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MAGAZINE

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AIR FORCE

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MAGAZINE

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AIR FORCE



The F-15 Eagle is, and for at least the next decade will remain, the mainstay of USAF's tactical airpower—by providing the umbrella of air superiority on which all other forms of air combat depend. See p. 22. (Cover photo by SSgt. Herman J. Kokojan, AAVS.)

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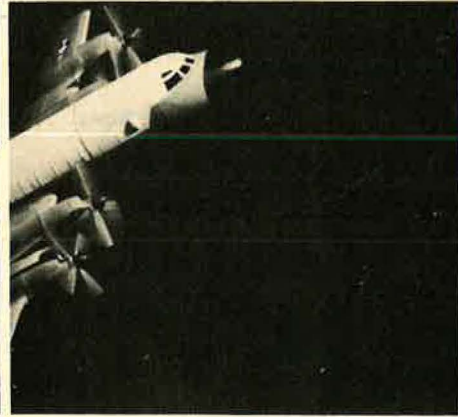
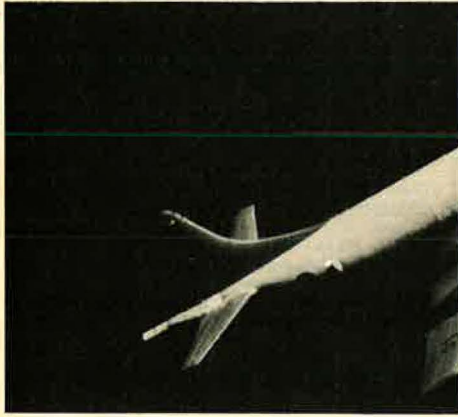
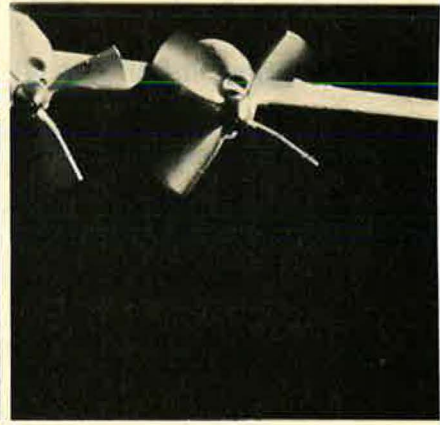
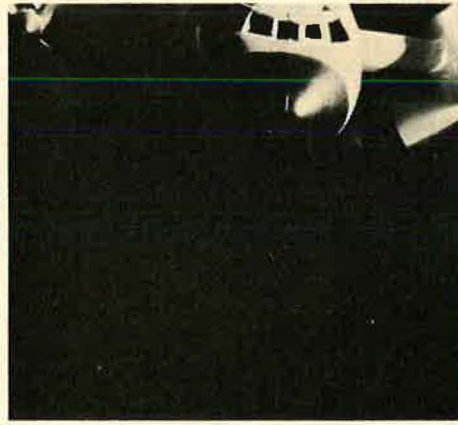
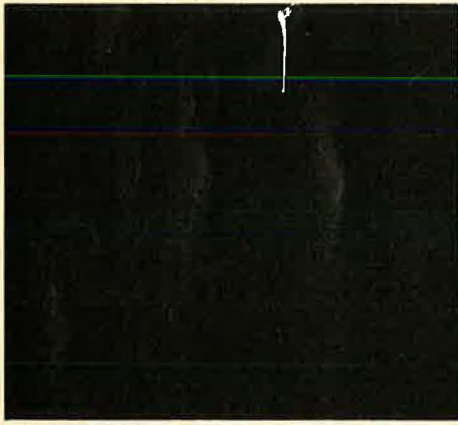
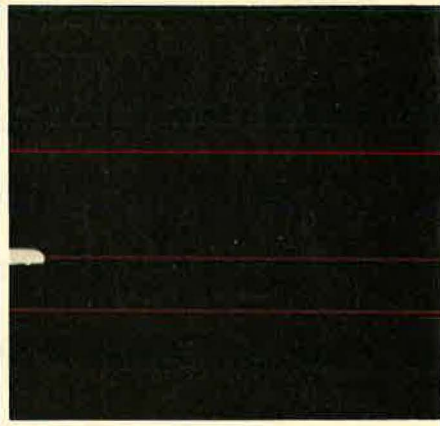
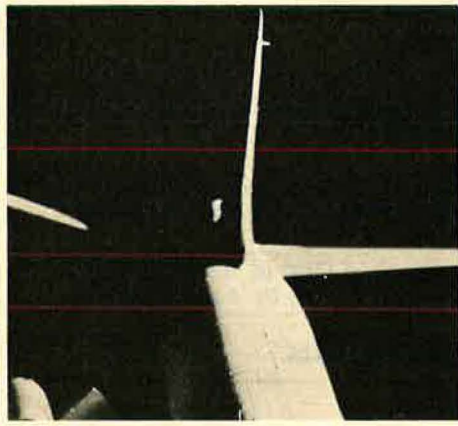
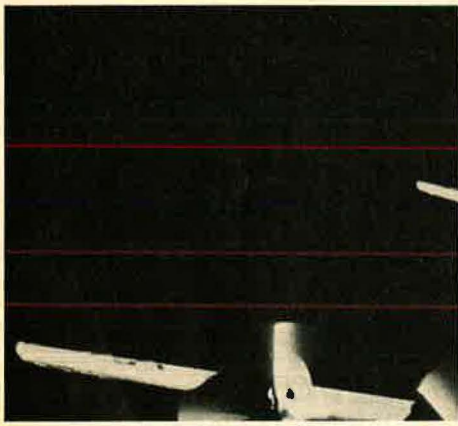
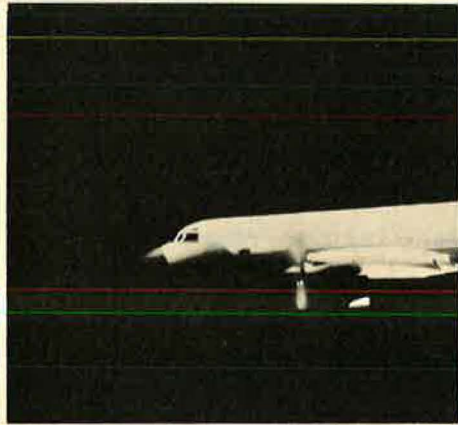
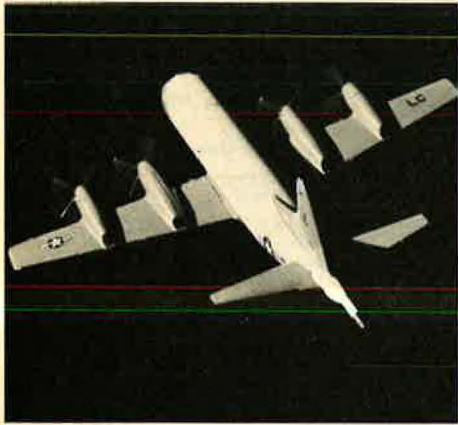
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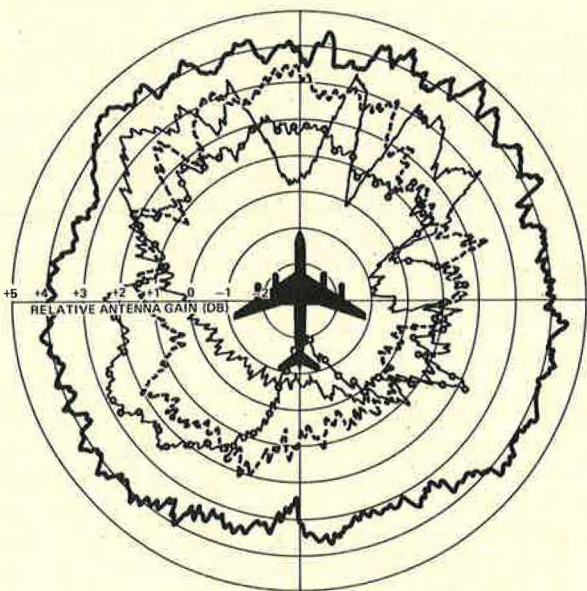
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MOTOROLA

The mind to imagine...the skill to do

Keeping Foreign Military Sales in Perspective

By John F. Loosbrock
EDITOR

THE TIMES do not exactly provide a bargain-hunter's paradise. Those who are still wrestling with their Christmas bills will testify to that. So will those who have struggled to put together a national defense budget and, to an even greater degree, those who will have to live with and cope with its consequences.

