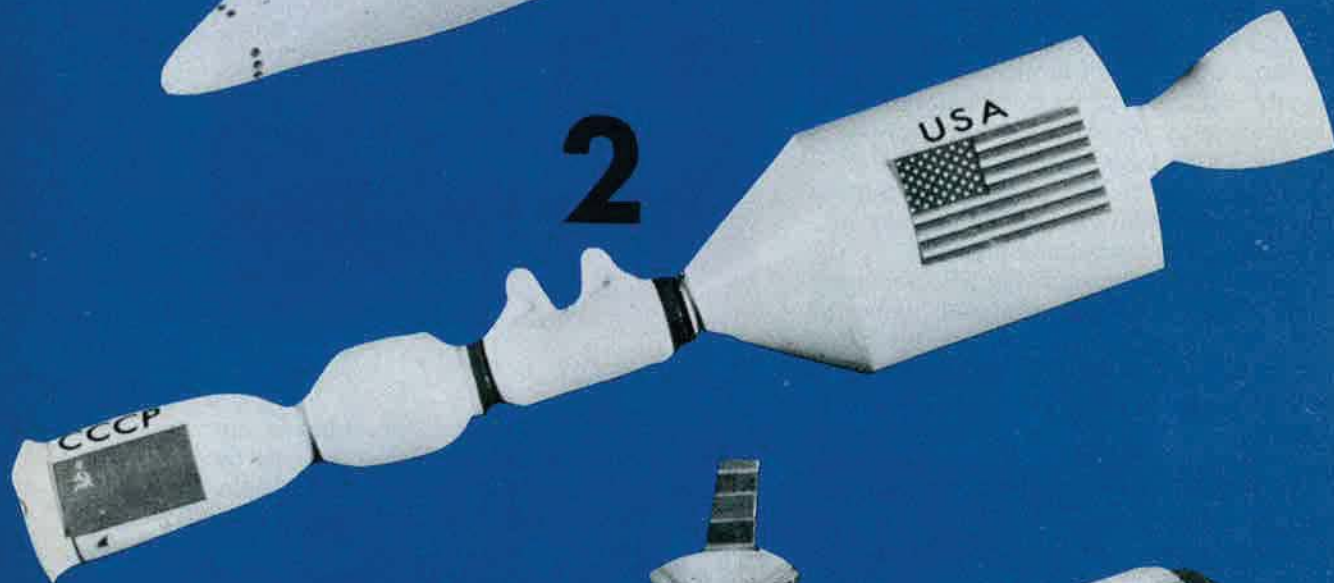
About the Author

The author, Forrest M. Mims, III, is a former Air Force officer who served as a photo-interpreter in Vietnam and a development engineer at the Air Force Weapons Laboratory's Laser Division. Mr. Mims has an active interest in remote sensing of the environment and has constructed an inexpensive instrument for measuring the infrared reflectance of leaves and other objects. He has also made both still and moving aerial photographs from hot-air balloons and small rockets. Now a full-time science writer, Mr. Mims has written six books (all on lasers and electronics), several technical papers, and more than sixty magazine articles. His byline last appeared in this magazine in June '72, with the article "The Evolution of Revolutionary Laser Weapons."

tions for ERTS. Geologists, for example, are trying to spot potential mineral deposits by locating characteristic landforms. Photographs taken by Gemini and Apollo astronauts have proved the worth of this technique.

ERTS-A is just the first in a planned series of environmental remote sensing satellites. ERTS has already yielded significant findings in several areas, and it is expected that the overall success of the program will easily justify further expenditures.

To NASA, of course, goes credit for getting the ERTS program off the ground, but critics of Defense Department research projects should be reminded that many of the state-of-the-art developments that made ERTS possible came from projects and laboratories funded by the military services. The Air Force, in particular, is responsible for many of the advanced aerial cameras, photo-interpretation techniques, infrared scanners, and high-flying aircraft that have brought remote sensing of the environment to its present valuable status. ■



The White House decision to hold federal expenditures to a minimum in the coming fiscal year has cut significantly into the funding of the national space effort, with a number of programs and activities of the National Aeronautics and Space Administration being stretched out, curtailed, or eliminated. But by an artful rearranging of priorities and schedules, NASA's managers are confident that the nation will be able to carry out . . .

A Strong, Productive National Space Program

By Edgar Ulsamer

SENIOR EDITOR, AIR FORCE MAGAZINE

NASA's major upcoming programs are shown on the facing page: (1) Skylab, to be launched next month; (2) the Apollo-Soyuz mission for 1975; and (3) the single most important program—the Space Shuttle—which should be fully operational in 1979.

MEASURED against past authorizations, and considering the effects of inflation, the National Aeronautics and Space Administration's Fiscal Year 1974 budget request is lean to the point of foreshadowing a year of technological and scientific famine. Last year's promise that future NASA budgets would be kept level in terms of purchasing power has been supplanted by pledges that the cuts in the new budget will be made up by larger budgets in subsequent years.

Expressed in terms of total obligational authority, the proposed budget of \$3,107 million is down by almost \$200 million from FY '73. Measured in new obligational authority, the FY '74 figure of \$3,016 million is almost ten percent less than the current year. Only when assessed in terms of outlays—monies to be actually spent—does FY '74 compare favorably with FY '73.

Under the proposed budget, there will be a further decline in the total number of people involved in NASA programs to about 100,000, in contrast to the 1966 peak of 420,000. The number of NASA's Civil Service employees will drop from more than 34,000 in 1967 to just under 25,000 by next year. Dr. James C. Fletcher, NASA's Administrator, maintains that although "reduced substantially below previous plans and expectations, [the new budget] will permit NASA to carry forward a substantial and significant program in space and aeronautics."

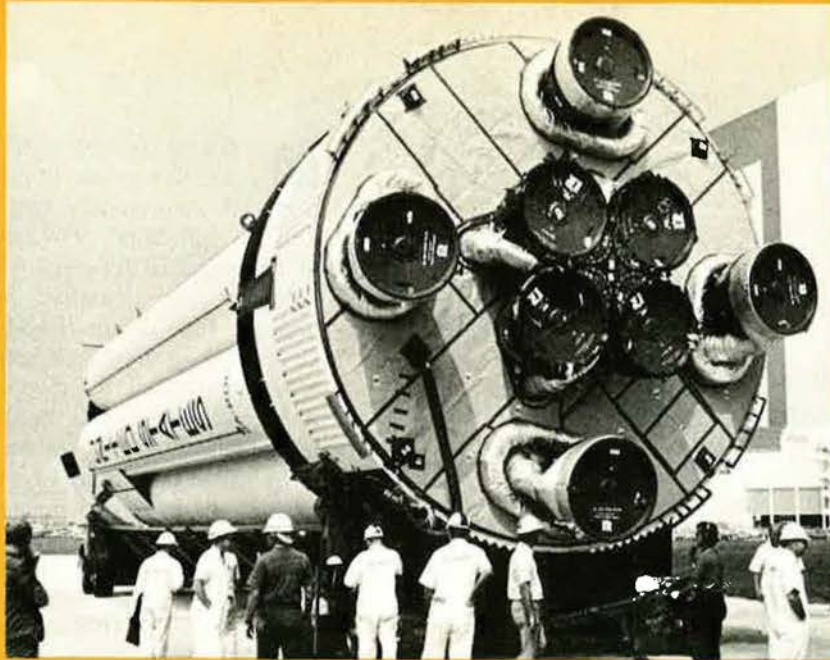
In order to sustain a national space effort in the most crucial areas, NASA had to stretch out and curtail some programs and hold off on some new initiatives. In addition, there were casualties, including the promising development work on nuclear engines for deep space missions, known as the NERVA program. Work on nuclear propulsion and large-scale nuclear power sources was terminated with the understanding that the technologies already developed would be reactivated toward the end of the decade if the space programs then planned for the 1980s require nuclear propulsion.

To the extent that the reduced budget permits, NASA will continue, and complete, most of the major programs currently in progress. Skylab, the large and sophisticated space station (see *March '73 issue*), is now scheduled for launch in May and will complete its active working life as planned before the end of calendar year 1973.

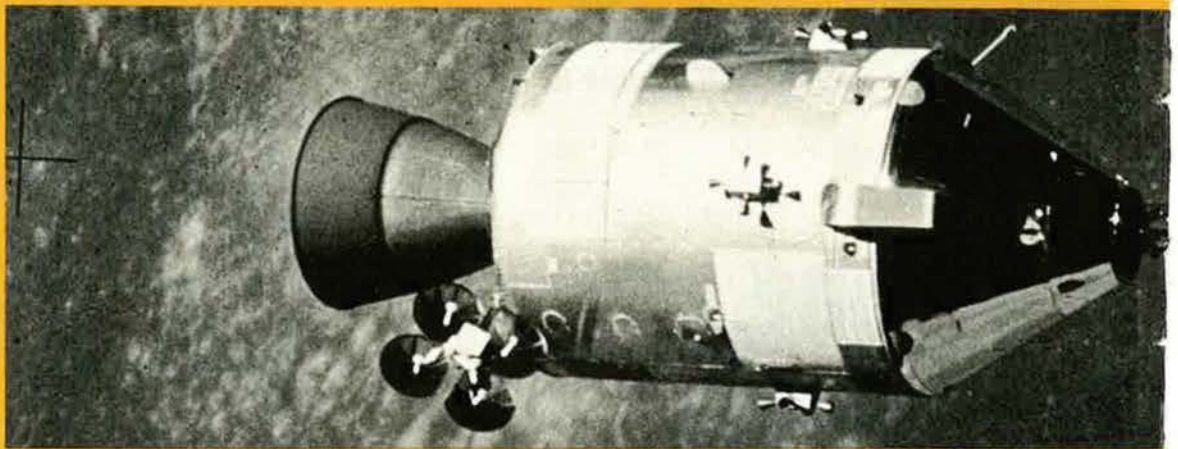
The Apollo-Soyuz cooperative test exercise was also left intact. The new budget allocates \$90 million for this joint US-USSR effort. Tentatively scheduled for a July 15, 1975,

The Saturn IB booster (right) and the complete Saturn IB (far right) are shown as preparations are on-going at Kennedy Space Center for Skylab 1 and 2 missions next month. The overall mission will be conducted in two stages.

The Saturn IB shown here will launch the first crew for the Skylab orbital workshop about twenty-four hours after the workshop itself has been placed into orbit by a two-stage Saturn V.



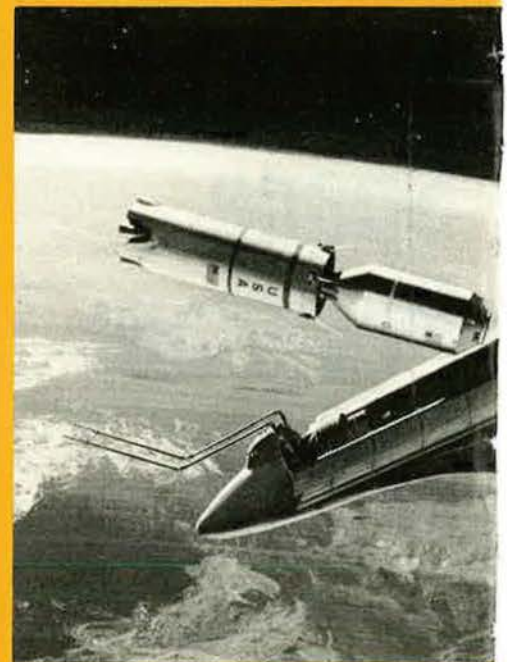
The US-USSR manned space effort agreed to in Moscow last year will see an Apollo spacecraft, similar to the type shown here, rendezvous and dock with a Soyuz spacecraft.



The Soviets will launch a Soyuz spacecraft like the model shown as part of US-USSR test to study space rescue.



Docking and Transfer Module will link the Soviet Soyuz and US Apollo Command Module.



This drawing shows a space tug pulling payload from the orbiter stage. Cargo-handling arms are extended.

launch and covering an in-flight period of up to two days, this program calls for a US Apollo and a Soviet Soyuz spacecraft to rendezvous and dock while both are in earth orbit. The American and Russian crews will visit one another's spacecraft in order to test equipment and techniques required to set up an international space rescue capability and to open the door to future joint scientific missions. The program is based on an agreement to cooperate in the exploration and peaceful use of outer space that was concluded last year in Moscow by the leaders of the two countries. The primary crew of three US astronauts assigned to the joint program is headed by USAF Brig. Gen. Thomas P. Stafford.

The Space Shuttle Stretch-Out

The single most important US space program, the reusable Space Shuttle, has been stretched out by about nine months, but, with \$475 million allocated in FY '74, continues as the linchpin of the nation's manned space effort between the end of this decade and the end of the century. The first horizontal flight of the Shuttle's manned upper stage, the so-called orbiter, is scheduled for early in 1977, and the first orbital flight is to take place late in 1978. The system will be fully operational in 1979. Subjected to a series of changes, or "scrub-downs," meant to reduce the system's developmental and operating costs, the Space Shuttle program, as presently constituted, looks like this:

At a price tag of \$5.15 billion (1971 dollars), NASA and its contractors will build and operate three complete Space Shuttle vehicles capable of delivering a payload of 65,000 pounds into an east-west, 100-mile-altitude orbit, or 40,000 pounds in a polar orbit. The former type of launch takes advantage of the centrifugal force provided by the earth's rotation; the latter is required for most military space missions.

The Space Shuttle, to be launched vertically, will consist of three elements: the orbiter, a huge external tank that provides the fuel for the orbiter's three engines, and two solid rocket boosters. Standing more than 210 feet tall and weighing about 4,100,000 pounds, the vehicle will be launched by the combined thrust of the two 11.8-foot diameter rocket boosters and the orbiter's three engines. The two rockets are jettisoned after their fuel is spent.

The rockets are equipped with a parachute system and will drop into the ocean about 100 miles from the Shuttle's launch site—either the Kennedy Manned Space Flight Center in Florida or Vandenberg AFB in California. They will be recovered and used for a total of

twenty individual launches. The expendable external tank containing liquid hydrogen and liquid oxygen will be jettisoned once the vehicle is in full orbit. The orbiter, a deltawinged vehicle about the size of a DC-9 jetliner, can stay in orbit for thirty days. It will accommodate a crew of four, six passengers, and a 65,000-pound payload stored in a bay sixty feet long and fifteen feet in diameter.

The orbiter will reenter the atmosphere at a high angle of attack, but level out to a conventional aircraft flight attitude once it reaches lower altitudes. It lands like a conventional aircraft and can use any runway at least 15,000 feet long and 300 feet wide. After a two-week turnaround period on the ground, the Shuttle will be ready for another launch. Each launch will cost about \$10.5 million, it is estimated.

Like the Shuttle's booster rockets, the orbiter also is to be reusable. According to present NASA plans, it will be capable of flying 100 missions. This figure might turn out to be optimistic since some of the technologies associated with its so-called thermal protection subsystem are still in a developmental state. Although essentially an aluminum structure, the orbiter will encounter severe kinetic heating as it reenters the atmosphere, reaching almost 3,000 degrees Fahrenheit at the structure's leading edges and nose cone. These areas, according to present plans, will be protected by reinforced carbon-carbon materials—composite materials of a carbon base whose characteristics are promising but not yet fully tested. Other surface areas of the orbiter will be protected by ceramic materials that can resist temperatures of up to 2,500 degrees.