But bargains can be found, even though they may go unrecognized, wrapped in a mythology of unfounded, or at the least misdirected, criticism. Such a bargain, which provides immense benefits to the American taxpayer, to the nation's economy, and to its posture in the world is the much-abused, little-understood foreign military sales program, administered by the Defense Security Assistance Agency in the Department of Defense.

The foreign military sales business is booming, no doubt about it. It is generating hundreds of thousands of jobs for American workers, and billions of dollars in their wages and salaries. It is pouring millions into the US Treasury in corporate and individual income taxes. And for every dollar of sales, about \$2.50 of secondary business in the United States is created.

And the taxpayer benefits even further. Adding foreign requirements to those of our own armed forces reduces the unit cost of military equipment to both customers. A wider, thicker production base is possible, making it immeasurably cheaper and easier to expand should an emergency arise. In some cases, the pooling of orders makes it possible to produce for our own use materiel we couldn't otherwise afford. And, not least, foreign orders help to pay for research and development costs.

With all these pluses, coming at a time when the nation needs all the pluses it can get, it is not unreasonable to wonder why the foreign military sales program is so frequently under attack in the Congress and in the media. Or perhaps the wonder is not so justifiable, given the human penchant for

believing things that aren't so. A mythology about arms sales has grown up, rooted in the "merchants of death" exposés of the '20s and '30s and ignoring much of the history that has transpired since. Sir Basil Zaharoff, the sinister arms peddler of bygone days, has been resurrected and stuffed with straw.

The mythology is worth examination and analysis, and these, in turn, require a brief backtrack through the history of the past two and a half decades.

In the beginning, the furnishing of military assistance to our friends and allies was financed one hundred percent by the American taxpayer. Grant aid it was called, and still is, for it is still being done on a modest scale and in a highly selective way. It was an indispensable part of getting the Free World back on its feet following the devastation of World War II.

As the economies of other nations improved, grant aid began to shift to credit sales, and eventually to cash transactions. By Fiscal Year 1964, the lines in the chart had crossed and we were selling more than we were giving away. In FY '74, purchase agreements totaled more than \$10 billion, and more than eighty-five percent of the sales were for cash. Meanwhile, in the same year, grant aid (except that directly related to the war in Southeast Asia) stood at less than \$400 million. Foreign military sales became a significant and positive domestic economic factor and are today.

American bargaining in the international marketplace is tough, but fair. The foreign customers pay in dollars. They pay not only for goods and services but for the costs the US incurs in managing the sale. If the US extends credit, the customer pays interest. And no nation has yet defaulted on a single loan. The US tries in every case to put together a complete package, with training, technical assistance, and logistical support, so that what is bought can be efficiently utilized.

Now for the myths.

First of all, the foreign military sales program is

not a matter of an industrial cabal selling willy-nilly to the highest bidder. Each and every transaction is scrutinized as to whether its consummation is in the national interest. If it is not, it is scrubbed. Nor is this decision made unilaterally in the Pentagon. State Department concurrence is required, and particularly sensitive and significant proposals must go to the White House for a decision. Any transaction of more than \$25 million must be reported to the Congress, where it may be vetoed by a concurrent resolution of both Houses. At every level of review and decision the national interest is the paramount yardstick.

Another myth—that the US government is a sales promoter. Often it is quite the opposite. Indeed, a prospective customer country is often discouraged from buying what it does not need or cannot afford. What they do need, and can afford, they are going to buy. And if the United States opts out of the competition, there are other suppliers quite willing to take its place—the French, the British, the Swedes, the Russians.

Another myth—that the US is peddling no more than death and destruction. Actually, over the years, arms and ammunition have accounted for about forty percent of total sales, the preponderance going to service vehicles, training, communications, technical services, spare parts, and electronics. A sizable fraction goes into capital investment for the buyer nation—improvement of ports and airfields, fixed communication nets, buildings, and the like. An ancillary benefit, especially in the less-developed nations, is the creation of technical skills through training programs—skills readily transferable to the civil sector. A further consideration is that improved facilities and skills broaden our logistic base, in that these resources could become available for our own use should the need arise.

It is true that, in exceptional cases, we have drawn on our own military stocks, at some risk, to supply foreign demand. A notable instance involved the survival of Israel in the Yom Kippur War. But ordinarily sales abroad do not interfere with production for our own forces. In any case, the same yardstick is used—the national interest of the United States, which at times may be better served by weapons in hands other than our own. Indeed, the danger of direct US involvement may thus be reduced.

In the receiving countries, foreign military sales programs, as well as grant aid and foreign military training programs, are supervised by US Military Assistance Advisory Groups (MAAGs). The MAAGs identify requirements, evaluate requests, and make sure that equipment is used effectively and that training is properly carried out. And they are a valuable adjunct to the US Chief of Mission, providing military advice and liaison with the foreign military forces. The number of people assigned to MAAGs, often a target for critics, has dwindled steadily over the years—from 7,192 in 1960 down to a total of only 1,622 for 1976.

Other important benefits to the United States flow from foreign military sales and associated programs. High on the list is standardization of equipment, of particular value within an alliance where its contributions to both logistic and operational effectiveness are obvious. Additionally, they give the United States an important leg up in future commercial sales of aircraft, electronics, communications gear, and other high-technology, high-cost equipment. Most important, perhaps, is the fact that a weapon in the hands of an ally is a weapon the US doesn't have to buy, or man, for itself.

An aspect of foreign military sales that worries many critics is the question of whether their impact in places such as the Middle East tends to stabilize or destabilize a potentially explosive situation. One can make a good case that judicious distribution of arms, which will be bought from someone in any case, can have a dampening, rather than exacerbating effect in maintaining a stable balance of power. Not to mention the fact that opting out would leave the field to suppliers whose aims are, to say the least, not in consonance with those of the United States. Our friends and allies thus would be faced with the choice between remaining unarmed and defenseless in a hostile environment or of buying from the competition, friendly or otherwise.

On Capitol Hill, Congress is growing restive about foreign military sales, a restiveness doubtless fueled by the mythology surrounding the programs. A ceiling of \$9 billion, covering both the DoD-managed program and private commercial sales (currently running at \$2 billion-plus annually under a system of export licenses granted by the State Department), has been proposed in the Congress. A \$9 billion combined ceiling applied to FY '76 would cut expected US military exports by twenty-five percent—some \$3 billion less than anticipated.

Congress also wants more control overall—a limit of thirty days, rather than twenty, in which to block a sale, tighter control over transfer of US-furnished equipment from one country to another, two-year estimates on future sales, and the furnishing, with each proposal, of an "arms sales impact statement," setting forth the detailed justification of the transaction involved.

It is hard to argue Congress' interest in and responsibility for the success of programs so critical to world peace and stability. The matter of economic benefit to the United States, looked at by itself, cannot justify the taking of undue and unwarranted risks. But the preponderance of evidence indicates that foreign military sales are being managed efficiently, judiciously, and within adequate constraints. The national interest is being well served.

It would be inimical to that interest in the broadest sense—diplomatic, military, and economic—should added and unwarranted restraints create a vacuum into which would rush, at best our friendly competitors, at worst our enemies. ■

Airmail

Dr. Schlesinger's Tenure

Gentlemen: I was pleased to read John L. Frisbee's objective appraisal of Dr. James Schlesinger in the December 1975 issue ["Of Arms and of a Man"].

I would like to add the following for your consideration in assessing Dr. Schlesinger's greatest contribution:

During Dr. Schlesinger's tenure, the Constitution of the United States was put to its severest test—that of a complete change in Administration. During this time, Dr. Schlesinger maintained a firm and controlling hand on the Department of Defense. His contribution was obviously sufficient to keep an adversary from attacking this country when there might have been some doubt for a number of hours as to who was the Commander in Chief.

By the same token, Dr. Schlesinger's control over the Department of Defense was sufficient to preclude a "Seven Days in May" situation from occurring.

I continue to support the right of each President to select his own Cabinet, but I cannot help but feel that the United States is better for having Dr. Schlesinger's twenty-eight-month tenure as Secretary of Defense.

O. D. Kulman
Atlanta, Ga.

The Pot Bubbles On

Gentlemen: Reference the September 1975 article, "Management Is Not Command," by Gen. Lucius D. Clay.

Realizing that this was an excerpt from an address by General Clay and therefore might be somewhat taken out of context, I still believe certain comments are appropriate.

a. If the implication was that the coach was a "manager," I don't know of any students of management who would label him a good manager. He doesn't sound like a good manager, commander, or coach.

b. The article states that management is "a system of bookkeeping that is primarily associated with

statistics." While I would agree that management is sometimes concerned with statistics, I do not believe many students of management would agree that "keeping of statistics" is anywhere near all-encompassing of management responsibilities. Management is also responsible for decision making.

c. The article implies that the manager is not concerned with the effect of orders on human beings nor of "all elements of logistical support" and that the commander is so concerned. I would conclude that both should be concerned with such important factors.

d. In summary, I believe it worth stating that although management is not command, it would be very grand indeed if commanders are good managers. In fact, I believe that unless a commander either implicitly or explicitly follows at least some acceptable practices of management then he is not likely to be a great commander.

Maj. Kenneth W. Robertson
APO New York

Gentlemen: Those who criticized General Clay's article must surely know that rather mundane procedures and paperwork directed by major air command or higher occupies a lot of any operational commander's time and resources. The idea, of course, is to supply "visibility" to higher command levels, or to ensure that consideration of things deemed important at the higher levels are not overlooked. The amount of such activities increased during my seven years in the USAF. I think applications of management concepts have sometimes—perhaps a lot of the time—hindered commanders in their efforts to conduct operations.

I do not mean to condemn all standardized management procedures. However, on the continuum between "anarchy" and "the Commander in Chief in every cockpit," General Clay would like to see fewer organizationally imposed burdens and more command authority at a lower level than presently

exists (if I read him correctly). Me too. Might it be too much to wish for if 1976 had less "red tape" than 1975? Only an equal amount?

OK, so you've been to SOS since General Clay has. You may even be smarter at football, but . . . it's not all that hard. C'mon, fellas, you know (you really should) what the General means.

William H. Heitman
Albuquerque, N. M.

OER System Again

Gentlemen: It is interesting to see that Frederick Thayer has not hesitated to jump on the new Air Force OER System with his usual fervor and cutting analysis ["Airmail," November '75]. As usual, his analysis and criticism of the system are concise and specific—even though a bit pedantic.

Colonel Thayer and I were associated for several years on active duty. . . . I think we shared the same views on the inflated and cumbersome OER system in existence in the 1960s and early 1970s.

After discussing the new OER system with both rating and rated officers, I have many of the same concerns clearly enunciated by Fred Thayer in his letter. It appears that some attempt has been made to factor out the human element. Time will tell whether or not human nature or the computer analysis approach will prevail.

The old system was bad. The theoretical bell curve was badly skewed to the high side. As I look back over a list of my contemporaries, . . . I cannot help but reach the conclusion that the human element prevailed. Those who have advanced to Flag rank in the three services and are now in positions of authority and responsibility were generally the doers and achievers even as company and early field grade officers. . . .

The pitfalls and dangers of the new system identified by Fred Thayer appear to me to be a bit overstated. Perhaps not. . . . I cannot help but feel, however, that . . . contemporary Air Force managers recognize and appreciate the real strength of the human element in management, performance rating, and selection.

Unless our country and armed services reach a premature Orwellian state of mind and thought control, the Air Force will be managed

WE'VE CHANGED OUR NAME WITHOUT CHANGING WHAT WE'RE CALLED.

In 1917, we called ourselves Lewis & Vought Corporation, but everybody called us "Vought."

In 1922, we called ourselves Chance Vought Corporation, but everybody called us "Vought."

In 1929, we called ourselves Chance Vought Division of United Aircraft Corporation, but everybody called us "Vought."

In 1935, we called ourselves Chance Vought Aircraft, a Division of United Aircraft Corporation, but everybody called us "Vought."

In 1939, we called ourselves Vought-Sikorsky Division of United Aircraft Corporation, but everybody called us "Vought."

In 1943, we called ourselves Chance Vought Aircraft Division of United Aircraft

Corporation, but everybody called us "Vought."

In 1954, we called ourselves Chance Vought Aircraft, a wholly-owned subsidiary of United Aircraft Corporation, but everybody called us "Vought."

In 1960, we called ourselves Chance Vought Corporation, but everybody called us "Vought."

In 1961, we called ourselves Chance Vought Corporation, a subsidiary of The LTV Corporation, but everybody called us "Vought."

In 1965, we called ourselves LTV Aerospace Corporation, but everybody still called us "Vought."

Well, we finally decided to build the side-walks where the people walk. So from now on, we're Vought Corporation.

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Airmail

by humans who recognize and appreciate human methods and needs. The pitfalls and dangers so explicitly forecast by Colonel Thayer may result from improper and inadequate management and support of the new OER system; however, it is now a fact and time will tell whether or not it will permit the doers and achievers to surface. I suspect they will surface regardless of the system.

If commanders, raters, and ratees—whatever their roles might be in a particular situation—will approach the new system with a positive attitude, and the Air Force will make prompt adjustments to correct abuses, the change may be for the better. It deserves a fair trial at least.

Col. Bruno M. Larsen,
USAF (Ret.)
Tempe, Ariz.

Still More Praise

Gentlemen: In the November '75 issue of AIR FORCE Magazine you published a letter written by Donald M. Goldstein [p. 14] praising Lt. Gen. Ennis C. Whitehead. I was delighted to see it.

Without taking anything away from Gen. George Kenney, I have to agree with Mr. Goldstein that Ennis C. Whitehead was the one who really did the fighting, and a hell of a job he did. He lived, slept, and fought the war. His only thought was to defeat the enemy and he certainly did. His use of airpower was magnificent, and his reasoning, his tactics, and grasp of the situation were remarkable.

L. J. Sverdrup
St. Louis, Mo.

Reward the EM

Gentlemen: The Air Force is now entering an era when many new and highly advanced weapon systems are being added to its inventory. This is also an era when the Air Force middle manager, the NCO, must not only be a technician but also a leader. He must be capable of not only achieving the results that the mission demands but also of understanding his people and being able to relate to the many problems that face the young air-

man in our rapidly changing society.