The Shuttle is expected to perform up to sixty flights annually by the early 1980s. About half will include Air Force and Department of Defense missions. The majority of the military Shuttle missions will involve the delivery of payloads into high-energy, geosynchronous orbits. These orbits are at altitudes far greater than can be reached by the orbiter, and require an additional propulsion stage. The vehicle that flies payloads from the orbiter to geosynchronous orbit is known as the space tug. It is expected to be reusable as many as twenty times, capable of accommodating payloads of 8,000 pounds, and is to be powered by an advanced design, high-pressure, liquid hydrogen/liquid oxygen engine, which produces about 10,000 pounds of thrust.

The tug is to be unmanned and is not designed for flight in the atmosphere. Its sophisticated avionics will make it possible to operate the tug remotely from the ground as well as in a preprogrammed fashion. A binding decision about the exact configuration,



funding, and schedule of the tug is to be made late in 1973 by NASA, the Department of Defense, and the Air Force. The tug is not expected to become operational before 1983, with the result that, initially, an expendable third stage, such as the Centaur and Agena rockets, will have to be used whenever payloads are to be transported from the Shuttle's low earth orbit to geosynchronous orbit.

Because of the existing funding constraints, NASA plans to delay full-scale development of the tug until after the annual funding level of the Shuttle has passed its peak. Studies of various tug concepts are being funded jointly by NASA and DoD.

The Air Force's principal interest in both the Space Shuttle and space tug is economic. Because the system will permit the retrieval, repair, and refurbishment of spacecraft, it is expected to lower the cost of military space operations.

More Funds for Aeronautics

Although they account for only about 5.5 percent of the total NASA budget, aeronautical research and technology were given a significant increase over FY '73. A total of \$171 million is being allocated to aeronautics in the new budget, or about \$20 million more than in FY '73. By comparison, the budget for manned spaceflight is \$1,057 million, down \$100 million from the current year. The key areas in NASA's aeronautical program involve basic research, support of military aircraft development, advanced supersonic technology, short-haul aircraft technology (conducted in concert with the Air Force's Advanced Medium Short Takeoff—AMST—prototype program), and noise reduction.

One of the areas in basic aeronautical research that the Air Force is watching with keen interest involves a new computer-based design concept. NASA plans to use the world's most advanced computer, the ILIAC IV, to calculate the aerodynamic behavior of aircraft shapes and their individual components in a three-dimensional fashion. ILIAC is a so-called parallel processor that can conduct many computations simultaneously, or in parallel, rather than in the sequential manner of conventional computers. It is being developed for the Department of Defense's Advanced Research Project Agency (ARPA) and is located at NASA's Ames Research Center, Calif. NASA experts are sanguine that the new concept will sharply reduce the cost of aeronautical R&D by reducing the need for hardware tests.

Advanced supersonic research meant to

benefit both military and commercial aircraft design has been increased to \$28 million in FY '74, compared to \$11 million in the current year. Consisting of work in the areas of aerodynamics, structures, propulsion, flight controls, configuration efficiency, and environmental impact, this research, according to NASA, is to "provide the United States with the technological options to make a later decision, late this decade, or early in the next decade, on supersonic transports."

Other NASA Programs

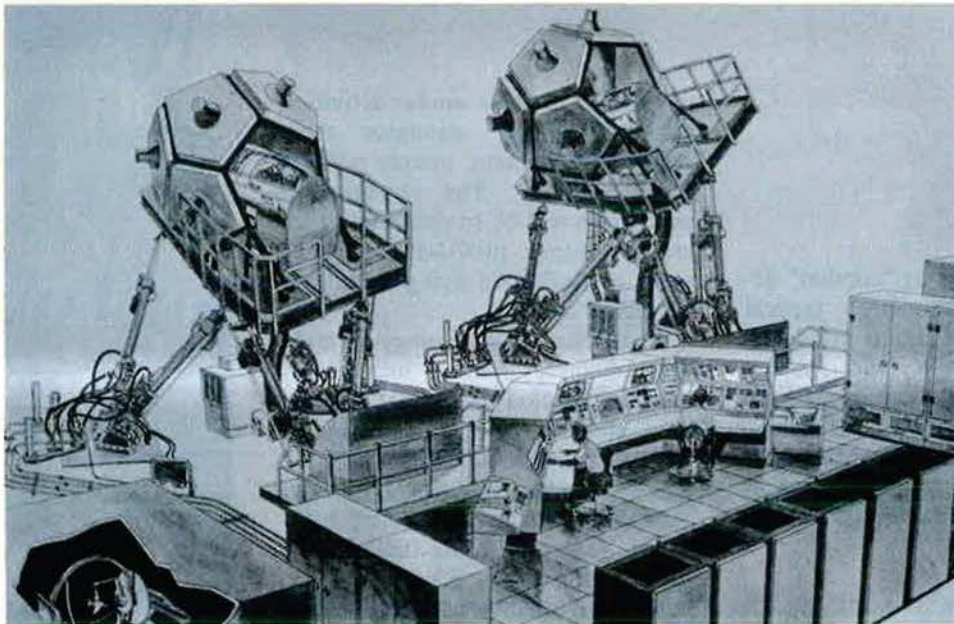
In the field of planetary exploration, the new budget provides for an unmanned Pioneer mission to Jupiter and a Mariner mission to Venus and Mercury, a soft-landing on Mars by a Viking spacecraft, and advanced work on a Mariner mission to Jupiter and Saturn, scheduled for launch in 1977. The space agency is phasing out all its work in communications satellites on grounds that further research and development "can be accomplished by industry on a commercial basis without government support." A number of current space sciences and Earth Resources Technology programs have been suspended or stretched out.

The agency's only two new initiatives are Nimbus-G, an experimental satellite that will perform environmental pollution and oceanographic measurements, and Lageos, a new geodetic satellite for extremely accurate measurements of movements of the earth's surface, a matter of military importance. Weighing close to a ton in spite of its small size, Lageos will be virtually impervious to orbital irregularities induced by the so-called mascons (mass concentrations below the earth's surface that, through gravitational force, affect spacecraft). Covered by laser reflectors and orbiting about 1,700 miles above the earth, Lageos will be able to get earth measurements "down to centimeters [less than half an inch] of precision." Its principal function will be measurements of the drift of the continents relative to one another.

The general tenor of the new, reduced NASA budget was summarized by Dr. Fletcher with the comment that "we have curtailed several NASA activities that were important to the nation's space and aeronautics program, but, despite these cuts, have maintained a surprisingly strong program. To maintain a strong program will require budgets at a higher level in future years, but the cost-reduction efforts now under way will yield more program content for the dollars invested and permit us to hold this level to one the nation can afford." ■

Advanced Flight Simulation

An artist's concept of the research simulator for air combat with image-producing cathode ray tubes around cockpits.



With the soaring cost of flying training, the increasing saturation of airspace, energy depletion, and other environmental problems, the Air Force—as well as commercial aviation—is turning to simulators in an effort to condense transition training and increase crew proficiency through the most cost-effective methods of training. In this article, the author tells of the latest USAF developments in flight simulation as he discusses . . .

SURROGATE FLYING

By Col. Leon C. Heinle, USAF

SWIRLING dull gray against the C-5 windshield slowly fades as the Altus approach lights come into view. The aircraft commander monitors cross hairs of the instrument landing system (ILS) indicator as he brings the big bird down the chute. Beyond the lights, the field is coming into view. There's the familiar clump of trees just short and a hundred or so yards to the right of the flight path. And that beautiful tire-marked ribbon of concrete. Check lists completed, a touch of power to hold speed, the flare, the screech-screech sound of touchdown, and another 300 feet and one-mile weather approach is complete.

Lower the nose, the engine whine winds down, and the lumbering giant slows and taxis to the ramp. Mission completed.

Far away, an F-4E wings over and streaks toward the ground. A cave mouth moves slowly into the piper. With the marriage of airspeed, dive angle, and target picture, the straining crew pickles its bombs and enters a jinking climb toward safety above the limits of the area's AAA. Last run, heading for home. Weather at home plate is no sweat at 1,000 feet and two miles. Radar all the way with breakout as advertised on the GCA. Home, sweet

home. Touchdown, drag chute, taxi to the chocks, and engine shutdown. The perspiring crew dismounts their trusty steed for debriefing.

The C-5 landing is at Altus AFB, Okla. The sun is shining, and we are looking ahead in time to next August. The "flight" occurred entirely in a modified hangar, home of the MAC C-5/C-141 simulator section, the first such Air Force unit with a mission simulator. Here will be the most advanced USAF "Surrogate Flying" locale. The apropos term is "proficiency through simulation."

The F-4E episode occurs six months later in a similar facility at

Luke AFB, Ariz. This "combat" action is on the simulated tactical range. The combat results are determined electronically, and mission analysis, or "scores," are printed out for the instructor's use during the critique. Even before the critique begins, the engines are accelerating as another crew readies for taxi and a following mission.

Use of Simulation

Increasingly, commercial airlines are using advanced simulation in their transition programs. The reasons are readily apparent when you consider the initial price of aircraft and escalating operating costs. And still further costs are incurred when aircraft are pulled from revenue-producing activities for training purposes. One airline's flying time for pilot transition from one type of aircraft to another approached twenty hours in the mid-1960s, prior to simulation. Its transition programs now require a similar number of hours, but the greater proportion is accomplished in the simulator. In one instance, transition training is approaching only two hours of actual aircraft flight time—to include the FAA check!

Military flying training varies significantly from airline programs. Yet, there are many similarities. The Air Force can adopt much airline

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experience in those similar activities, plus developing simulator technology in the many unique military flying activities. The objective of simulation will be to maintain or increase aircrew proficiency through more cost-effective flying training—surrogate flying.

Sophisticated technology is making simulator training increasingly realistic. Motion and visual displays now can be incorporated into a simulator. Much of this has been made possible by the increasing availability of large-capacity, high-speed, general-purpose digital computers. Research continually expands the number of activities and functions that can be duplicated in the simulator.

Air-to-Air Tactics

A research simulator system is now under development for air-to-air tactics training. The resistance barrier to simulation will be significantly reduced as more pilots are exposed to the new systems. Today, aircrew resistance to simulators is a phenomenon induced by years of directed simulator training in devices that did relatively little simulating. Instrument flying and procedural training (normal and emergency) were the only facets of flying that could be done realistically in earlier simulators. Proficiency and "feel" training were limited, often absent, and in many instances negative because the simulator was so unlike the aircraft that its characteristics had to be "unlearned" when a pilot climbed into a real cockpit.

There are reasons other than economic that are causing the Air Force to look at flying simulation with increased interest. Among them are safety, airspace saturation, environmental problems, and energy depletion concerns.

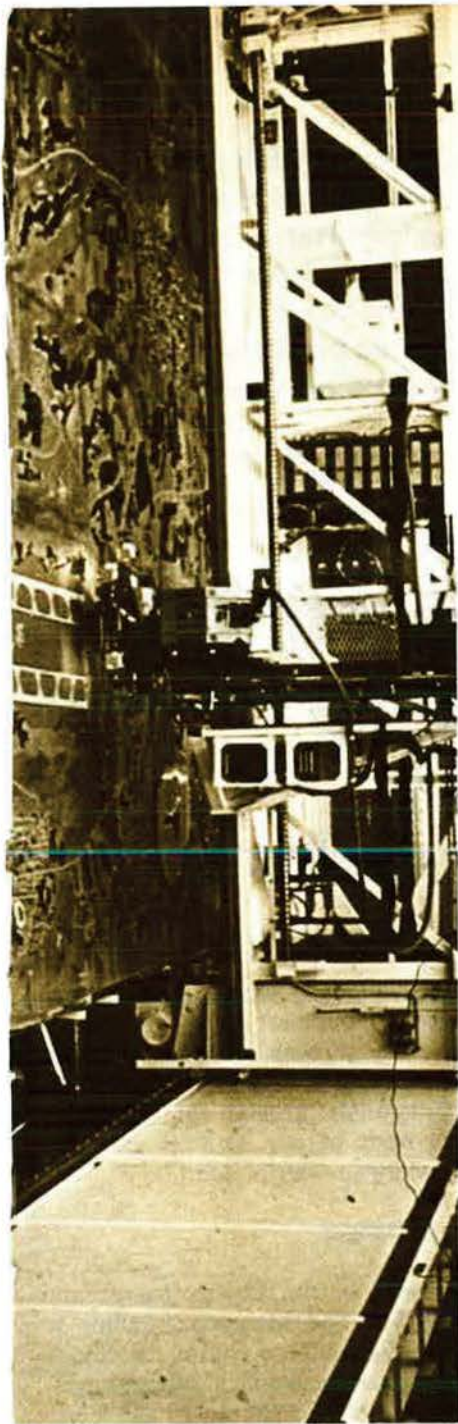
Procurement of the limited visual system for the C-5/C-141 simulator, which already possessed an advanced motion system, has been accelerated. Deliberate progress is being made in other simulator sys-



tems, particularly newly developing ones for the F-15 and B-1. Operating commands are studying the impacts and cost-effectiveness of increased simulation in each of its weapon systems.

Motion

The first simulator was built in 1929 by Edwin A. Link in Binghamton, N. Y. The device was a result of Ed Link's interest in aviation and the knowledge he had gained



TV probe moves over a vertically mounted terrain board. Positioned here over parallel runways, the probe moves in and out to simulate altitude and is gimbaled to produce roll effect.

from his experience in the Link Pivano and Organ Co.

Dubbed the Link Aviation Trainer, his device produced the effect of aircraft motion by a motor and bellows system from the organ factory. This crude system was the forerunner of the Link "Blue Box"

trainer, familiar to thousands of World War II pilots.

The jet age produced varying theories on motion needs, resulting in early motionless jet trainers. Both studies and experience indicated the no-motion advocacy to be fallacious, and increasing amounts of motion crept back into simulator designs. Today's most sophisticated systems provide six different freedoms of motion—pitch, roll, yaw, and vertical, lateral, and longitudinal movement. The objective is to provide realistic cues to the pilot's sensory nerves and organs.

Motion platforms obviously cannot fully duplicate the aircraft because of limited space and area of travel. However, the crew member can be intentionally fooled into feeling the real sensations of motion. This is done by introducing an acceleration cue, then washing out the motion. That is, a specific movement is induced, then decelerated at a rate below the threshold of the body's ability to sense motion change.

Visual

The visual system now in use consists of a scaled terrain model with a servo-controlled optical probe moving over the model board in the direction and at the rate of speed at which the simulator is being "flown." The probe picks up the imagery in the form of color TV and projects it in front of the cockpit. One method is to project the image onto a reflective screen in front of the windshield. Another is through a cathode ray tube inserted into the windshield. Regardless of the method, the basic principle is that the pilot "flies" the remote probe over the terrain through his normal pilot controls. The probe sees and projects back to the pilot a scene in concert with the simulated aircraft maneuvering.