The Air Force, because of the nature of the role that it plays in our defense posture, has always sought out the above-average individual to help meet its goals. The Air Force uses education as one measure that has been found to be an effective gauge of an individual's potential. . . .

The current Air Force policy is that each person wishing to become an officer have some type of baccalaureate degree; this is a bare minimum. This is so because it has been found that the many different positions that an officer has to fill require a person with intelligence, worldliness, and the ability to adapt. It is even getting to the point where some type of advanced degree is needed if an officer wishes to stay in the Air Force and make it a career.

Since the Air Force rewards an officer for having a degree by higher pay, more responsibility, and the prestige of being a member of the Officer Corps of the United States Air Force, why not offer some rewards for the enlisted man who strives to better his position by receiving a baccalaureate degree? Up until recently there have been many avenues for the enlisted individual with a degree to move ahead, to become an officer; but as of late many of these programs have been terminated.

What I propose is that when an enlisted member receives a baccalaureate degree, reward that person by promoting him or her one grade in rank. This program will have many advantages both to the Air Force and to the individuals involved. For the Air Force it means that it will be promoting individuals who have the initiative to seek out a college degree. These are the people that the Air Force needs to retain. . . .

The middle manager will become more of an asset to the Air Force, and it will be a small price to pay for the Air Force to have these individuals actively involved in the mission. The airman will be rewarded . . . by having the increased responsibility the added rank will demand. Morale for the enlisted members would increase, knowing that the Air Force is going to recognize and reward their education efforts.

The program can work very sim-

ply. When E-4s, E-5s, and E-6s have received a baccalaureate degree, promote them one grade in rank—quotas, etc., being taken into consideration. For those who are under the rank of E-4, promote them to E-4 once a skill level of five has been earned. Because of the nature of the work the Supergrades do, plus the fact that E-7s and E-8s are already considered for promotion under the whole-man concept, which takes into consideration a college education, they will not be considered under this program. . . .

Such a program can work and would be immensely valuable to the Air Force.

SSgt. Lyle A. Cubberly
Loring AFB, Me.

Strategic Support Squadrons

Gentlemen: I have been seeking information on the 1st, 2d, 3d, and 4th Strategic Support Squadrons of the early 1950s. Pictures, especially of the Squadron Bug of the 1st SS Squadron, and any other information would be appreciated.

Sgt. Mark M. Mulik,
USAF (Ret.)
7621 State Road
Parma, Ohio 44134

Patches for Auction

Gentlemen: I have been working with young people as adviser to a Boy Scout Explorer unit in aviation since 1954. We have run out of ideas for making money for our program.

If readers have in their possession any kind of patches—Boy Scouts of America, Jamboree, District Region Special Event, Military etc.—which they are willing to donate, it would be greatly appreciated. These would be used to hold a patch auction at our Scout Show to be held June 5, 1976, at the York Interstate Fairgrounds.

Harry E. Grau
R. D. #12, Hellam Br.
York, Pa. 17066

Fly-In and Early Flyers' Club

Gentlemen: A fly-in has been scheduled by the two Delaware, Ohio, Kiwanis Clubs and Delaware Aviation, Inc., for May 29-30, 1976 with rain dates set for June 5-6. Assisting in the planning is the Ohio Department of Aviation, Norma J. Crabtree, Director.

A full program of events is being developed. A bountiful breakfast will

be served each day. Tentative plans also call for acrobatic and exhibition flying, helicopter rides, and many other features of interest to aviation enthusiasts.

A primary hope and proposal looks toward the formation of a senior flyers' club—such group to include all persons who have held pilot licenses for thirty-five years or more.

Project director is Kiwanian Walter B. McClelland. He is assisted by a strong and enthusiastic committee composed of members of both clubs, some of whom are also flyers. "Mac" holds pilot license number 15453, issued in 1930. He is personally interested in the formation of this senior flying club. The only eligibility requirement is a pilot license issued thirty-five years or more before the fly-in dates.

If you are interested in such an organization, please send your name, address, and number and issue date of your license to Walter B. McClelland, 196 Euclid Ave., Delaware, Ohio 43015.

And by all means attend the fly-in. Delaware Aviation, Inc. 2052 Airport Rd. Delaware, Ohio 43015

Insignia Collection

Gentlemen: I am a collector of distinctive insignia or unit crests worn by the old Army Air Corps and US Army Air Forces prior to 1947. These insignia are the small, gilded metal and colored enamel pins approximately 1½" high x 1½" wide and were worn on the shoulder straps and campaign hats. I now have over 200 such pieces in my collection and need only a very few more to complete the collection. The pieces I need were generally made overseas during the years 1943 through 1945 and are rapidly becoming almost impossible to get. They are: Made in CBI—51st Fighter Group and 462d Bomber Group; made in Cairo or elsewhere in Egypt—98th Bomb Group and 57th Fighter Group.

Here are three pieces made in the US that I have been unable to get and I list these with the makers' name hallmarked on the back: Made by S. E. Eby Co. or Eby Co.—2d Airborne Squadron and 26th Reconnaissance Group; made by B. Hecker—11th Bomb Group with motto at bottom.

If any former member of the

above units still has his insignia I would be very pleased to buy or trade for same. If anyone can furnish me with the names and addresses of anyone who may have one of these insignia I would be most appreciative.

Jean Edens, Jr.
3211 Nacogdoches Rd.
San Antonio, Tex. 78217

Another Original

Gentlemen: Recently, while thumbing through a back issue of AIR FORCE, I noted with some slight twinge of nostalgia the contents of a letter from a bomber type in which reference was made to the original employment of "Ground Directed Bombing" in Korea in 1950.

To clarify any possible misunderstanding or misconception, let the record reflect that the 22d Tactical Air Command employed an SCR-584 set located in the Northern Apennines near Bologna in the winter of 1944-45 to direct A-20s, A-26s, and Wimpies against German targets in the Po Valley. The initial results were gratifying and the operation continued effectively until friendly Army troops overran the entire target area immediately prior to the cessation of hostilities in that theater.

Maj. Gen. Thomas C. Darcy,
USAF (Ret.)
Tequesta, Fla.

553d Bomb Squadron Association

Gentlemen: I have founded the 553d Bomb Squadron Association and need to reach those persons who were members of that squadron between December 1, 1942, and November 7, 1945.

The 553d Bomb Squadron was a part of the 386th Bomb Group (B-26s) of the Ninth Air Force in World War II.

Please get in touch with me.
Denny McFarland
553d Bomb Sqdn. Assoc.
P. O. Box 5543
Abilene, Tex. 79605

Avenger Book

Gentlemen: I am in the process of writing a book on the TBF and TBM Avenger. Would appreciate hearing from any AFA members who have pictures, data, or stories pertaining to this aircraft. Any material received will be returned in the condition received and will be credited where used.

I hope that this book will be a tribute to the men who designed, built, and fought in this aircraft.