Another visual system with future potential is Computer Generated Imagery (CGI). As the simulator "flies," the computerized program is displayed in a manner similar to the terrain model system. The images are presently somewhat like cartoons, but are getting more realistic as techniques improve. A prime

advantage of this system is the ability to reprogram the terrain, contrasted to the limiting factors involved in a rigid terrain model board. Also, the total area of operation is not limited. Current model boards contain only the airport and its immediate surroundings.

Either visual system can be enhanced with numerous special effects that are induced by the flip of a switch or the twisting of a rheostat. These include all the light phases of daytime through twilight into nighttime, selected ceilings, any desired visibility restriction, and sound effects.

Training Features

Playback capabilities exist, thanks to computers. This is the football TV instant-replay feature. A student and instructor can replay an entire performance exactly as it occurred, for critique purposes. This taping feature also allows "canned" demonstrations of new maneuvers to students, especially important in single-seat aircraft where an instructor is not with the student. The perfected canned performance also enhances standardization because each student receives the same demonstration.

Simulation technology has come a long way since Ed Link's first trainer. Motion systems now can realistically simulate most aircraft maneuvering; an obvious exception is sustained G forces. Visual systems can provide appropriate scenery and weather effects for many training needs. Current developments are pointed toward marrying these capabilities with cockpits identical to the actual aircraft. The consummation of this marriage will provide a great step forward at all levels of flying training.

In the future, a typical mission may start from any given airfield location, proceed to the active runway, take off, transition to IFR, perform weapons delivery either by radar or visual means, return to the airfield, execute an IFR approach, transition to VFR at any selected visibility and ceiling, complete a visual landing, and return to the parking area. AND NEVER LEAVE THE GROUND!

Although we will soon complete the withdrawal of US forces from South Vietnam, USAF airmen will continue to be based in Thailand—a nation of growing importance in world affairs. In this article, a foreign-affairs expert analyzes that country's pro-Western orientation, political stability, defense efforts, economic potential, and strategic location, and tells why these factors have made . . .

THAILAND

THE NEW CENTER OF GRAVITY IN SOUTHEAST ASIA

By
**Lawrence
Griswold**

WHEN the last POW has been returned, the missing in action satisfactorily accounted for, and the last American combat unit shipped home from South Vietnam, it will not mean the end of the United States military presence in Southeast Asia. In Thailand, the Air Force will continue to use a few of the several bases now in service, apparently with the hearty approval of the Thai government. The US Navy and the Army Logistics Command will carry on with their work at Ban Sattahip, the supply base for all US operations in that country. The partnership is a natural one, much better than a mere treaty. And it has important implications for the future of US foreign policy.

With the cease-fire in Vietnam, the strategic center of gravity in Southeast Asia has shifted westward to Thailand. Its pro-Western political orientation makes Thailand a friendly enclave surrounded by hostile, envious, or politically and militarily weak countries with Communist-fed insurrections of their own. Its tradition of independence and its relative political stability are a combination unique in Southeast Asia. Finally, Thailand occupies a geographically strategic position between the Indian Ocean and the South China Sea.

Tactically, South Vietnam was a battle won. Strategically, however, the campaign to prevent Communist domination of the western Pacific and our vital lifeline to Asian and African raw materials must be guarded from

Thailand—a traditionally secure island of sanity in continental Southeast Asia. At stake is not just a country or even a region. It is the insurance of continued access to the Indian Ocean, and materials needed for American industry—the basis of our national existence and of the American way of life.

Dimensions of Danger

If Burma, west of the Dawna Range and the Salween River, and Malaysia, swelling to a great bulb at the southern end of the elbow-shaped shaft of the Kra Isthmus, offer no present threat, Thailand's neighbors to the north and east more than make up for them. True, Burma's highlands reach across northern Thailand to meet Laos, but they form more of a bridge than a barrier to the greedily warlike Yunnanese of south China, who for years have dominated that northern region—a stubbornly unassimilable, frequently hostile minority in China as in Thailand. Bangkok estimates that there are about 8,000,000 Chinese occupying the foothills and both banks of the upper Mekong. Most of them are farmers, but an undetermined number are guerrillas, dedicated or mercenary. Yunnan is the traditional vector of trouble for both Indochina and Thailand. The Red River gorge leading from Kunming (formerly Yunnanfu) is an ancient invasion path to Tonkin, the northern region of Vietnam, as the Mekong is to Laos. These river

valleys also are the supply routes for weapons and other munitions.

During the decade of 1948–58, the terrorists of still-British Malaya were armed and reinforced secretly through Thailand, although not without help from confederates on the island of Singapore. After 1954, Ho Chi Minh's Communist revolution drained away most of the arms, and Communist activities were shifted northeasterly to Laos and Vietnam. Russian- and Chinese-made arms poured into Hanoi from south China, while in Laos the Pathet Lao and the Khmer Rouge were supported by the Communist Party in Hanoi. Opportunistic raids across the Mekong from Laos and from Cambodia's Battambang district, ranging from the northern to the southern extremities of eastern Thailand, have kept the Thai Army mobilized for years. With the halting, however temporary, of the war in Vietnam, Bangkok expects its own frontiers to be battlegrounds at any time. Nor are the American airmen of the 7th/13th Air Force at their bases near Udorn, Nakhon Phanom, Ubon—all near the Mekong—and Korat, close to Cambodia, more relaxed. Airfields have never been easy to defend. The B-52 airbase at U-Tapao, near Sattahip, and the F-111 airbase at Takhli are at safer distances.

Furthermore, no statesman in Asia seriously expects the Communist leadership in Hanoi to honor any agreement to keep the peace when its capability for effective military aggression has been restored. Moreover, the cease-fire agreement signed in Paris on January 27 applied only to Vietnam. Article 20 of the agreement simply returned the buck to the 1954 Geneva Conference, before the Pathet Lao and Khmer Rouge organizations of Communist guerrillas were set up, armed, and directed by Hanoi. The wording of the pertinent paragraph (c) of Article 20, stipulating that "the internal affairs [of Laos and Cambodia] shall be settled by the people of each country," by no means discourages alien management of rebellions, misnamed "civil wars," that could spill over into Thailand.

A Unique History

About two-thirds the size of Texas and with a total population of some 40,000,000, including the Chinese minority in the north, Thailand is unique in Southeast Asia in its successful defense of its national independence for eight centuries. Its people have repelled armies from Burma, from Portugal and England, from Kublai Khan's China, from Annamite Hué, and Khmer Phnom Penh. In relatively modern times it challenged the French, not always with complete success, but

a disillusioned King Chulalongkorn (Anna's king) was subdued only when the French, in 1893, laboriously worked two light gunboats across the Menam River sandbars to drop their anchors virtually at his palace door.

Western Laos and Cambodia were ceded to the French in successive stages between 1881 and 1907. In the latter year, Britain seized the southern end of the Kra Isthmus and created four "unfederated Malay States" from the territory. These ex-Thai regions are now virtually Communist pockets, allied to the Viet Cong. Obviously, Bangkok shares Saigon's apprehensions about a troubled future.

In 1941, the Japanese played on the memory of Chulalongkorn's humiliation by the French, promising Thailand the return of the lost territory if Bangkok would permit the "peaceful transit" of the Japanese army on its way to Malaya and Singapore, and a later declaration of war upon the United States and Britain. The Thai government agreed. On January 25, 1942, Thailand declared war. Washington ignored it. But the "peaceful transit" had been bungled. Bangkok neglected to notify the Army at the port city of Songkhla (or Singora, as it is known to the Malays), about 120 miles north of the Malay border. When General Yamashita ("The Tiger of Malaya") tried to land his crack 5th Division on the Thai side of Malayan Kota Bharu on the morning of December 8, 1941, the Thais put up a furious resistance, and hours were lost before a frantic Bangkok could locate the embattled commander by telephone and order a cease-fire.

Thailand's Armed Forces

According to the most accurate sources available, mainly the International Institute for Strategic Studies' "Military Balance 1972–73" (see *December '72 AIR FORCE Magazine*), the Thai armed forces are probably superior, in general, to other continental Southeast Asian nations excepting both Vietnams. Facilities at Thai air and naval bases are now shared with the United States. Ban Sattahip, with the enlarged airbase at U-Tapao, now used by USAF B-52s, is an old Thai naval base some seventy air miles south of Bangkok. The US Navy uses the base for storage and the limited repair facilities present. Its principal occupant is the US Army Logistics Command, which arranges for the storage and transfer of POL, JP-4 jet fuel, spare parts, ammunition, and other supplies to USAF bases in the country, including the US Marine Corps air base at Korat. The larger warships of the Royal Thai Navy also conduct their operations from Ban Sattahip.

The Royal Thai Navy includes three destroyer types (two US and one British) of World War II vintage; two coastal gunboats; one small minelayer; and seventeen patrol boats. Three new frigates are on order, and Bangkok is considering the purchase of German-built torpedo boats of the *Jaguar* class.

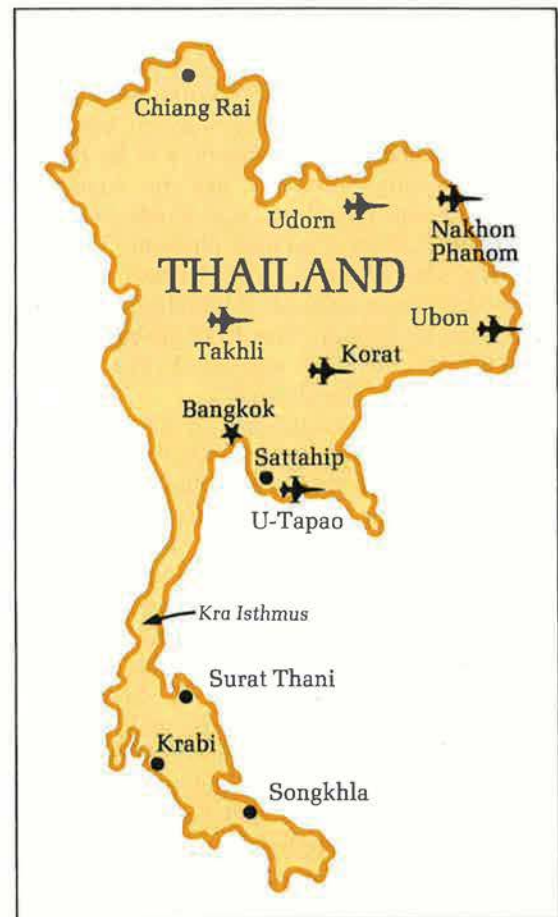
The Royal Thai Navy has a difficult dual responsibility. Blocked by sandbars and shallow water from access to the country's main internal waterway, the larger ships patrol the extensive gulf coastline from the Malaysian frontier at the Kra Isthmus around the northern gulf coast past Ban Sattahip and down the east coast to the Cambodian border—as well as the waters of the gulf between. The smaller fighting craft patrol the 155-mile length of the Menam River, running from the dredged sandbars of its broad mouth, past Bangkok, to the limit of river barge navigation. The great central basin, "Asia's Rice Bowl," almost vertically bisected by the Menam, is a vast region of intersecting *klongs*—canals—and the nation's substitute for highways. The *klongs* also greatly increase the difficulties of policing illicit traffic, including guerrillas from the north, as well as more normal controls. Cheaper than highway construction and maintenance, they complicate and hinder the maneuverability of the Thai Army.

The Thai Air Force has a normal strength of about 30,000, including four battalions dedicated to the defense of the airfields—one for each of the four bases near the Laotian and Cambodian borders. For the emergency protection of exposed USAF bases, airborne US Marines are now stationed at Korat. In equipment, the Royal Thai Air Force is credited with 144 combat aircraft, all American-made. They include eleven F-5A and F-5B fighter-bombers; twenty F-86F day fighters; two RT-33A reconnaissance planes; fifty-five T-28D, forty T-6 and sixteen OV-10 counterinsurgency aircraft; thirty-eight transports; and some sixty helicopters. JP-4 jet fuel is supplied in part by TORC (Thai Oil Refineries Corp., the only Thai-owned refinery capable of making it) and part from refineries in Singapore, shipped by rail, or by tanker across the gulf to Sattahip. The US Army Sealift Service operates two T-2 tankers, bringing oil from the Arab/Persian Gulf. Additionally, the USAF also has contracts for POL with one

English and three American oil companies with offices, but no refineries, in Thailand.

The Government and Counterinsurgency

Until 1932, Thailand had been an autocracy. Thereafter, it became, technically, a constitutional monarchy with a royal descendant reigning over a country ruled by military Prime Ministers and a marginally effective Parliament, often suspended during times of stress. As in many Oriental nations, most Thais accept government as a fact of life imposed by the gods, and in politics open dissent is



Thai bases that are being used by US forces are shown above. The map at right points up the strategic significance of Thailand to both the land mass of SEA and access to vital ocean trade routes.

tantamount to blasphemy—probably one of the reasons communism has failed to take root among the rural populations. With this governmental structure, political power resides in the Officer Corps, and when a spokesman for the present government was quoted as asserting, "Thailand is not ready for Western-style democracy," he was stating a fact.



SCALE OF MILES 0 100 200 300 400 500
 An AIR FORCE Magazine Map. Copyright © 1973
 by the Air Force Association, Washington, D. C.

Field Marshal Thanom Kittikachorn promoted himself to power in a bloodless *coup d'état* on June 17, 1971. He had been Deputy Prime Minister since 1959 and Acting Prime Minister since 1963. A staunch conservative, Thanom's suspension of Parliament and abolishment of all political parties in Thailand (except his own) fell most heavily on the far-left-wing Democratic Party of ex-Prime Minister Seni Pramoj, a civilian "progressive" of the 1940s. Seni's party was suspected of encouraging, if not actively directing, the pro-Hanoi "Free Thai" guerrillas in apparent association with the Pathet Lao and Khmer Rouge. Prime Minister Thanom's appointed nine-man government was confirmed last December by the King.

Bangkok has been sharply aware of the alien Chinese in the north at least since 1946, and many were intercepted as they passed southward toward British Malaya during the "terrorist" crisis of 1948-58. Only a few weeks ago, Thai Intelligence exhibited copies of phrase books in the Thai language issued to Chinese army officers in 1965. Nor is Bangkok likely to forget the spring of 1962, when Chinese out of Yunnan crossed the Mekong near the trading town of Chiang Rai in the northwest about the same time that battalions of Pathet Lao invaded Thailand from the east, driving almost to Udorn. At that time, the Thai government invoked SEATO. Washington quickly responded with a force of 2,800 Marines from the Seventh Fleet, aircraft and crews, and, a little later, 2,200 men from the Army. The Marines were withdrawn after a few months, followed by the Army, leaving the Air Force contingent on guard, a token prelude to 1973.

Until January 1973, Thailand's hospitably casual attitude toward the formalities of immigration has offered a sort of open house to subversive infiltration. Early this year, a law was put into force barring all unlicensed foreigners from practicing some sixty-five skilled trades or professions, ranging from chemists and cartographers to physicians and photographers. The list was designed less to protect Thai occupations than to locate undercover subversionists; an effective sealing of the national frontiers would require many years.