F. M. Sticksel
500 Forest Parkway
Manchester, Mo. 63011

UNIT REUNIONS

8th Air Force

The 8th Air Force will hold a reunion in England September 13-18, 1976. The program features a rally in London and then hotel headquarters in Cambridge, Ipswich, and Norwich (depending on location of the unit in WW II). A memorial service is planned at the American Cemetery at Cambridge and a visit to Duxford to see the Aircraft Exhibits there and to initiate the 8th AF Memorial Museum, planned for location there. There will be visits to former bases and a reunion banquet with English friends. All former 8th AF persons, their families, and friends are eligible for the September 12-26 charter flight. Write

8th Air Force Reunion
c/o Reunion Services
P. O. Box 1304
Hallandale, Fla. 33009

63d Station Complement

The 63d Station Complement Sqdn. (SP), 9th Air Force, World War II, will hold a 5th biennial reunion June 4-5, 1976, SPA Motel, 5414 Lincoln Ave., Chicago, Ill. Contact

Kenneth F. Kerber
2332 W. Belmont Ave.
Chicago, Ill. 60618

or

Lt. Col. J. T. Gilmore, USAF (Ret.)
24 Wedge Way
Littleton, Colo. 80123

Calling All Hoggies!

The 82d Strategic Reconnaissance Squadron extends an invitation to all former Hogs to return to Hog Heaven to attend the Last Annual Dining-In on Saturday, March 20, 1976. Guest speaker will be Brig. Gen. Doyle E. Larsen, Dir. of Intel., CINCPAC. For reservations or information, contact

82d SRS
APO San Francisco 96239

91st Bomb Group

The 91st Bomb Group (H) Memorial Association Inc., known as "Wray's Ragged Irregulars," WW II, Basingbourn, England, will hold its 6th National Reunion at Colorado Springs, Colo., July 7-10, 1976. For further information please contact

MSgt. George W. Parks, USAF (Ret.)
Sec.-Treas. Western Div.
109 Wilshire Ave.
Vallejo, Calif. 94590

Airpower in the News

By Claude Witze, SENIOR EDITOR

Of Détente, Money, and Zealots

Washington, D. C., Jan. 7
Each month, it seems, the quandary changes a bit in character, but it is always the Defense Department's appropriations that wind up in dispute, even when they have nothing to do with the issue. As we enter the new year, written New Year for the past couple of weeks, the national irritant is a distant segment of Africa, called Angola. President Ford, who is clinging to the détente policy he inherited from President Nixon, has ruled out any withholding of grain shipments to Russia.

"Withholding grain would produce no immediate gain in diplomatic leverage," he said yesterday. "American grain, while important to the USSR, is not vital to them." Earlier, Henry Kissinger, the Secretary of State and recognized midwife to détente, had indicated this nation will not stand passive while Russia pours in arms and sponsors a proxy war being fought for it by Cuban troops. If the public is perplexed, the reason may be the running inadequacy of the news it hears out of Congress. Headlines have a way of telling less than the whole story.

We must return to the closing hours of the first session of the 94th Congress. The Defense Appropriations bill was completed, Senate and House differences settled in conference. The result provided \$90.5 billion for Fiscal '76, which was \$7.4 billion less than the Administration requested. It still was \$7 billion more than Congress voted for Fiscal '75, a jump that was more than gobbled up by inflation. When the bill reached the Senate floor on December 15, it took only one day for Sen. John V.

Tunney of California to announce that he and some colleagues would offer an amendment barring use of any of the money in Angola with the exception of what is needed to gather intelligence there. He started a fight that went on for four days, brought about a Republican filibuster, then resulted in an Administration defeat, fifty-four to twenty-two. There were both open and secret sessions.

During this argument, a strange combination of political bedfellows came up with Senate Resolution 333. The father of the idea appears to be Sen. Adlai E. Stevenson III, of Illinois. His committee assignments are concerned with banking, commerce, and the District of Columbia, but his father's blood is there. Adlai II, you may recall, distinguished himself at one time as our representative in the United Nations. Senate Resolution 333 declared the President "pursuant to his authority under the Export Administration Act of 1969, should curtail exports to countries which persist in intervening in the conflict of Angola." It also said the US should suspend aid to any faction in Angola, pending efforts to end all foreign intervention.

Introducing the resolution, Mr. Stevenson said again that détente must be a two-way street. "The implausibility of continued US aid to the Soviet Union in the form of technology, capital, and wheat, irrespective of its conduct in the world, is brought inescapably to the attention of the Senate. The United States has just committed supplies of grain to the Soviet Union for six years—notwithstanding its transgressions in Angola or anywhere else. The agreement cannot mean what it says on its face. All such agreements are subject to abroga-

tion or modification by one party if conditions are changed materially by another. The Soviet Union is relieving the United States of any obligations under that agreement—and I say 'any' because it is of arguable legality anyway.

"The resolution which we offer urges upon the President a course of action which emphatically rejects the Soviet exploitation of détente at the expense of US interests and the rights of people in other nations—without exposing the United States unnecessarily to the risks of a long and ultimately unsuccessful involvement in Angola."

The Stevenson proposal won instant support and cosponsorship from an unlikely contingent. Included were Hubert Humphrey, Edmund S. Muskie, Robert C. Byrd, and Barry Goldwater. Senator Goldwater said the resolution "is the first thing that has made any sense in a long day." Unlike President Ford, Mr. Goldwater thinks the Russians need our wheat "desperately" and said we should use our economic power as an instrument of national policy.

Well, the resolution was placed on the calendar, which means it was put out of sight. The defense appropriations measure was sent to the House, too late for action before the Christmas holiday. Congress reconvenes to start the second session on January 19. On the 21st, it is anticipated, the House will accept the Tunney amendment and pass the bill. At this writing, events in Angola and off its shores are moving swiftly. If the pace steps up, it is possible Congress will take



Sen. Adlai E. Stevenson III, Illinois, favors pressure to curb Reds in Africa.

another look. This time, if the conduct of Russia shakes us hard enough, perhaps there will be consideration of the strategic importance of Angola. It is a subject that has remained untouched, except in a burst of frustration from Daniel P. Moynihan, our UN ambassador, who views the congressional surrender with a cold eye.

The mess in Angola is not the only impediment to a sensible consideration of Pentagon financial problems. The so-called new budget system now is one year old and is considered on the road to success. Congress has agreed on a federal deficit of \$74.1 billion for Fiscal '76, the biggest in history. The Fiscal '77 budget goes to the Hill in about three weeks. This gives the Armed Services Committees of both Houses less than two months to resolve the issues requiring authorization.

In anticipation, Chairman Melvin Price of the House committee started hearings on December 3. His announced purpose was to broaden the concerns of the committee to cover "the total national security budget and the factors and procedures which go into the development of that budget as well as the foreign policy considerations on which it is based."

Mr. Price had an interesting, and sometimes irritating, list of witnesses. The first was Clifford J. Miller, the Pentagon's Deputy Comptroller for Plans and Systems. His presentation, which took most of a long day, was the most specific and complete discussion of the overall Pentagon budget problem

ever offered at a public session. The open meeting drew a small audience. The representative of AIR FORCE Magazine was the only person at the press table, and we are not aware that the wire services or newspapers paid any attention to the event. If they had, the public could have learned that reductions are made in the defense budget to accommodate increases in non-defense areas. And that seventy-five percent of government outlays are considered uncontrollable. And that two-thirds of the remaining twenty-five percent is identified with the Defense Department. This means two-thirds of defense spending is looked upon as controllable.

Viewing this in more detail, Mr. Miller concluded that in order to get minor reductions in spending, it is necessary to enforce large program cuts in defense. And, because most of the defense budget goes into personnel, one way or another, the burden on procurement and research and development is magnified. To save \$1 billion in outlays next year, for example, it would be necessary to cut 300,000 persons from the Pentagon payroll. On inflation, the witness said the acute effects are felt more in defense than any other segment of the federal budget. In real dollars, defense spending went down by \$22 billion between 1964 and 1976. Other federal outlays increased by \$122 billion.

The more vociferous critics of defense spending were given their time on the witness stand. The announcement of their appearance, in contrast to that of Mr. Miller's, brought wire service and newspaper reporters to join AIR FORCE Magazine at the press table. The news, however, was thin.