Actively beset at the north and east, Thanom's army has been widely deployed in a strenuous effort to contain guerrilla invasions from Laos and Cambodia. Twenty-five Thai battalions are fighting with the Royal Laotian Army in a wide arc around the Laotian capi-

tal, Vientiane, and others are in the extreme south of the Kra Isthmus working with the Malaysian Army in an effort to comb out the guerrilla nests in that area. Perhaps for the first time in its long history, a Thai government is making a serious effort to put its house in order.

The Thai Economy

Thailand's considerable wealth lies in agricultural products and raw materials. Rice, tin, rubber, a few ores (including iron), teak, and other forest products sum them up. There is, of course, TORC's single oil refinery not far from Bangkok and a small refinery in the north, an iron smelter for local consumption, and a number of minor shops making silverware, fabrics, and jewelry. Lack of road and railroad communications inhibit industrial development. The single railroad running through Malaysia to Singapore relieves transportation problems but hardly solves them; intercity traffic can move over roads along the coast of the Kra Isthmus, but highways disappear north of Bangkok, and the sandbars and shallow waters of the Menam prevent extensive commercial development.

Perhaps Thailand's immediate future in industry depends on the energy and longevity of a Chinese-born Thaiander known as "K-Y" Chow. Kwan-yun Chow personifies most of Thai industry. He built and controls TORC, he owns an ocean-going steamship line and, last year, negotiated an Export-Import Bank loan to add two "less than 100,000-ton" tankers to it. He contributes heavily to charitable foundations, encouraging education in various branches of engineering, and, also last year, engaged three American firms to conduct feasibility studies for the excavation of a Kra Isthmus sea-level canal and the construction of "city-complexes" at both canal terminals.

Bangkok, now a junior partner in this latest Chow enterprise, correctly envisions new political problems with the completion of the Kra canal project. Bangkok's initial reluctance to endorse Chow's Kra canal idea vanished with the vision of flourishing city-complexes a la Singapore at either end and of a future, modern, substitute for the Strait of Malacca, which connects the Indian Ocean and the South China Sea. Now the declared private property of Malaysia and Indonesia, the strait was once the *raison d'être* of Singapore's gaudily affluent eminence.

A Strait and/or a Canal

On this world there are only three great interoceanic waterways, and all of them are in trouble. The Suez Canal was closed in 1967.

The author, Lawrence Griswold, holds a master's degree in anthropology from Dresden University, and has done archeological work in Southeast Asia, Western China, the Middle East, and Latin America. From 1950 to 1968, he wrote and published "Background for Tomorrow," a periodic analysis of foreign affairs. Mr. Griswold is a contributing editor of *Seapower*, the magazine of the Navy League. He is the author of several books and many articles on politico-military strategy.

The Panama Canal is obsolescent. And now the future availability of the Strait of Malacca, oldest of the three and the only natural waterway, is in doubt. In 1970, more than 37,000 vessels passed between the Indian and Pacific Oceans through the strait's Sumatran and Malaysian territorial waters without so much as a grateful nod to the strait's joint proprietors. Things will be different in the future, especially for giant tankers and warships not flying Indonesian or Malaysian flags.

The Strait of Malacca is a funnel well over 600 miles in length. At its western end, it is deep and broad. At the eastern end, between Singapore and Sumatra, it is cluttered with islands, has a dredged depth of sixty feet, and is only twenty-one miles wide. Given the twelve-mile legal limit to territorial waters, Malaysian and Indonesian jurisdictions overlap for a distance of three miles, thereby establishing a condominium that may be clarified easily between Djakarta and Kuala Lumpur, but also establishing a legal foundation for the argument that Indonesia and Malaysia enjoy joint ownership of the Strait of Malacca's eastern gate.

In November 1971, a joint Indonesia/Malaysia statement notified world maritime nations that henceforth all vessels above 200,000 dead-weight tons would be barred from using the Strait of Malacca and all foreign warships of any tonnage could pass only after obtaining, in advance, formal permission from the proper authorities. However, merchant ships on "innocent transit" may pass freely through the strait.

Russia, Japan, and Singapore protested the restrictions, but they were confirmed in March 1972. Tokyo's protest was *pro forma*; its huge tankers were already using the Sunda Strait between Java and Sumatra, a route subject to closure at Djakarta's convenience. Moscow's protest was more serious. The Russian Navy, it said, had established its presence in the Indian Ocean and needed the shorter route to Vladivostok. Singapore complained that it would hurt business.

Obviously, the need for a canal across the Kra Isthmus was growing. A Kra canal would cut the distance between the South China Sea and the Indian Ocean by 900 miles. Last December, the New York engineering firm of TAMS (Tippets-Abbott-McCarthy-Stratton) announced its contract with the Thai government to conduct a feasibility study for a Kra Isthmus canal wide enough and deep enough to accommodate million-ton tankers. The release did not mention the retainer to LTV (Ling-Temco-Vought) of Dallas, Tex., for the future planning of city-complexes at both terminals, whichever route across the Kra

Isthmus was selected. Of the three optimal routes to be studied, the Krabi-Surat Thani line, running about fifty-eight miles north-northeast from the Andaman Sea at Krabi to Surat Thani on the Gulf of Thailand, along a deep defile for more than half the distance, seems likeliest.

The terrain of the Isthmus is hilly and forested. The geology indicates a solid rock foundation. The excavation of a trough about fifty-three miles long, at least 250 feet deep, and 1,000 feet wide will be expensive even in Asia, but engineers believe that nuclear excavation such as once proposed for Operation Plowshare would make the project practicable. This would further complicate matters. The US State Department discourages it because of the Limited Nuclear Test Ban Treaty, but, fortunately for K-Y Chow, fissionable material is obtainable elsewhere than from the United States, and Japan may be financially interested. Tokyo considered a Kra canal in 1942, but postponed it. Even then, the idea was more than a century old.

A functioning Kra ship canal, with all its advantages, could erode Thailand's presently amicable relations with its ASEAN* partners, especially Indonesia and Singapore. Inevitably, it would attract general shipping away from the Malacca passage, and Thailand—rather than Singapore and Djakarta—would profit thereby, not only in business but in international prestige. Strategic leverage now exerted by Indonesia, with lesser benefices going to Malaysia and Singapore, would pass northward to Bangkok, bearing with it all the thorny problems of ownership in a part of the world where Russia and Japan may soon compete more tensely for maritime controls that will certainly command the attention of the West.

In cold fact, the center of political gravity has already switched from Saigon to Bangkok, as Thailand becomes the new focus of free-wheeling Communist attention. And neither the Politburo of Moscow nor its equivalent in Peking can do a thing to prevent it even if either of them wished to. As each discovered a year ago, somewhat to its surprise, Hanoi is running its own show in its own way.

Now that the last of our combat troops are leaving South Vietnam, Thailand and the US forces based there will receive Hanoi's full attention. ■

*ASEAN: Association of Southeast Asia Nations, founded August 1967. Members include the Philippines, Indonesia, Thailand, Singapore, and Malaysia.

"Giveaway" is the term often applied to US security assistance programs. In fact, sales of military equipment to our allies and friends far outweigh outright grants of funds and equipment. Yet this program—a cornerstone of the Nixon Doctrine and an important element of US technological and economic viability—remains under attack. Too few people realize that the Military Assistance Program is, in fact, a vital . . .

MAP

FOR SECURITY

away" program with few returns. Even people acquainted with the widely supported Truman Doctrine of 1947, under which military equipment was provided to Greece and Turkey to combat Communist guerrilla forces, often find it difficult to see how that monumental bulwark against Communist expansion can be compared honestly with the congeries of present-day aid. To be sure, military assistance today is not as well defined as it was during the dramatic days of the late forties. But then neither are the threats of "Communist take-overs." The extent of today's change from the days of either the Truman Doctrine or the Marshall Plan (between June 1947 and December 1951, the latter provided some \$11 billion for the economic recovery and defense of Europe) is underlined nowhere more emphatically than in the actual financial exchanges that take place between the US and the countries assisted.

**By Col.
Don Clelland,
USAF**

A CENTURY ago, Lord Palmerston said of Britain: "We have no eternal enemies . . . no perpetual friends. But we do have interests, both eternal and perpetual, and those it is our duty to follow." The Prime Minister was addressing, of course, the ambivalent nature of foreign policy and the underlying consistency of actions that often seem quite otherwise to the uninitiated. For example, the type of consistency that permitted the US to move smoothly from post-World War II anticommunism to the present rapprochement with the USSR and China.

As one of the important supporting elements of American foreign policy, the Military Assistance Program (MAP) is often defended by the use of Lord Palmerston's argument. Despite its apparent validity, however, the argument seldom quiets critics who see no plan, no pattern in our grand mixture of Grant Aid and Military Export Sales.

When MAP is defended annually before Congress, doubters find doubt increased as Congress slashes, comes up with puzzling riders to bills, and, almost annually, procrastinates on passage to the point where the Military Assistance Program habitually operates on Continuing Resolution Authority. And critics and supporters alike, catching an occasional glimpse of behind-the-scenes State and Defense quarrels, frequently wonder just who is running the show. The general public is further confused when the zigzags of policy are not sufficiently explained as we follow our "perpetual interests."

One unfortunate result of all this is the continued belief of many that MAP is a "give-

MAP and Morality

"Giveaway" today in the area of responsibility of the United States European Command (USEUCOM) consists in part of annual sales by US firms of more than \$2 billion worth of military equipment to "assisted" nations. To be sure, Grant Aid still exists, but the salesmen of Hughes, Northrop, McDonnell Douglas, *et al.*, are not beating the bushes in Europe, the Middle East, and Africa simply out of charity.

The reason for a continuing Military Assistance Program lies in an admixture of US domestic employment, national security, and foreign needs—and foreign wants. Then accept another pragmatic truth: If the US gets up on a high moral horse and won't sell military equipment to friendly nations, others will be glad to.

FOREIGN MILITARY SALES AND MILITARY ASSISTANCE FISCAL YEARS 1964-73



This is not to say that the US hasn't attempted to play it straight. For example, US Military Assistance Programs have long been built upon the premise that equipment will be given or sold to another country only after considering the social and economic impact it would have on that country. In short, if in the US judgment arms are legitimately needed for security, a sale should be considered. On the other hand, if it is strictly an international case of "keeping up with the Joneses," no US grants or sales should be made.

The difficulty of maintaining this "moral" position was brought home sharply to US policy-makers in 1971 when other countries sold more than \$1 billion worth of sophisticated weapons to Latin America. These sales resulted mainly from a self-imposed US embargo on arms sales in that area. Official opinion was that the armies being built up in Latin America were out of line with any threat and, worse, were internally devastating.

US concern, however, was not shared by all. Europe, in particular, was glad to step in and sell combat aircraft, submarines, missiles, and tanks. While Congress limited US military sales and credits to \$75 million for Latin America, European governments swiftly increased their influence by imposing few limits and offering long-term, easy-credit arrangements. The US response to the rejection of its lofty hopes was predictable. Ceilings on sales have since been adjusted, and restrictions are being removed. The ramifications of this, of course, go far beyond any immediate profit involved, for sales are the foundation upon which commonality with US equipment, logistics, and doctrine can be built.

Administering the Program

Accepting this also means recognition that the Military Assistance Program routinely interacts with a myriad of governmental and commercial activities. The US, perhaps unfortunately, does not have an agency assigned complete responsibility for bringing these together. Instead, the Department of State has been charged with coordinating the Military Assistance Program with other aspects of US foreign policy, while operating responsibility belongs to the Department of Defense, from which it is farmed out to the Unified Commands—USEUCOM, PACOM, SOUTHCOM.

USEUCOM at Stuttgart, Germany, has direct responsibility for the administration of the Military Assistance Program and for Foreign Military Sales (FMS) in its area. This entails the administration of Military Assistance Advisory Groups (MAAGs) in nineteen countries with MAP and FMS activities managed by the Defense Attachés in twelve other countries. Geographically, USEUCOM's responsibility extends from Norway through Saudi Arabia to Zaire (formerly the Belgian Congo).

Of the thirty-two countries administered by USEUCOM, seventeen still have Grant Aid programs of varying sizes, but these programs are dwarfed by the sales made to these and other USEUCOM countries. Grant Aid, of course, is the source for the pejorative "give-away." Nevertheless, it has been, and continues to be, a vital part of the overall US Security Assistance Program in its provision of US military equipment and services to needy nations. One aspect of the Grant Aid program seldom appreciated is the fact that it has en-

For the past eight years, foreign sales of military equipment have surpassed MAP grants of funds and excess equipment. These sales, now amounting to almost \$4 billion a year, help reduce the present unfavorable US balance of payments, give employment to thousands of Americans, and contribute to maintaining a healthy research and development base in this country.

abled more than 200,000 foreign military students to be trained in the United States. In terms of the intangibles of commonality, this has doubtless repaid, many times over, the original investment.

It is in the area of foreign military sales, though, that the USEUCOM participants make their greatest financial impact. Today, countries within the USEUCOM area of responsibility are buying sizable amounts of sophisticated equipment such as F-4s and F-5Es. Since the fact that these sales occur in such magnitude is not well known, it can be fairly concluded that most Americans probably dismiss lightly the requirements of this type of business.

Assistance is needed, of course, by both American business and by the procuring country. USEUCOM (the Security Assistance Directorate, specifically) helps industry representatives in a number of ways: by advising them of foreign interest in their product, by helping arrange for promotional briefings, and by obtaining equipment loans and demonstrations. In the field, the MAAGs, and augmented Defense Attaché Offices, do the critical legwork required in the host country to try to successfully bring together the security needs of the country in which they are stationed and the American firm best able to satisfy these needs.

MAAGs, Missions, and MAP

The importance of the MAAGs and Missions in the US sales picture can hardly be overstated. Contrary to the policies of some other countries, the US government has, in the past, tended to stand aloof from American

The author, Col. Don Clelland, is Deputy Director of the Security Assistance Directorate, Hq., USEUCOM, at Stuttgart, Germany. Colonel Clelland, an F-86 pilot in Korea, has served as an assistant professor of history at the Air Force Academy, an RF-101 pilot in Vietnam, a USAF planner, and in the Office of the Secretary of the Air Force. Before assuming his present duties, he was Executive Officer to the US Representative, NATO Military Committee. Colonel Clelland has been a frequent contributor to AIR FORCE Magazine.

industry and its attempts to sell military equipment abroad. This may have stemmed partially from the sensitivity of policy-makers to charges of encouraging the "military-industrial complex." Or, the arms industries may not have needed government help. Whatever the reasons, the government's noninvolvement is now detrimental to US business since our technological lead has been minimized, and the surging industries of other countries have made the military-sales market severely competitive.

One result of this laissez-faire attitude has been the loss of sales to foreign competitors, not because their product was necessarily better, but because their industry and their government worked side by side. Another consequence has been the fratricidal wasting away of American competitive strength as US companies compete with one another, only to see the sale go to a foreign entry because it is backed solidly by its government.

In the absence of an official coordinated program designed to serve our industry, the MAAGs and Missions do what they can to assist in bringing about American sales. Probably the most valuable aspect of this assistance is the implicit US government endorsement that is given when a man in uniform acts as the intermediary between US industry representatives and officials of the host country.