An early guest was Dr. Seymour Melman of Columbia University, national cochairman of SANE and outspoken foe of what he calls The Permanent War Economy. Dr. Melman attributes most of our economic woes, worldwide, to the fact that defense money—that small percentage of the federal budget earlier defined by Mr. Miller—is spent, in part, on procurement of advanced weapon systems. Dr. Melman, in short, favors unilateral disarmament, endorsing cuts of the magnitude proposed by Sen. George McGovern when he ran for President four years ago. Despite

figures on the record, carefully spelled out by Mr. Miller, Dr. Melman insists the defense spending curves are going up, not down. Challenged by Rep. Samuel Stratton to discuss the threats to our security, the witness said Russia is not a factor.

There were moments when Dr. Melman, with much of the fervor of a zealot, appeared ready to lose his temper. When it was pointed out that the House Armed Services Committee had a hand in creating the Arms Control and Disarmament Agency and that it looked eagerly for progress in the SALT talks, the witness scoffed. He called SALT nothing more than "controlled escalation." Dr. Melman appeared with quantities of a lengthy dissertation, copies of which had been sent to the press. Rep. George M. O'Brien of Illinois complained that he never saw the paper until the hearing opened. The day before he had been queried on its contents by a reporter who had an advance copy.

A similar performance was put on by a lady named Marion Anderson, projects director for PIRGIM, the Public Interest Research Group in Michigan. She had spent the day before her appearance canvassing the newspapers and wire services in Washington, whipping up press interest in her performance. Her argument is that Pentagon spending increases unemployment in the United States, but the committee was not impressed by her supporting data. In her opening statement, Ms. Anderson demonstrated that she does not understand the difference between defense authorizations and appropriations and went on to argue that an \$80 billion defense budget brings a nationwide loss of 844,000 jobs. She went on to list the members of the Armed Services Committee, the men she was facing, and tell each how many jobs were denied his constituents because of the military budget. Chairman Price of Illinois was told his district lost 7,800. Mr. Stratton, who once was Mayor of Schenectady, N. Y., and is thoroughly familiar with the role of General Electric in that city, was credited with killing 8,600 jobs there by approving an \$80 billion defense budget.

The reaction was inevitable. Ms. Anderson was told she is not living in the real world. Rep. V. William



Rep. Melvin Price offered critics time to assail defense on proposed budgets.

Airpower in the News

Whitehurst of Virginia, who was an economics professor, said he would give her an F for her paper on the economic impact of defense spending. Rep. Robin L. Beard of Tennessee said she was offensive. The charts given to the committee by the Pentagon witness, Mr. Miller, were cited to disprove the Anderson case. The lady said she would take them home and study them. She had a chart of her own, pretending to demonstrate that more than 100 percent of the money paid in personal income taxes by US citizens goes into defense spend-

ing. She had no chart to show what percentage of personal income taxes goes into other federal spending.

Ms. Anderson made a heavy point of the fact that her research, published last spring under the title "The Empty Pork Barrel," was released in the capital "by a distinguished economist and member of your committee, Representative Les Aspin." The Wisconsin congressman was conspicuous by his absence as his protégé was roasted by his committee colleagues. It was a sorry performance, but one that should result in fewer inept and incompetent presentations by extremists and zealots. That is the only result that can justify the expenditure of committee time and effort. If that does come about, the level of debate in 1976 may be improved. ■



Rep. Les Aspin sponsored Anderson's thesis, but failed to appear with his witness, facing ridicule by House committeemen.

The Wayward Press

The American Society of Newspaper Editors has adopted a new Statement of Principles. It replaces a fifty-two-year-old Code of Ethics or Canons of Journalism. Editor & Publisher, the newspaper trade publication, hails the new declaration as "a forthright document" and calls on newspaper editors to "read it, memorize it, and quote it often." In the event you want to cite the statement to an editor who has failed to memorize it, here is the text, as printed in Editor & Publisher of December 13, 1975:

A Statement of Principles

Preamble

The First Amendment, protecting freedom of expression from abridgment by any law, guarantees to the people through their press a constitutional right, and thereby places on newspaper people a particular responsibility.

Thus journalism demands of its practitioners not only industry and knowledge but also the pursuit of a standard of integrity proportionate to the journalist's singular obligation.

To this end the American Society of Newspaper Editors sets forth this Statement of Principles as a standard encouraging the highest ethical and professional performance.

Article I—Responsibility

The primary purpose of gathering and distributing news and opinion is to serve the general welfare by informing the people and enabling them to make judgments on the issues of the time. Newspapermen and women who abuse the power of their professional role for selfish motives or unworthy purposes are faithless to that public trust.

The American press was made free not just to inform or just to serve as a forum for debate but also to bring an independent scrutiny to bear on the forces of power in the society, including the conduct of official power at all levels of government.

Article II—Freedom of the Press

Freedom of the press belongs to the people. It must be defended against encroachment or assault from any quarter, public or private.

Journalists must be constantly alert to see that the public's business is conducted in public. They must be vigilant against all who would exploit the press for selfish purposes.

Article III—Independence

Journalists must avoid impropriety and the appearance of impropriety as well as any conflict of interest or the appearance of conflict. They should neither accept anything nor pursue any activity that might compromise or seem to compromise their integrity.

Article IV—Truth and Accuracy

Good faith with the reader is the foundation of good journalism. Every effort must be made to assure that the news content is accurate, free from bias and in context, and that all sides are presented fairly. Editorials, analytical articles, and commentary should be held to the same standards of accuracy with respect to facts as news reports.

Significant errors of fact, as well as errors of omission, should be corrected promptly and prominently.

Article V—Impartiality

To be impartial does not require the press to be unquestioning or to refrain from editorial expression. Sound practice, however, demands a clear distinction for the reader between news reports and opinion. Articles that contain opinion or personal interpretation should be clearly identified.

Article VI—Fair Play

Journalists should respect the rights of people involved in the news, observe the common standards of decency, and stand accountable to the public for the fairness and accuracy of their news reports.

Persons publicly accused should be given the earliest opportunity to respond.

Pledges of confidentiality to news sources must be honored at all costs, and therefore should not be given lightly. Unless there is clear and pressing need to maintain confidences, sources of information should be identified.

These principles are intended to preserve, protect and strengthen the bond of trust and respect between American journalists and the American people, a bond that is essential to sustain the grant of freedom entrusted to both by the nation's founders.

WHEN AFA's national and state leaders and staff gather early this month for a "family dinner" to commemorate the thirtieth anniversary of the Air Force Association, our badges will proclaim:

"Only 170 years to our Bicentennial."

A tongue-in-cheek memento, obviously, but worth a mention. The motto is humble to the extent that AFA is, historically, a young organization; yet, somewhat presumptuous in the assertion that it will, indeed, be around for a two-hundredth anniversary.

There were many times in the early days when I wondered whether it would survive the coming year.

Editor Jack Loosbrock was aware of this when he asked me to do this piece. "Don't give me the history of AFA or its heritage," he said. "Just give me an informal reminiscence of your experiences with the Association."

When the Publisher receives an editorial format from the Editor, the Publisher should take heed. As one who came up, or went down—and the case is debatable—on the editorial side of the publishing business, I learned early that the only noteworthy contribution of the business office to literature is the writing of paychecks. Therefore, this request from the Editor was flattering.

Herewith, then, are some random notes—not even highlights—of AFA's first thirty years. There is no attempt to be definitive, no pretense of completeness.

Like the Air Force it supports, AFA was born in poverty. I'm not talking about the mighty Air Force of World War II. I refer to the Air Force in the immediate aftermath of that war—the greatest air armada the world had ever seen shrunken to the equivalent strength of less than three combat groups.

It was during that ebb-tide of American airpower—on February 4, 1946, to be exact—that AFA was established. And, let me stress, with neither endowment nor treasury, as those who attended the early Board meetings will testify. Instead of "Praise the Lord and pass the ammunition" the slogan was "Praise Jimmy Doolittle and pass the contributions."

General Hap Arnold had the AFA idea. He turned it over as a project to Ted Curtis, a major general who was about to return to his job as Executive Vice President of the Eastman Kodak Co. Curtis figured Doolittle was the man to organize AFA, and he was right.

Doolittle, a Vice President of the Shell Oil Co., took an entire year off from work to tour the country organizing AFA chapters and to lead the Association's first policy campaign—for a separate Air Force.

Meanwhile, the Army Air Forces had turned over to the budding Association its official wartime journal—AIR FORCE Magazine—which otherwise would have been a victim of peacetime budgets. Back in 1942, I had been tagged by General Arnold to establish the magazine as the slick paper successor to the mimeographed *Air Corps Newsletter*. Arnold wanted an orientation medium for the thousands of recruits who were pouring into the newly formed AAF.

As a Reserve second lieutenant in Army Intelligence, called to active duty from a magazine editing job and just assigned to Headquarters, AAF, I lacked the clout the assignment demanded. But General Arnold, who had taken his turn as editor of the old *Newsletter*, became in fact the Publisher of the new AIR FORCE Magazine, and protected it from the many senior officers who tried to move in on the operation.

In fact, to guard against such encroachment, Arnold transferred the publishing office to New York City and gave me a priority on picking talent from the basic-training centers. We were able to pull together a formidable staff of editors and writers from leading magazines—*The New Yorker*, *Cosmopolitan*, *Collier's*, and the like—along with veteran writers from the Hollywood stables. Thus reinforced, we dug in for editorial combat on the front lines of Manhattan, at One Park Avenue, no less—a wicked spot from which to fight the war.

When AIR FORCE Magazine was turned over to the Association in early 1946, it was the only tangible item—apart from a card and pin—AFA had to offer to its members for their \$3.00-a-year dues. With no money to set up a publishing operation of its own, AFA's Board contracted out the magazine job to a commercial firm. During the first AFA year the company went bankrupt. I'll never forget that room, piled high with unfulfilled subscription cards. Nor can I forget the many thousands of new members who never saw a copy of their magazine.

A few years ago we were elated at finally reaching the magic membership figure of 100,000. We're at

THE FIRST THIRTY MONTHS WERE THE HARDEST.

AFA's Thirtieth Anniversary

BY JAMES H. STRAUBEL, PUBLISHER, AND EXECUTIVE DIRECTOR, AFA

140,000 today—and climbing. Yet, way back in September of 1947, at AFA's first National Convention in Columbus, Ohio, it was proudly announced that AFA had 120,000 members. This didn't surprise me, because it was all a part of the success story. General Eisenhower, on the Columbus convention platform, lauded the new organization, and rightly so, for having mobilized "a wealth of talent to devote to our defense needs." Delegates rubbed shoulders with this talent, singing wartime songs at the bar while Hollywood's Jimmy Stewart, one of AFA's first national officers, played the piano into the early hours of the morning.

The 1947 convention was my real introduction to AFA, although I had participated in some planning sessions almost two years earlier. In June of 1947, three months before Columbus, I had joined the Association staff as editor of the magazine—hired by General Doolittle after the Board had decided to establish its own publishing operation.

Our original staff of six members, acquired from the bankrupt commercial publisher, all worked in one medium-size room on Madison Avenue in New York. It was a madhouse. The art director, stuck in the corner with his drawing board, constantly complained of the noise from the clacking typewriters and from the editorial conferences.

There was plenty to confer about. The original publisher had thought the wave of the future was in private aviation—that everyone would want a helicopter in his backyard. He linked the editorial content to this premise as the key to advertising income. True, military aviation was closer to bust than boom, but we were running only two or three ads a month, and it didn't make sense for a magazine published by a military-oriented organization not to stress military aviation and the Air Force in particular. So we decided to swing our editorial thrust, overnight, in that direction—come what may.

Meanwhile, back in Washington, AFA's national administrative headquarters had been established in a basement office on K Street, N. W. In less than a year it moved to a gymnasium-size room—and for good reason. It took a lot of space to house the horde of secretaries whose main job was answering mountains of complaint letters from members who hadn't received their magazines. And there was another little problem. During AFA's first year, the staff had forgotten that members had to be reminded when their memberships were due to expire and be urged to renew. So a renewal program had to be started—a year late.

As announced at that first Columbus convention, AFA did have 120,000 members, but, at the same time—although no one realized it—these members were renewing at a dismal twenty-three percent rate. This meant that we had to gain more than 90,000 new members a year just to stay even. Membership plunged from 120,000 to 50,000. Contrary to all that's holy in the publishing business, we raised our advertising page rates four times while steadily reducing our magazine circulation guarantee from 100,000 to 50,000. But that wasn't all. It got so bad that the printer demanded payment in advance before he would turn the presses each month for the next issue of AIR FORCE Magazine.

But the economics were not as important as the fact that 50,000 people stuck with AFA.

Why? Doolittle's leadership was the main factor. And there was the magazine, of course. But beyond that?

The answer is that AFA's internal problems were overshadowed by its public image. Few people knew that donations from members of the Board, and other supporters like Jackie Cochran, plus a substantial one from New York financier C. V. (Sonny) Whitney, an Air Force veteran and one of AFA's founders, were preventing the Association from folding up. To the outside world we were very much alive.

The Association mobilized thousands of veterans, fresh from wartime service with the Army Air Forces, to impress on the public, and in turn the Administration and the Congress, the need for the same action that had been urged almost two decades earlier by Billy Mitchell—namely, the creation of a separate Air Force.

To expose the nation's military weaknesses, AFA went to the grass roots. And from rallies across the country telegrams went to the White House, bearing thousands of signatures and calling for a buildup toward the goal of our second campaign—the seventy-group Air Force that had been recommended by the Finletter Commission.

Tom Lanphier, AFA's second president, was the leader of the seventy-group effort. At the very lowest point in our financial and membership struggles, Lanphier decided to "shoot the works" for public recognition of the new Air Force and of the new Air Force Association.

Under Lanphier's aggressive leadership, AFA's second national convention in 1948 featured a mammoth show before a packed house in Madison Square Garden. On stage were the great Hollywood personalities of the day—Bob Hope, Marlene Dietrich, Clark Gable, Jimmy Stewart, to name a few—plus such leaders from the business world as Bernard Baruch. The Garden President, John Reid Kilpatrick, called it "the greatest show ever put on" at the famed arena. Beyond that, this dramatization of AFA's airpower crusade was featured in an unprecedented four-hour nationwide television program, including an also unprecedented blackout in the middle of a strip act by Gypsy Rose Lee.

Madison Square Garden was the first of the extravaganzas—the spectacular National Air Fair of 1949 in Chicago, the history of flight pageant which filled the Hollywood Bowl in 1951, the nationwide celebration of the Air Force's Golden Anniversary in 1957, the nationally televised World Congress of Flight of 1959 in Las Vegas, which *Life* Magazine called the "world's greatest air-space show."

Meanwhile, behind the scenes, AFA's national leaders and staff still were fighting a battle for survival. Our financial problems no longer were a secret when, in the late '40s, we sent out letters to all members bluntly explaining our poverty and asking for a donation of one dollar per member just to keep AFA alive. The first mailing brought in some \$35,000, a followup appeal about \$25,000. Almost all the donations were small ones.