In addition, members of the MAAGs, since they are in close daily contact with the host country, can provide military, economic, and political insights unavailable from other sources. Though perhaps not a major contribution, MAAG personnel can also be helpful to US industry by making known to them the *actual* key people in the host country as opposed to the apparent; and the idiosyncrasies of these key people that must be catered to in briefings and presentations.

As one businessman said about the MAAGs and Missions: "Let me repeat the fact that a major responsibility for the success of our foreign military sales effort rests upon the quality of support given us and our products by the MAAGs and Missions in our customer countries. Without excellent representation in our MAAGs and Missions, we, as contractors, will be significantly less effective in achieving our goals."

This sort of praise for the jobs done by the MAAGs and Missions is widespread; however, it is not ubiquitous. During the early days of the Military Assistance Program—in the late forties—security meant that we gave generously from our resources to equip and train interested but indigent allies. During these Grant Aid years, our MAAGs and Missions grew large. Criticism of their size, however,

was muted by the general praise of their accomplishments. Today, the echo of "giveaway" mixes unfortunately with "reduce the military overseas." And the MAAGs are threatened. As we enter a period when military assistance is beginning to be financially profitable, the US is preparing to cut down drastically on the MAAG staffs so important to confirming this possibility.

Even as this is written, consideration is being given to eliminating some MAAGs and shifting the burden of sales elsewhere, perhaps to augmented Defense Attaché Offices. This line of thinking treats too lightly the expertise and work involved in making sales of military equipment. In addition, it fails to face up to the conflict that would be thrust into a single organization if it were charged with both intelligence-gathering responsibilities and the job of being advisers and assisting in sales to foreign forces. Should the attaché ever be assigned both functions, both functions will suffer.

MAP and the Nixon Doctrine

The Nixon Doctrine states that we should reduce our military presence abroad and increase our reliance on allies. If this is to be done, and done without a reduction in overall effectiveness, our allies must be able to respond with techniques, training, and weaponry equal to that withdrawn by the US. This should be done without damaging programs within the particular countries that are designed to provide solid foundations for social and economic development.

The Nixon Doctrine seems to be a natural follow-on to earlier US actions. Today, we are heading into the third phase of a foreign-aid program that has already proved to be one of our wisest investments. In the first phase, we gave military equipment and training to buttress the war-depleted strength of our allies. In the second phase, our strength, and the strength of our allies, was sufficient to permit the US great leeway in deciding whom we would sell to, and under what conditions. In the third, and present phase, competition and domestic economic considerations have driven us to a position where we can no longer turn down two dollars worth of sales for every one dollar sold simply because our criteria have not been met. The constraints laid upon sales, and by extension upon our military assistance program, will have to be those of the more prag-

matic rationale spelled out by Lord Palmerston in which we pay our deepest obeisance to those interests which ". . . it is our duty to follow."

This means, for one thing, a dispassionate appreciation of the importance of defense industry to our domestic economy. For another, it means accepting the fact that nations that want arms, and have money, will get arms. Finally, it means recognition of the fact that, regardless of attitudes, maintaining a desirable position in the sale of arms is going to require effort.

A significant part of our population depends on defense work for its livelihood. It is also beyond dispute that the quality of US arms needed for our own defense is built upon continued research, development, and production. And government subsidization can only go so far in this expensive business—another fact that underlines the need for sales.

Increasingly, the leading industrial nations have come to accept the truth of the above as it applies to them. France, for one, is the world's third largest arms exporter. In a breath of Gallic candor, *L'Express* of October 23, 1972, offers these reasons:

For many arms, such as tanks, France is not particularly competitive as compared with other nations; in fact, she is even sometimes more expensive. But she gives herself the advantage of being a very accommodating supplier. In contrast, the American negotiators are generally worried as to the destination of the arms and the conditions of their utilization.

The US has learned that even in the nuclear age no single advantage can guarantee peace. Instead, orchestration of a number of factors is required. One of these factors, the Military Assistance Program, has been vital to the security we have known over the last twenty-five years, and the MAAGs and Missions have played important roles. It would be regrettable, indeed, if our zeal for economy led to MAAG/Mission enfeeblement at a time when they can contribute increasingly to both domestic and international security. ■

The Bulletin Board

By Maj. Robert W. Hunter, USAF

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

At a meeting of AFA's Military Manpower, Junior Officer Advisory, and Airmen's Advisory Councils held February 22-23 in Washington, D. C., Lt. Col. Henry J. Steenstra, Office of Legislative Liaison, Office of the Secretary of the Air Force, briefed the Councils on USAF and DoD legislative proposals. The essence of his briefing follows.

DoD Program Items

DoD 93-3—Revise special pay structure. The proposal (1) extends enlistment bonus to all "critical military skills"; (2) provides for selective reenlistment bonus in critical skills; (3) authorizes Reserve enlistment and reenlistment bonuses; (4) authorizes officer "critical speciality" bonus; (5) provides special pay for lawyers; (6) increases special pay for doctors and dentists; (7) authorizes a variable bonus of up to \$15,000 per year for health professionals; and (8) increases sea pay and extends it to officers in grades O-3 and below.

STATUS—Submitted to OMB on December 14, 1972.

DoD 93-5—Modernize the non-disability retirement structure. Primary changes under this proposal are: (1) reduced annuity for retirees with less than thirty years of service, increased when they would have reached thirty; (2) increased multipliers for long service; (3) use of "High-1" averaging; (4) integration of military retirement and Social Security benefits at age sixty-five; and (5) payments at separation for both voluntary (over ten) and involuntary (over five) separatees. Includes twenty-year transition and save-pay provisions. (See *AIR FORCE Magazine*, December '72, pp. 38-41.) **STATUS**—Submitted to OMB on January 17, 1973.

DoD 93-6—Recomputation of retired pay. The proposal authorizes recomputation based on the January 1, 1971, basic-pay rates at age sixty, if retired with less than twenty-five years' service, or at age fifty-five, if retired with twenty-five or more years of service. Disability retirees whose disability is rated

thirty percent or more could recompute immediately. **STATUS**—Submitted to Congress on February 1, 1973.

DoD 93-7—Amend Dependents' Assistance Act. The proposal would make permanent the present authority to pay the "with dependents" rate to lower-grade enlisted personnel who are married. **STATUS**—Submitted to OMB on December 4, 1972.

DoD 93-10—Dependent dental care. Would provide a civilian dental care program similar to medical care under CHAMPUS. The proposal includes a sliding annual deductible from E-1 through O-10 of \$25 to \$150. All members would pay, in addition, fifteen percent of the cost of orthodontic or prosthodontic care, and dependents would receive up to two free examinations each year, including cleaning and scaling of teeth. **STATUS**—Submitted to OMB on November 7, 1972.

DoD 93-11—Income tax treatment of moving expenses. Beside correcting other tax inequities, this proposal would amend the law to

ED GATES NAMED CONTRIBUTING EDITOR

Edmond N. "Ed" Gates, who recently retired as editor of *Air Force Times*, has joined this magazine's staff as a contributing editor. Beginning with this issue, he will comment regularly on Air Force developments in the personnel field.

A 1939 graduate of Miami University, Oxford, Ohio, Ed served with the Army Air Forces during World War II. In 1947, he received a regular commission while at Maxwell AFB, Ala., as assistant editor of the *Air University Quarterly Review*. In 1950, he was separated from the service on a disability discharge.

In July of that year, Ed joined *Air Force Times* as an associate editor, becoming managing editor in 1959, and editor in 1967. He retired on January 1, 1973, and is living in Arlington, Va. He and his wife, Emily, have two sons: Raymond, a former B-52 copilot, now in the Air Force Reserve; and David, on active Air Force duty.

During his years with *Air Force Times*, Ed Gates became widely recognized as an authority on Air Force personnel matters. He brings to *AIR FORCE Magazine* more than twenty years of expertise in that increasingly important field.

Mr. Gates's first offering, "Shooting for the Stars," appears on the opposite page.



Ed Gates

—Chase Ltd.

specifically provide that any cash or "in kind" payments received in connection with a PCS move would not be included in taxable income. Internal Revenue Service has put a moratorium on enforcement of their interpretation of the law until June 30, 1973. STATUS—Submitted to OMB on August 4, 1972.

DoD 93-34—**Appointment and promotion opportunity of nurses and medical specialists.** The proposal removes restrictions on appointment and promotion of Army and Air Force nurses and medical specialists so that they compete on the same basis as other officers. Authority also included to defer to age sixty the otherwise mandatory retirement of nurses and medical

specialists in grades O-5 and O-6. STATUS—Submitted to Congress on January 5, 1973.

DoD 93-42—**Dual compensation.** Proposal provides that the retired pay of regular officers will not be reduced when they are employed in a civilian capacity with the US or District of Columbia. STATUS—Submitted to OMB on November 7, 1972.

DoD 93-43—**Travel and transportation allowances.** The proposal would provide for reimbursement of the actual costs of parking, fares, and tolls incurred during official travel; would authorize travel from a member's TDY station to his old permanent station and then to his new permanent sta-

tion when PCS orders are issued while he is TDY; and would authorize payment of a dislocation allowance where dependent travel is performed and orders are subsequently changed. STATUS—Submitted to OMB on January 17, 1973.

DoD 93-44—**Travel and transportation allowances for dependents' schooling.** The proposal authorizes payment for periodic transportation of dependents attending primary and secondary schools away from the parents' duty station, when there is no suitable DoD-operated school available. If available, use of military transportation on a space-required basis would be legislated. STATUS—Submitted to OMB on November 7, 1972.

Ed Gates . . . Speaking of People

SHOOTING FOR THE STARS

What is the toughest military promotion? To colonel? To chief master sergeant? Maybe to four-star general?

None of these. It's the one to brigadier general, where thousands compete for a handful of vacancies. Interestingly, however, once an officer wins his first star, his chances of picking up the second one increase tremendously.

Of USAF's 422 active-duty general officers, 149 are major generals and 220 are brigadiers. Thus, the latter enjoy a great shot at two-star rank. The odds drop considerably in the race for three- and four-star identification, since Air Force has but thirty-nine of the former and only fourteen of the latter. Still, the chances of making either of the two top grades are many times better than of making that tough initial star.

That's the monumental hurdle, the one several thousand Air Force colonels were immediately concerned with recently when the annual temporary O-7 selections were announced. The list named seventy-three officers who will pin on their stars throughout the year as vacancies occur.

Approximately 4,200 colonels were basically eligible for that list, although all but about 300 had been screened out of competition before the final board convened.

When matched against the approximately 6,100 colonels in the Air Force, the actual chance of making brigadier general figures out to about one in 84.

Most officers understand—or they should—that the majority of USAF colonels cannot be classified as serious contenders for star rank. Individuals can pretty well ascertain whether they stand much of a chance at selection; most full-colonel slots are not avenues to stars and never will be. Officers, generally, know which are which.

Yet, every year a surprise or two occurs; a name no

one expected to emerge slips onto the list. Thus, other colonels whose chances of selection appear negligible often continue to clutch at that one-in-a-thousand chance that the gods may smile.

Besides the particular jobs held, other clues for making a star are age and service. The further a line officer goes beyond his forty-fifth birthday and his twenty-third year of service, the poorer become his chances of getting a star.

On the latest list, for example, the average selectee was 45.7 years old and had completed 23.6 years of service.

There is nothing illogical about this. Air Force and the public deserve to get reasonable mileage out of the new leaders. What some quarters do question are the mandatory retirement rules that force general officers out of uniform when they are in their most productive years. Industry, business, and educational institutions—which hire much of this talent—are the winners.

What about the quality of officers the Air Force taps for stars? Does each O-7 board, together with the AF Chief of Staff (who plays a key role in determining the makeup of his service's leadership) really pick the top contenders year after year?

Human judgment being subject to error as it is, there can be no flat yea or nay response to that question. Yet, it seems clear that for the most part, excellence prevails. Rarely is a so-so contender or a second-rater advanced, close observers of the system insist.

The prevailing view is that the annual boards look at many more officers who are qualified for stars than the quotas can accommodate. That some contenders fully deserving a star are not chosen is regrettable, but it can't be helped. The quota won't stretch.

The system, meanwhile, replenishes USAF's military leadership year after year in good fashion.

The Bulletin Board

DoD 93-45—**Reimbursement for private shipment of POVs.** In cases where a member personally arranges shipment of his POV incident to PCS, this proposal would authorize reimbursement not to exceed the cost of transportation had it been provided by the government. STATUS—Submitted to OMB on November 7, 1972.

DoD 93-49—**Officer tenure and separation.** The proposal provides for selection board consideration of regular lieutenant colonels and colonels who have been twice passed over or twice considered for brigadier general, with a minimum of seventy percent selected to continue on active duty. Also provides for consideration only one time in each grade, severance pay for those selected to retire, and changing tenure of lieutenant colonels from twenty-eight to twenty-six years. STATUS—At OSD; services have provided inputs.

USAF Legislative Proposals

AFLI 3038—**Equalize and expand BAQ.** The proposal would authorize the same BAQ for married and unmarried members, would authorize payment of BAQ to lower-grade airmen while en route PCS in a leave or travel status, and would make permanent the higher BAQ rates for lower-grade airmen now authorized by temporary law. STATUS—Revised proposal to services for coordination on February 13, 1973.

AFLI 3149—**Flight pay.** Proposal would revise the monthly rates, authorize Service Secretaries to prescribe entitlement and performance standards, and delete the provision from the law that terminates flight pay to colonels and above in "noncombat" assignments after May 31, 1973. STATUS—AF comments submitted to OSD on February 13, 1973.

AFLI 3191—**Direct payment of overseas housing costs.** Authorizes direct reimbursement for necessary and reasonable one-time expenses not otherwise compensated for in securing rental quarters, to include initial repair and alteration, expenses incurred when quarters are

vacated, and payment of advance rent. Applies outside the forty-eight contiguous states. STATUS—To other services for coordination on February 16, 1973.

AFLI 3215—**Make PL 92-477 retroactive.** Public Law 92-477 became effective on October 9, 1972, and provides for trailer moves and additional moves of dependents of members in a missing status for more than one year. Proposal would make law retroactive to August 5, 1964. STATUS—To other services for coordination on February 16, 1973.

AFLI 3222—**Settlement of pay accounts.** Provides for settlement of the pay account of a member in a missing status who is determined to be dead in a case where his wife has divorced him or remarried. Would cut off entitlement to wife as of date marriage is terminated. STATUS—To other services for coordination on February 16, 1973.

AFLI 3229—**Equalize entitlements of married personnel.** This proposal would change the statutory definition of a military dependent so that it includes the spouse of a female military member. All benefits that now accrue to the wife of a male member would apply. STATUS—To other services for coordination on February 20, 1973.

News Briefs

• The medical exam given to those retiring or separating from active duty is not given to determine eligibility for or to give support for physical disability retirement or separation. USAF officials recently made that point clear as they explained new guidelines for administering disability retirement, so much in controversy lately. The exam is to protect the individual and the government. Under the new guidelines, it will be assumed that the member is physically fit for service, and he'll get a *nondisability* retirement or separation unless he's unable to perform the duties of his office, rank, or grade in such a manner as to reasonably fulfill his employment on active duty. After retirement, one can apply to the VA for any benefits as a result of laws affecting that agency.

In the future, someone will have some explaining to do if an unfitness determination is made within one year of an established date of separation or retirement, where the member has been on flying status within one year of such a deter-

mination, or where the physical defect bringing about the determination of unfitness existed at the time of the member's last periodic physical exam. Those, such as amputees, who are retained on active duty in limited assignment because of their skills won't be affected.

• USAF is going to double the number of commissioning opportunities for enlisted men. Half or more of the new spaces will go to those who are qualified for pilot or navigator duties. Emphasis will also be placed on technical degrees. Some 1,300 airmen could be affected in FY '74. More weight now goes to military qualities and performance as well as commanders' recommendations. Time allowed in an undergraduate college will be expanded to as much as thirty months for airmen to get their degrees.

• Promotions to E-2 for basic trainees who finish in the top fifteen percent of their class has ended. Air Force thus expects to save \$1.8 million annually.

• Nonregular Air Force officers who leave active duty for an active Reserve job may now keep their active-duty pay grade. Previously, Reserve officers had to train and be paid in their permanent grade, which was usually lower than their active-duty grade.

• Air Force has tightened guidelines for members to be retained as part of the rated force. If an officer doesn't complete training directly related to an aircrew job when he is medically or professionally qualified, he may be removed from flying status. Likewise, if an individual doesn't meet minimum annual training or proficiency standards, his commander has been instructed to take a hard look at him. Further, if he's been medically suspended for more than three years, medical requalification will not necessarily mean he gets back on flying status. Reduced crew ratios, SEA drawdown, and good worldwide rated manning are some of the reasons behind the new guidelines.

• Bootstrap application cutoff dates and board dates have been announced. Application dates are the fifth of this month for a board meeting on April 17-18; July 5 for a board meeting July 17-18, 1973; an October 4 cutoff for a board meeting October 16-17, 1973; and a cutoff for applications on January 4, 1974, for a board meeting January 15-16, 1974.

- USAF is trying to reduce present undergraduate pilot-attrition rates, with a totally ground-based pilot selection process the goal by FY '77. They have asked the Human Resources Laboratory at Lackland AFB, Tex., to explore the role that altitude chamber training plays in pinpointing physiological and psychological causes of pilot attrition. The lab will also experiment with improved use of the Officer Qualification Test, medical screening, and preliminary psychiatric evaluation. Further, a new pilot indoctrination program will give the applicant an insight into the real day-by-day world of the pilot. The idea is to identify—in the selection process—those likely to eliminate themselves in later training.

- AFLC's Newark Air Force Station (NAFS) near Columbus, Ohio, will be the first unit to field test the new Civilian Personnel Management Information System (CPMIS), designed by the Air Force Data Systems Design Center at Gunter AFB, Ala. (See AIR FORCE Magazine, "The Bulletin Board," March

'73, for more on the CPMIS.) Newark AFS is the home of AFLC's Aerospace Guidance and Metrology Center. All 2,800 NAFS employees will have their records involved.

- Air National Guard officials are alarmed at an increasing rate of elimination for their undergraduate pilot trainees. The rate grew from 13.37 percent in FY '71 to 21.63 percent in the first four months of FY '73.

- Air Force Reserve's "Palace Diamond" effort (see AIR FORCE Magazine, "The Bulletin Board," October '72 issue) has been a success, reports Reserve chief Maj. Gen. Homer I. Lewis. Major actions to date include the establishment of a single manager for Reserve personnel, the development of an optimum structure for Reserve officers so General Lewis' office will know their needs, a central assignment system to help in placing officers in meaningful jobs, and central management of recruiting. In addition, all colonel assignments are now being managed in the AFRE Personnel Division. Upcoming are im-

provements in administration of Air Reserve Technicians and 265/8033 officers, changes in the Air Reserve Personnel Center organization to align it with the Military Personnel Center, and improvements in promotion and career-development programs. It's all in an effort to get in line with active-force personnel policies and procedures, while recognizing differences that do exist.

- Some statistics from the last brigadier general list serve to profile selection to that grade. (For more on selection to brigadier general, see Ed Gates's accompanying article.) The average length of service is 23.6 years. For the line officers, the range of ages goes from forty to fifty-one; the average is 45.7. The average time in grade is 4.6 years. Twenty-one of the new generals graduated from either West Point or Annapolis, while thirty-two were aviation cadets, one came from OCS, and eight from ROTC. Two were direct commissions. Sixty-nine percent hold advanced degrees; seven with doctor-

Senior Staff Changes

B/G (M/G selectee) Andrew B. Anderson, Jr., from C/S, 2d AF, SAC, Barksdale AFB, La., to Asst. DCS/Ops, Hq. SAC, Offutt AFB, Neb. . . . **Col. (B/G selectee) Richard N. Cody**, from Cmdr., 320th Bomb Wg., SAC, Mather AFB, Calif., to Cmdr., 93d Bomb Wg., SAC, Castle AFB, Calif. . . . **M/G Ray M. Cole**, from C/S, Hq. MAC, Scott AFB, Ill., to Cmdr., 21st AF, MAC, McGuire AFB, N. J., replacing retiring M/G Roland A. Campbell . . . **B/G (M/G selectee) Harry M. Darmstandler**, from IG, to Asst. DCS/Plans, Hq. SAC, Offutt AFB, Neb., replacing B/G (M/G selectee) Ray B. Sitton . . . **Col. (B/G selectee) Donald M. Davis**, from Cmdr., 307th Strat. Wg., SAC, U-Tapao AB, Thailand, to Cmdr., 40th Air Div., SAC, Wurtsmith AFB, Mich. . . . **B/G (M/G selectee) Lawrence J. Fleming**, from Cmdr., Air Def. Wpn. Cen., ADC, Tyndall AFB, Fla., to Cmdr., 24th NORAD/CONAD Region, with add'l duty as Cmdr., 24th Air Div., Malmstrom AFB, Mont.

B/G John R. Hinton, Jr., from C/S, 15th AF, SAC, March AFB, Calif., to IG, Hq. SAC, Offutt AFB, Neb., replacing B/G (M/G selectee) Harry M. Darmstandler . . . **B/G (M/G selectee) Jeanne M. Holm**, from Dir., Women in the AF, DCS/P, to Dir., SAF Personnel Council, Hq. USAF, replacing retiring M/G Dudley E. Faver . . . **B/G (M/G selectee) Lester T. Kearney, Jr.**, from Cmdr., 63d MAW, MAC, Norton AFB, Calif., to C/S, Hq. MAC, Scott AFB, Ill., replacing M/G Ray M. Cole . . . **B/G John R. Kelly, Jr.**, from Asst. DCS, to DCS/Logistics, USAFE,

Ramstein AB, Germany, replacing M/G Bryce Poe, II . . . **B/G Richard L. Lawson**, from Dep. Dir., Strat. Operational Forces, DCS/P&O, to Dep. Dir., Ops, DCS/P&O, Hq. USAF, replacing M/G Cuthbert A. Pattillo . . . **M/G Cuthbert A. Pattillo**, from Dep. Dir., to Dir., Ops, DCS/P&O, Hq. USAF, replacing retiring M/G Clifford W. Hargrove.

Col. (B/G selectee) Carl D. Peterson, from Asst. DCS/Ops, Hq. ADC, Ent AFB, Colo., to Cmdr., Air Def. Wpn. Cen., ADC, Tyndall AFB, Fla., replacing B/G (M/G selectee) Lawrence J. Fleming . . . **Col. (B/G selectee) John S. Pustay**, from Exec. to C/S, SHAPE, Brussels, Belgium, to Exec. Asst. to SAF, Washington, D. C. . . .

B/G (M/G selectee) Henry Simon, from Asst. DCS/M Management, Hq. AFLC, Wright-Patterson AFB, Ohio, to Asst. Compt. for Audit, and Cmdr., AF Audit Agency, Norton AFB, Calif. . . . **B/G (M/G selectee) Ray B. Sitton**, from Asst. DCS/Plans, to DCS/Plans, Hq. SAC, Offutt AFB, Neb., replacing retiring M/G Paul N. Bacalis . . .

B/G (M/G selectee) Howard P. Smith, Jr., from Dep. ACS/Intelligence, Hq. USAF, to Dep. Dir., Intelligence, DIA, Washington, D. C., replacing M/G Richard R. Stewart . . . **Col. (B/G selectee) Erskine Wigley**, from Cmdr., 1550th Aircrew Tng. Test Wg., MAC, Hill AFB, Utah, to Cmdr., 63d MAW, MAC, Norton AFB, Calif., replacing B/G (M/G selectee) Lester T. Kearney, Jr.

RETIREMENTS: M/G Dudley E. Faver; M/G Clifford W. Hargrove; B/G John M. Talbot; M/G Harold C. Teubner. ■

The Bulletin Board

ates. Only eight of the line selectees are nonrated, with pilots leading the totals at fifty-two. There are three navigators and one astronaut. Five others are in the medical corps; four more are judge advocates. Forty-two of sixty-four line officers have SEA experience.

The same kinds of data are available for the last list of selectees to major general. Here the years of service average slightly over twenty-seven years. Average age is forty-nine years, three months; youngest is forty-four, oldest, fifty-four. Time in grade averages one year, nine months. Fifty-four percent hold advanced degrees; three at doctorate level. Thirteen are West Pointers, twenty-nine aviation cadets, five OCS, and one a direct appointee. There are forty-one pilots, three navigators, and four nonrated.

• Information from the Military Personnel Center (MPC) at Randolph AFB, Tex., shows the impact of several "people programs." The CONUS Assignment Exchange Program, permitting airmen to trade CONUS assignments on a one-for-one basis, saw 300 airmen opting for the switch in 1972. Also, the Officer Career Development Division reports more than 204,000 personal contacts in its program.

MPC reports that the personalized concept of officer career management, called the "PALACE mode" series, expanded to eight teams now covering more than fifty percent of the nonrated line force. The start of the PALACE NAF (nonappropriated fund managers) program was the first time the PALACE mode operation had been applied to the enlisted force.

MPC also reports the fact that 1972 was a record retirement year, with 33,282 members entered on the growing retirement roles.

New Major Generals

Promotions: To be Major Gen-

eral: Andrew B. Anderson, Jr.; Jack Bellamy; Arnold W. Braswell; James M. Breedlove; Wilbur L. Creech; Richard G. Cross, Jr.; Harry M. Darmstandler; William A. Dietrich; Billy J. Ellis; Howard M. Fish; Lawrence J. Fleming; Raymond B. Furlong; Herbert J. Gavin; Alden G. Glauch; Colin C. Hamilton, Jr.; William R. Hayes; Ralph T. Holland; Jeanne M. Holm; Lester T. Kearney, Jr.; John R. Kern, Jr.; James A. Knight, Jr.; Robert P. Lukeman; Herbert A. Lyon.

Billie J. McGarvey; Edward P. McNeff; Travis R. McNeil; Charles F. Minter, Sr.; Thomas W. Morgan; Slade Nash; Donald G. Nunn; James E. Paschall; Harold L. Price; Edmund A. Rafalko; George Rhodes; Jack B. Robbins; Ray A. Robinson, Jr.; Evan W. Rosencrans; Kendall Russell; William M. Schoning; Brent Scowcroft; Frank J. Simokaitis; Henry Simon; Ray B. Sitton; Howard P. Smith, Jr.; William Y. Smith; Eugene Q. Steffes, Jr.; Eugene F. Tighe, Jr.; Robert F. Trimble; John H. Wilkins. ■

HERE'S HOW TO HELP . . .

The Air Force Association has worked with the National Committee for Employer Support of the Guard and Reserve since the Committee was formed. Last September, AFA's annual Convention was the scene of a seminar devoted to the Committee and its new efforts. That panel presentation was reported on in AIR FORCE Magazine (see November '72 issue, pp 82-86). A resolution was also passed at

that Convention making it a matter of record that AFA was lending its full support to the efforts of the Committee. It is with this same interest and belief in the goals of the National Committee for Employer Support of the Guard and Reserve that AFA offers herewith an opportunity for those involved in the problem to participate.

On the facing page is a message for employers, and below is a

pledge coupon employers may sign and return to the Committee. We hope our readers who may employ current or potential members of a Reserve component will read the message and sign and return the pledge. Mail it to the National Committee, which will then send you your official "Statement of Support," signed by the Secretary of Defense and the National Chairman.

Mr. J. M. Roche, Chairman
National Committee for Employer Support
of The Guard and Reserve
400 Army Navy Drive
Arlington, Va. 22202

Dear Mr. Roche:

We are happy to join you and other American employers in pledging continued encouragement and support to the National Guard and Reserve Forces of the United States.

Please send our copy of the "Statement of Support" so we can sign and display it.

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
NUMBER OF EMPLOYEES _____
SIGNATURE _____ DATE _____

HANG IT!



Statement of Support for the Guard and Reserve

We recognize the National Guard and Reserve as essential to the strength of our nation and the maintenance of world peace. They require and deserve the interest and support of the American business community, as well as every segment of our society.

In the highest American tradition, these Guard and Reserve forces are manned by civilians. Their voluntary service takes them from their homes, their families and their occupations. On weekends, and at other times, they train to prepare themselves to answer their country's call to active service in the United States armed forces.

If these volunteer forces are to continue to serve our nation, a broader public understanding is required of the total force concept of national security—and the essential role of the Guard and Reserve within it.

The Guard and Reserve need the patriotic cooperation of American employers in facilitating the participation of their eligible employees in Guard and Reserve programs, without impediment or penalty.

We therefore join other members of the American business community in agreement that:

1. Our employees' job and career opportunities will not be limited or reduced because of their service in the Guard or Reserve;
2. Our employees will be granted leaves of absence for military training in the Guard or Reserve without sacrifice of vacation time; and
3. 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.

Secretary of Defense

Chairman
National Committee for Employer Support
of the Guard and Reserve

Title _____

Employer

_____, 19 ____

That's what you do with the things you cherish . . . your degree, that diploma, family pictures, your first buck. All these are probably hung up somewhere because you're proud of them. This piece of paper is something to be proud of too. Hang it—hang it up with those other precious things.

It represents a feeling, a stand, a commitment. All for America. For the things you believe in. The atmosphere you work and play in. Freedom.

The words on the statement are self explanatory, the feelings are not. They are tied up in history—the history of our country, of your town. Ever since Lexington and Concord our country has thrived and survived because of her citizen soldiers, sailors, and airmen. They're the ones we count on for a lot of things. Things like fighting to keep our freedom, helping us in disasters. They even hand us a bargain to boot. Thirty percent of our defense posture is made up of Guard and Reserve forces and they do it all on less than five percent of the budget. That's a bargain in anybody's book.

As a businessman and employer, share your feelings of pride and thanks for those who are ready to lay it all on the line for what you believe.

Send for the statement, sign it, and hang it!

**National Committee for
Employer Support of the
Guard and Reserve**

400 Army Navy Drive,
Arlington, Virginia 22202



Wearing the Legion of Merit awarded at his retirement ceremony, Lt. Col. Bill Dunn (center) smiles broadly as ADC Commander Lt. Gen. Thomas K. McGehee presents a certificate of appreciation to Colonel Dunn's wife, Evelyn.

He began his career at an early age. He had to, to get everything in: ground combat in France with the Canadian Army before Dunkirk, fighter pilot in the RAF Eagle Squadron No. 71 and with the Ninth Air Force, adviser to the Chinese Nationalist Air Force, service with USAF in Vietnam. At the retirement ceremony capping his colorful career, the eight rows of ribbons on his chest attested to a lifetime of service . . .

BILL DUNN— Our First Ace of World War II

By James R. Patterson

A FUNNY thing happened to Bill Dunn on his way to making US Air Force history. When he transferred from the Royal Air Force to the US Army Air Forces in 1943, somebody forgot to make a note in his records that he was America's first ace of World War II. The oversight remained uncorrected until 1967.

Dunn retired as a lieutenant colonel on January 31, 1973. Before an audience of about 200 in the Aerospace Defense Command auditorium at Colorado Springs, Lt. Gen. Thomas K. McGehee, ADC Commander, presented the Legion

of Merit to the ace. A good thing, too, that it was this medal, because it meant adding only a cluster to the eight rows of ribbons already stacked on Dunn's chest.

Then Air Commodore William Harbison, Air Attaché at the British Embassy in Washington, D. C., stepped forward, and Bill Dunn popped to with the smartest British hand salute to be seen this side of Buckingham Palace. The Air Attaché handed the retiring airman three framed mementos of his American Eagle Squadron No. 71 participation and observed that Dunn's military career "read like a

history book." It was no overstatement.

Bill started flying when he was twelve and had scrounged around 100 hours by the time he was seventeen, when a persuasive US Army recruiter convinced him the quickest way to Randolph Field and a flying career was to sign up as an enlisted man. He did, but it took a while to get off the ground.

After a three-year hitch in the Infantry, Bill Dunn roamed a bit until, with the start of the World War II, he heard the Canadians wanted pilots. Dunn hurried to Vancouver in September 1939, only to learn that the Canadians were not taking American volunteers for flight training, though they did later. It was a poor second choice, but as long as he was there, he decided to enlist as a corporal in the Seaforth Highlanders Regiment of the 1st Canadian Infantry Division. Later, as a sergeant leading a mortar platoon, he fought in France until the evacuation of the British Expeditionary Force at Dunkirk, in June 1940.

Back in England, Dunn was in a Canadian Army camp near Borden in Hampshire when it was attacked by Stuka dive-bombers on August 16. The German aircraft knocked out a gun crew near him. Dunn jumped into the gun pit, manned the old Lewis gun, and shot down two of the Stukas. This could well be a unique feat for a subsequent air ace.

A few months later, Bill Dunn got the break he had been hoping for. Drained of pilots by the Battle of Britain, the RAF was looking for anyone of reasonably sound body and a few hours of flying time. Pilot Officer Dunn was given five weeks of training and sixty-four hours' flying time, and, in April 1941, reported to No. 71 Eagle Squadron.

On July 2, 1941, flying a Hawker Hurricane, Dunn shot down an ME-109E, the first enemy warplane destroyed in aerial combat by an Eagle Squadron pilot. By August 9, he accounted for two more Messerschmitts and shared the destruction of a third with a Polish RAF pilot.

Then, on August 27, Dunn won two more air battles, to bring his

official score to 5½, but in the fight he was severely wounded and his Spitfire was crippled. Barely conscious and with most of his cockpit instruments shot out, he managed to land on an airfield near Folkestone.

"I taxied over to the side of the field where I saw an ambulance parked," Dunn recalled recently. "As I cut the engine a medical orderly jumped on the wing and told me I should go to the other side of the field to refuel and rearm before leaving the plane. I said I was wounded and needed help to get out. Then he noticed my bloody face and saw the mess in the cockpit. He turned green and slid off the wing."

When they got Dunn to the Royal Victoria Hospital in Folkestone, he was found to have been wounded in the back of the head. He had two bullets in the calf of his right leg, and the top of his right foot had been taken off by a cannon shell. After he was on the mend, they moved him to a large resort hotel in Torquay that had been converted into a convalescent hospital by the RAF.

"But it was more hotel than hospital," Dunn said. "The bar opened at 11:00 a.m., and we pretty much had the run of the place. Even so, those of us who could, would take the hospital bus to town at night to try the other bars.

"There was an Australian pilot who always wanted to go along, but he was in a cast from his waist to above his knees so that he couldn't sit down. In the bus, we would stow him in the baggage compartment at the rear where he could ride standing up. In town, we would prop him in the corner of a pub and then pick him up when it was time to go home. One night we forgot him when we got back to the hotel, and he spent the night propped up in the bus."

The Torquay interlude was one of the happier memories of Dunn's service under King George VI. The life of an RAF pilot on combat duty was far from the bottoms-up-couldn't-care-less bravado pictured in movies and novels of the time.



Bill Dunn served with Canada's Seaforth Highlanders before joining the RAF.



A fighter pilot at last, Pilot Officer Dunn in a Supermarine Spitfire Mk-IIA.



Major Dunn, wearing a Ninth Air Force patch on his AAF uniform, at the controls of a Mustang.

"You better have a clear head when you flew," Bill said, "or you might come back without one."

Dunn was shot down once, in July 1941. An ME-109 got him when he was over the Channel.

"I was picked up almost at once by an RAF rescue launch," he related, "and the first thing they did when they pulled me into the boat was to hand me a cupful of dark, thick, powerful rum. It was supposed to take the chill off after a dip in the icy Channel, but it did more than that."

After a few relaxing sips, the American looked around to see two other RAF pilots and two German airmen in the launch. The four smiled at him and toasted him with their cups. It was almost like being on a picnic.

On reaching shore, the rescued RAF officers' names and units were taken and their home stations notified. But somehow the word never got through to Dunn's squadron. Seeing no need for a hurried return, he took the train to London and in due course boarded another for his home station.

"When I got back to the room I shared with Tommy McGerty," Dunn said, "I found all my clothing had been divvied up. Even my socks and underwear were gone. I had a hell of a time getting it all back."

Later, McGerty was killed in air combat. A lighthearted nineteen-year-old pilot from California, he had told his parents that they should not worry about him, as he was a Link trainer operator in the RAF.

After Dunn's transfer to the USAAF in the rank of captain, he was assigned to the 406th Fighter Group of the Ninth Air Force, flying tactical air support in P-47 Thunderbolts. By V-E Day, he had flown 234 combat missions, totaling 519 combat hours, and was officially credited with 8½ enemy aircraft confirmed destroyed, four unconfirmed destroyed, three probably destroyed, and four damaged. In addition, he destroyed twelve enemy aircraft on the ground, as well as 168 tanks and trucks, and sank a 4,000-ton enemy troopship.

Major Dunn later went on to the

James R. "Jimmy" Patterson, a frequent contributor to this magazine, has been a free-lance writer living near the Air Force Academy in Colorado since his retirement from the United Aircraft Corp. in 1971. A former public relations executive, Mr. Patterson is also a retired Air Force Reserve colonel who, during his career, served as a flight instructor and information officer. His last previous article for AIR FORCE Magazine, "William Tell '72," appeared in the January '73 issue.

China theater where he was base commander at Luchow and then an adviser to the Chinese Nationalist Air Force in Peking. He came home in December 1946, a lieutenant colonel, but after being passed over twice for promotion he was released from active duty in 1949. Bill Dunn had been shot down before; he immediately enlisted as a technical

sergeant, subsequently rising to chief warrant officer (W-4). He was retired at his Reserve commission rank and pay of lieutenant colonel.

The story of how Bill Dunn was finally officially recognized as America's first fighter ace of World War II goes back to 1965, when he donated some Eagle Squadron memorabilia to the Air Force

Museum at Wright-Patterson AFB, Ohio.

"I sent them an old Eagle Squadron uniform, my RAF log book, and some photographs," Dunn recalled. "Col. William F. Curry, who was then the museum director, thought he should try to obtain official verification of the air victories shown in my log book."

Colonel Curry wrote to Air Marshal Sir Patrick Dunn (no relation), who verified from the RAF records that Pilot Officer William R. Dunn was credited with 5½ air victories. W. J. Taunton of the RAF Historical branch in London also corroborated this information. The findings were later reported by Royal D. Frey of the Air Force Museum in the August 1967 issue of *Airman Magazine*, an official publication of the US Air Force. This provided the first authoritative recognition of his status as the first American ace of World War II. Until then, military historians had generally accorded the honor to Lt. Boyd D. "Buzz" Wagner, who shot down five Japanese aircraft shortly after Pearl Harbor. Wagner was, in fact, first USAAF ace of World War II, while Dunn was the first American ace of the war.

Now comfortably retired in Colorado Springs after a total of thirty-eight years of military service under three flags, Bill Dunn is philosophical about the late recognition of his ace status.

"I think I can claim another distinction," Bill said with a grin. "When I retired, I was fifty-six years old, and I'm pretty sure I outranked any lieutenant colonel on active duty that day." ■



Colonel Dunn touches a brush to the picture he painted of aerial combat in Europe during World War II.

FORMALITIES OF WAR

During the Korean War, Gen. Curtis LeMay ordered all SAC troops to wear Class A uniforms and directed that each officer have a formal uniform. I was driving about in a B-36 one day, when an F-86 pulled in close. I asked if he had a problem.

"Nope," he replied. "Just checking to see if you bomber weenies have your black ties on."

CONTRIBUTED BY GROVER TATE, USAFR (RET.)

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

By Don Steele

AFA AFFAIRS EDITOR

THE COLUMBUS CHAPTER, OHIO . . .

cited for consistent and effective programming in support of the mission of AFA, particularly in the area of AFJROTC, and in recognizing the accomplishments of Junior Officers and Airmen.

More than 160 members and guests, including forty-eight AFJROTC Cadets from six schools, attended the Columbus, Ohio, Chapter's recent Air National Guard Awards Dinner at the Lockbourne AFB NCO Club.

Lt. Col. Edmund C. Morrisey, Jr., Commandant of the Air National Guard Academy at Alcoa, Tenn., was the guest speaker. Colonel Morrisey gave an audiovisual

Smith, all members of the 160th Air Refueling Group (ANG); A1C Manzona Bryant, Jr., SMSgt. Dee Pike, and Lt. Gary Felton, all members of the 121st Tactical Fighter Wing (ANG).

We congratulate the Chapter on its continuing program with the AFJROTC and its efforts to involve airmen and junior officers in its programs. In recognition of these outstanding efforts, we are pleased

expounded on the need for all Americans to be concerned with their responsibilities as citizens. He acknowledged that his views were influenced by his thirty-four-year Air Force career, but further stated that his experience and world travels had convinced him that the American way of life was the greatest.

A. A. "Bud" West, Vice President for AFA's Central East Re-



Participants in the Columbus, Ohio, Chapter's recent Air National Guard Awards Dinner were, from left, Chapter President Don Wilson; Ohio AFA President Robert H. Maltby; Lt. Col. Edmund C. Morrisey, Jr., Commandant, Air National Guard Academy, the guest speaker; AFA National Director Jack Withers, the master of ceremonies; and Bernard D. Osborne, Vice President for AFA's Great Lakes Region. More than 160 members and guests, including forty-eight AFJROTC Cadets, attended the dinner.



Principals in the Delaware Galaxy Chapter's Charter Night Dinner reenact the presentation of the Chapter's AFA Charter to its President. From left to right, they are: Brig. Gen. Kelton M. Farris, Vice Commander, 21st AF; Chapter President Hank T. Meinersmann; A. A. "Bud" West, Vice President for AFA's Central East Region; Lt. Gen. Eugene B. LeBailly, Chairman, Inter-American Defense Board; and Col. George H. Chabbott, Program Chairman. General LeBailly was the guest speaker.

presentation on the Academy. AFA National Director Jack Withers was the master of ceremonies.

During the program, the Outstanding Airman, NCO, and Junior Officer from the 121st Tactical Fighter Wing and the 160th Air Refueling Group received Chapter awards. Recipients were: A1C John D. Simcoe, TSgt. Russell D. Leadbetter, and Lt. Robert R.

to name the Columbus, Ohio, Chapter as AFA's "Unit of the Month" for April.

The Charter Night Dinner program of the newly organized Delaware Galaxy Chapter featured an address by Lt. Gen. Eugene B. LeBailly, Chairman of the Inter-American Defense Board.

In his remarks, General LeBailly

gion, presented the AFA charter to the Chapter President, Hank T. Meinersmann, and congratulated the local Chamber of Commerce and Dover AFB personnel for their efforts in establishing the Chapter.

Brig. Gen. Kelton M. Farris, Vice Commander, Twenty-first Air Force, who, while Commander of the 436th Military Airlift Wing at Dover AFB, helped establish the

AFA News

Delaware Galaxy Chapter, conveyed the appreciation of Gen. Paul K. Carlton, Commander, Military Airlift Command, and Maj. Gen. Roland A. Campbell, Commander of the Twenty-first Air Force, to all concerned for their efforts in organizing the Chapter.

General Farris also wished the Chapter every success, and, on behalf of General Carlton, volunteered the help of MAC in any way possible. He stated that Dover AFB had always enjoyed outstanding community relations with the city of Dover and that AFA would further improve these relations.

Special guests included Col. W. H. Spillers, 436th MAWG Commander; Col. George H. Chabbott, Chairman of the Chapter's Program Committee; Col. Louisa Spruance Morris, Delaware Civil Air Patrol Wing Commander; O. B. Williams, President, Dover Chamber of Commerce; C. Donald Hodge, Assistant City Manager; and Franklin R. Welch, President of AFA's Diamond State Chapter of Wilmington, Del.

In addition to Mr. Meinersmann, Chapter officers are: Roy M. Scrutchfield, Vice President; Mary E. Frey, Secretary; and Richard R. Brown, Treasurer.

AFA's Colin P. Kelly Chapter, of Rome, N. Y., together with the Rome and Utica Chambers of Com-



Rep. Alexander Pirnie (R-N. Y.) and Mrs. Pirnie, left, were guests of honor recently at a retirement testimonial cosponsored by AFA's Colin P. Kelly Chapter, and the Rome and Utica, N. Y., Chambers of Commerce. With them is Chapter President Paul B. Oliver, right center, and New York AFA President Gerald V. Hasler.



Borinquen, Puerto Rico, Chapter President Hector Reichard, Sr., left, receives the Chapter's AFA charter from Maj. Gen. Daniel F. Callahan, USAF (Ret.), an AFA National Director. General Callahan was the guest speaker at the newly organized Chapter's Charter Night Dinner at Ramey AFB Officers' Club.



Mr. and Mrs. Charles H. Church, right (he's President of AFA's Harry S. Truman Chapter, Kansas City, Mo.), greet the guests of honor, Col. and Mrs. Hewitt E. Lovelace, left, at the Chapter's recent reception and dinner welcoming the new Air Base Commander to Richards-Gebaur AFB, Mo.



Lt. Gen. James C. Sherrill meets with his hosts just before addressing a joint meeting of the Anchorage Chapters of AFA, AUSA, and NL. From left are: Ralph Cox, AUSA Chapter President; General Sherrill; Jim Amos, Navy League Chapter President; and William M. Mack, President of the AFA Chapter.

merce, recently cosponsored a testimonial dinner in honor of **Rep. Alexander Pirnie** (R-N. Y.) on the occasion of his retirement after fourteen years of service in Washington, D. C. More than 350 attended.

Congressman Pirnie was described by **Rep. Samuel Stratton** (D-N. Y.) of the adjoining Thirty-fifth District as "a congressman's congressman" and by his successor, **Rep. Donald J. Mitchell** (R-N. Y.), as "a public servant's public servant" as they joined others in tributes to the veteran New Hartford Republican.

Chapter President **Paul B. Oliver** was the chairman of the dinner, and **Fritz S. Updike**, Rome *Sentinel* executive editor and vice president, was the toastmaster.

During the program, Congressman Pirnie, a former member of the House Armed Services Committee, who has had Griffiss AFB as a major concern throughout his years of service in Washington, received a congratulatory message from Congressman **F. Edward Hébert** (D-La.), Chairman of the House Armed Services Committee, and tokens of appreciation from **Col. James W. Vorhies**, Commander, 49th Fighter-Interceptor Squadron; **Col. Phillip N. Larsen**, Commander, Rome Air Development Center; **Col. Edward F. Nassoy**, Chief of Staff, Northern Communications Area; and **Col. Bruce K. Brown**, Commander, 416th Bomb Wing (SAC).

Rome Mayor **William A. Valentine** presented the Congressman with the City of Rome citizenship award, while Utica Mayor **Michael Caruso** presented him with a key to Utica City Hall.

The newly organized **Borinquen Chapter**—AFA's second Chapter in the Commonwealth of Puerto Rico—received an AFA charter during its Charter Night Dinner at the Ramey AFB Officers' Club on January 27.

The guest speaker, **Maj. Gen. Daniel F. Callahan**, USAF (Ret.), a member of AFA's Board of Directors, presented the charter to Chapter President **Hector Reichard, Sr.**, of Aquadilla.

In his address, General Callahan talked about the flood of misinformation regarding the B-52s' performance in Southeast Asia during December, misinformation that "swamped the country, from Capitol

Hill to the man on the street."

He said, "The facts are these: Linebacker II, as the two-week air campaign north of the DMZ was called, resulted in the loss of fifteen B-52s. All told, 735 sorties were flown between December 18 and December 30.

"It takes no mathematical genius to figure out that the loss rate was about two percent. Gentlemen, this is several times lower than what we experienced in Europe during World War II in our raids against heavily defended targets. Only back then the deck was never quite as stacked against us as it was in the Hanoi-Haiphong area."

General Callahan went on to explain how the "deck was stacked against us" and rebuked the allegation that this proves the bomber is no longer a viable strategic weapon: "... the proven penetration capability of the manned bomber represents the most reliable form of strategic deterrence in our arsenal." He said that AFA has "no more urgent task at this time than to set the public record straight on these issues." He also talked about the meaning of the charter event, the mission of the Chapter, and the advancement of scientific technology in other areas unrelated to space.

Col. Kenneth B. Clark, Commander, 1640th Air Base Wing, represented Ramey AFB at the dinner and introduced the guest speaker.

The **Hon. Sra. Conchita Suarez**, Mayor of Aquadilla, and her husband, **Dr. Jaime Suarez**, were special guests.

In addition to Mr. Reichard, the Chapter officers are **Joe Laws**, of Aquadilla, Vice President; **Breedlove Smith**, of Ramey AFB, Secretary; and **Edmundo Lugo**, also of Aquadilla, Treasurer.

AFA's **Harry S. Truman Chapter**, of Kansas City, Mo., recently honored **Col. and Mrs. Hewitt E. Lovelace**, Air Base Commander, with a welcoming reception and dinner. More than 200 members and guests attended the event, which was held in the Richards-Gebaur AFB Officers' Club.

Chapter President **Charles H. Church** presided and introduced Colonel and Mrs. Lovelace.

Special guests included US Congressman and **Mrs. William J. Randall**, Congressman from the Fourth District of Missouri; **Maj.**

Gen. and Mrs. Paul R. Stoney, Commander, Air Force Communications Service; **Brig. Gen. and Mrs. Donald R. Werbeck**, Vice Commander, AFCS; **Maj. Gen. and Mrs. Frank H. Spink, Jr.** (USAFR), mobilization assistant to the Commander of the Aerospace Defense Command; and **Mr. and Mrs. Earl D. Clark, Jr.**, Vice President for AFA's Midwest Region.

Lt. Gen. James C. Sherrill, Commander in Chief, Alaskan Command, was the guest speaker at the first joint luncheon cosponsored by the **Anchorage Chapters** of the Air Force Association, the **Association of the US Army**, and the **Navy League**. General Sherrill talked about President Nixon's all-volunteer force.

Alaska's **Lt. Gov. H. A. "Red" Boucher** was the master of ceremonies. Included in the more than 300 members and guests who attended were **Gen. Raymond J. Reeves**, USAF (Ret.), former Commander in Chief, Alaskan Command; **Maj. Gen. Donavon Smith**, Commander, Alaskan Air Command; **Brig. Gen. Mickey Reed**, USA (Ret.); and **Elmer Rasmuson**, President, National Bank of Alaska.

More than 200 members and guests attended the **Cheyenne, Wyo., Chapter's** recent banquet, observing the Twenty-fifth Anniversary of the USAF. The banquet, which was held in the F. E. Warren AFB NCO Club, featured an address by **Brig. Gen. George G. Fall, Jr.**, Commander of the 4th Strategic Missile Division.

General Fall spoke on the achievements of the Air Force, lessons learned, and the risks associated with a weak military posture. He also commented on some of the future needs of the Air Force and the requirement for a strong Air Force capable of deterring future conflicts.

In closing, General Fall described the need for the continued modernization of the Minuteman missile force and production of the new B-1 strategic bomber.

Chapter President **George Kaufman** introduced General Fall. During the program, **Del Northcut**, the master of ceremonies, presented the Chapter's "Outstanding Junior Officer of the Quarter" plaque to **Capt. George P. Shamer**, 320th Strategic Missile Squadron.

AFA News

Special guests included Cheyenne Mayor Jim Van Velzor; Maj. Gen. John R. Carson, Wyoming Adjutant General; and Col. Harold

L. Swanagon, Commander, 90th Combat Support Group.

Col. (Brig. Gen. selectee) Hoyt S. Vandenberg, Jr., Vice Commandant of Cadets at the Air Force Academy, was the guest speaker at the Front Range, Colo., Chapter's recent dinner observing the Twenty-fifth Anniversary of the Air Force.

With "Twenty-five Years of Air



When Maj. Gen. Richard Hoban recently left as Ogden Air Materiel Area Commander to become Vice Commander of the Air Force Logistics Command, the Utah AFA presented him a Golden Spike Centennial rifle as a going-away present. Participating in the ceremonies were, from left, Utah AFA President Lynn Summers; General Hoban; AFA National Director Nathan H. Mazer; and Jack C. Price, Vice President for AFA's Rocky Mountain Region.



Shown as they met recently to discuss AFA activities are, from left, Earl D. Clark, Jr., Vice President for AFA's Midwest Region; Paul W. Gaillard, Chairman, AFA National Membership Committee; Maj. Gen. Paul R. Stoney, Commander, Air Force Communications Service; Charles H. Church, Jr., President, Harry S. Truman Chapter; and Col. Hewitt E. Lovelace, Base Commander, Richards-Gebaur AFB, Mo. (See also p. 83 for a related item.)

Force Heritage" as his theme, Colonel Vandenberg briefly covered the highlights of the Air Force's heritage and concluded by saying, "I submit that this twenty-fifth anniversary of airpower is a time for reflection, a time for a review of those characteristics once evident in our past. This is our heritage. We dare not do it injustice. Born in rebellion, just as was this nation in the 1700s, the Air Force must now strive for professionalism second to none."

During the program, Chapter President James Hall presented awards to Dr. Eugene Kelly, Dean of the Department of Education, Adams State College, and to Capt. Bill Hubbard, Lowry AFB Information Officer. Dr. Kelly received the Chapter's Exceptional Service Plaque for his outstanding support of the Chapter's Aerospace Education Workshops, while Captain Hubbard received the Chapter's Meritorious Service Award for his support of the Chapter's programs during the last three years.

Special guests included Maj. Gen. Joe C. Moffitt, Colorado Adjutant General; Maj. Gen. Alton D. Slay, Commander, Lowry Technical Training Center; Brig. Gen. Walter E. Williams, Commander, 140th Tactical Fighter Wing, Colorado Air National Guard; Brig. Gen. Larry M. Killpack, Commander, Air Force Accounting and Finance Center; Col. Ben Catlin, Commander, Air Reserve Personnel Center; Colorado AFA President Roy Haug; and Noel Bullock, Director of Aerospace Education for the Chapter.

The Utah AFA's 1972 Project Navajo has grown so much over the past five years that it now is the largest charity campaign ever held in the state of Utah.

This latest project, cochaired by Robert Foster and Wayne Gamble, concentrated on food—corn, beans, sugar, flour, canned goods, etc. Ample stocks of clothing left over from the 1971 project already were on hand. Monetary contributions came in at a steady rate, and the money was spent for food. Donations came from schools, government installations, defense industries, civic groups, and citizens throughout Utah.

The first delivery took place on December 15, when an Air Force Reserve C-130 from the 921st Tac-

tical Airlift Group, Kelly AFB, Tex., airlifted ten tons of items to Kirtland AFB, N. M. The C-130 and Utah AFAers aboard were met at Kirtland by a Whitfield Transportation, Inc., truck, and the goods moved to Fort Wingate near Gallup, N. M. There, the food and clothing were stored in Navajo Council warehouses for distribution by the council to Indian families.

The following week, Project Navajo took a new turn with a request from the Goshute Tribe, a group of 150 men, women, and children located seventy miles south of Wendover, Utah. The Utah AFA's Project Navajo came through, and an H-53 helicopter from the 1550th Aircrew Training and Test Wing at Hill AFB airlifted some two tons of food to the Goshutes. Primitive roads into the area necessitated the helicopter airlift, which was provided under the Air Force's Domestic Actions Program.

The third phase of Project Navajo 1972 took place on December 26

when Whitfield trucks loaded with thirty tons of food and clothing headed south to Mexican Hat, Utah, where the goods were off-loaded at Navajo Tribal Council warehouses and the project was complete—or so the Utah AFA thought.

However, two additional requests for assistance were received. One from the Elko Shoshone in Nevada and the other from the Tonto Apache in Arizona. Ten tons of food and clothing were delivered to these two tribes in February.

AFA is extremely proud of the Utah AFA's outstanding programs and wishes them continued success in all of their efforts.

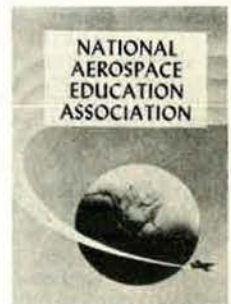
COMING EVENTS . . . California AFA Convention, Riviera, Palm Springs, April 6-8 . . . Massachusetts AFA Convention, Hanscom Field, April 27-28 . . . AFA Missile Symposium in cooperation with the Strategic Air Command during SAC's annual Missile Competition at Vandenberg AFB, Calif.,

May 2-3 . . . Illinois AFA Convention, O'Hare International Airport, May 5-6 . . . Washington AFA Convention, Sea Tac Hyatt House, Seattle, May 11-12 . . . Colorado AFA Convention, Pueblo, May 12 . . . Alabama AFA Convention, Mobile, May 11-13 . . . Florida AFA Convention, site to be determined, May 18-20 . . . New Hampshire AFA Convention, Pease AFB, May 19 . . . South Carolina AFA Convention, Charleston AFB, May 26 . . . 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's Twenty-seventh National Convention and Aerospace Development Briefings, Sheraton-Park Hotel, Washington, D. C., September 16-20. ■

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ARIZONA (Phoenix, Tucson): **William P. Chandler**, One S. Norton Ave., Tucson, Ariz. 85719 (phone 624-8385).

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Morning attendees are assembled into parties of 20 persons each, and are escorted from briefing to

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of the Air Force were honored at a reception in the Exhibit Hall, attended by some 2,000 guests.

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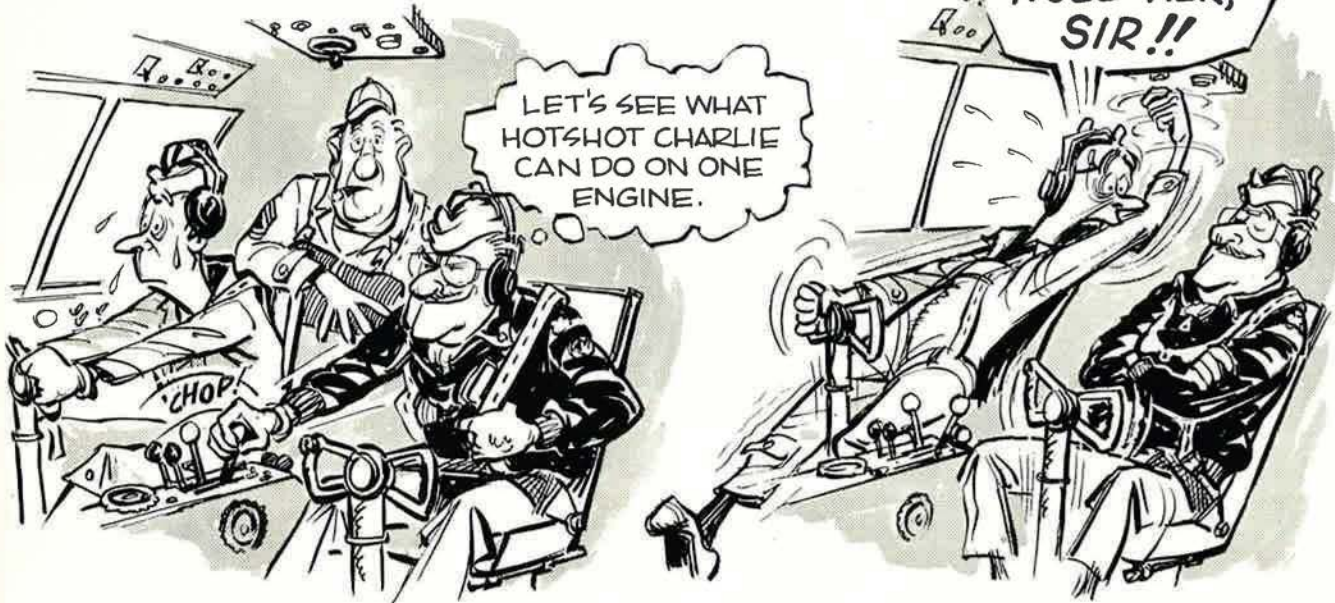
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Bob Stevens'

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From which these monsters get their kicks,
But here's a ploy that's just too shoddy,
So, Sarge, let's jettison the body . . .

SCENE: THE COCKPIT OF A B-26
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