Grateful as we were for the money, it was equally

rewarding to read the letters that accompanied the donations. Over and over again, in one way or another, the members said, "AFA has got to survive. I'm not much of a joiner so I haven't been active in our chapter work. But I'm a real believer in our mission. I'm proud to contribute what little I can to help keep us going."

To a staff that wasn't sure of its future, words like that meant AFA was worth fighting for. In fact, staff morale was strong. This was true despite the fact that our only fringe benefit at the time was the occasional office party to celebrate some major event, like the arrival of a new typewriter. Another plus was that the staff was in great physical shape. National Headquarters in Washington by that time had moved up, literally, from the original basement offices to the fifth floor of a century-old house. There were no elevators so the five-floor walk-up kept us physically fit.

In view of all this, I'm still amazed when I realize that three members of our current staff have been with us more than twenty-five years (and three more will pass that mark before the end of 1976), seven more than twenty years, nineteen more than fifteen years and twenty-seven more than ten years. True, AFA has developed, thanks to some great national leaders, a very adequate salary structure plus a good retirement plan and other fringe benefits. But we were not in a position to start these improvements until 1961, which means that about a third of our current staff stayed on through the really thin years. I salute them for it while paying my respects to the loyalty, dedication, and professionalism of the entire staff.

The Korean War gave our magazine advertising a boost, but it hit membership hard at the grass roots, where AFA has its real strength. Thousands of Air Force veterans, many of them AFA members, were recalled to active duty. Some AFA chapters (they were squadrons then) were decimated. In San Francisco, eighty-five percent of AFA's chapter members were called into service. So we had to rebuild at the grass roots after the war.

In the span of only a few years, AFA graduated from a fraternal type association, with its "Keep the Gang Together" theme, to an organization primarily concerned with national attitudes toward the overall US defense posture. For example, as early as 1948 we broadened our membership base, originally restricted to people who had served in the Air Force or its predecessor services, to admit men and women who subscribed to our objectives regardless of previous military service.

Also, AFA became involved in its own youth movement. In 1948, at the request of the Air Force, we engineered the merger of three Air Force ROTC organizations into the Arnold Air Society. For many years, members of the Society have been cadet members of the Association—some 6,000 strong—and our relations with this group of fine young people couldn't be better. But it wasn't accomplished without strain.

The initial proposal to admit ROTC students as cadet members of AFA was met with the usual skepticism of young people. Annually, over some five years, I would appear before the Society's national business sessions to explain the advantages to them of affiliation with AFA, including subscriptions to our magazine,

at a special fee then set at \$2.50 per year. Regularly I was met with the question, worded one way or another, "What's your angle?" Each year I explained that there was no angle, and each year my proposal met with polite disbelief. Finally, at a National Conclave in Omaha, Neb., I told the cadets, "All right, here's our angle. We need young people as regular members and as leaders of AFA in the future. I am gambling that if you get to know us through your cadet membership, some of you may decide to stay with us as regular members. Further, some of you may return to civilian life and be in a position to take leadership roles in AFA." Then, in a dramatic finale, I said, "That's the last word you will hear from me on this subject. I've had it!" With that I stomped off stage and out the door—right into the empty hotel kitchen. And the back door was locked.

After a few embarrassed minutes I was rescued by one of the cadets who told me the group meanwhile had approved cadet membership in AFA by acclamation. When I asked how come, he said, "We just wanted to know your angle, and we like it." So it goes.

A longtime basic AFA objective has been to upgrade the prestige and career status of the military profession. As early as 1949, AFA President C. R. Smith sent a letter to every member of Congress calling for higher pay for all men in uniform—the start of a continuing AFA campaign to improve the quality of life for men and women in uniform.

Over the years, AFA's policy positions have spanned the air age, the missile era, and the conquest of space, with the nuclear age involved all the way along the line. We have done pretty well, I think, in coping with the technological revolution, despite a few rough spots here and there.

Take the first missile race, for example. Not the one between the USA and Russia, but the race between the US Air Force and the US Army. Some of our elder statesmen saw the ICBM as just a new type of cannon. "Give it back to the Army," they said. At a Policy Committee meeting I argued, along with other members, that the Air Force required ICBMs to carry out its strategic mission. One of our committeemen, a great airpower pioneer, braced me with the charge: "You must be against airpower." Before I could reply, another great airpower pioneer in the group turned to my critic and said, "You must miss your boots and spurs, too." That broke the impasse in short order.

We have been blessed with great elected leaders in AFA—at national, state, and local levels. Their dedication to the mission, their long hours of effort, their sacrifice of time, money, and family life to support that cause—all this has been a great inspiration to me and, I know, to the entire staff.

I was once introduced, and quite innocently, at an AFA chapter meeting with the words: "We do not have a speaker tonight, but we'll now hear from Jim Straubel."

So it is that we do not mark AFA's thirtieth anniversary with a full-blown historical narrative, but rather with these hit or miss reflections on a great experience, by one who has enjoyed every minute of it.

Based on those reflections I'm convinced that AFA will celebrate a Bicentennial. In fact, I'm looking forward to it. ■

Aerospace World News, Views & Comments

By William P. Schlitz, Assistant Managing Editor

Washington, D. C., Jan. 6
★ Following the December meeting in Paris with representatives of the North and South Vietnamese governments, members of the recently established House Select Committee on Missing in Action (see November '75 issue, p. 76) expressed hope for more substantive talks in

nam. (According to the Vietnamese officials, a Vietnamese agency is already working on the problem of American MIAs. The officials also agreed to report to their governments the Committee's request for information about Americans missing in Laos and Cambodia.)

- To take steps to allow those



Weighing only thirteen pounds, this lightweight laser designator can be aimed like a rifle to pinpoint targets for laser-homing weapons. Built by Hughes Aircraft Co., the LWLD will first undergo stress testing by the Army Electronics Command, followed by fully operational field tests.

the future. "The most dramatic aspect of the Paris meeting was that the meeting took place," a Committee spokesman commented.

However preliminary, the talks in Paris did result in three Vietnamese commitments:

- The return of the remains of three US pilots, which took place on December 21. This concession had been agreed to previously, but was temporarily stymied when the US vetoed a North Vietnamese bid for UN membership.

- The continued search for those Americans still listed MIA in Viet-

nam. American civilians still in Vietnam to leave.

Also touched upon during the Paris meeting were the cases of the eighty-two MIAs known to have been alive in enemy hands and on which "hard-evidence" files had been turned over to the North Vietnamese by Henry Kissinger in 1973. The Vietnamese officials denied any specific knowledge about those particular MIAs, but agreed to report on the matter to their governments.

On the other hand, the Vietnamese representatives held firm to

their position that the US must reciprocate if the matter of the US MIAs is to move forward. At issue here is the US embargo on trade with Vietnam and the US refusal to "heal the wounds of war"—meaning grant reconstruction aid.

Voicing cautious optimism, National League of Families Director Earl Hopper said, "This is a beginning to the resolution of the MIA problem and represents a break in the stone wall we have been faced with these last three years. However, the League stands firm in its resolve not to accept further concessions to the Vietnamese at the expense of gaining an accounting of our prisoners and MIAs."

★ Between 1952 and 1968, seven American aircraft—one civilian and six military—were shot down over or near the People's Republic of China (PRC).

During President Ford's recent visit, the PRC offered some additional—though scant—information concerning the fate of those aircraft and their crews.

An aircraft carrying four civilians was shot down over northeast China in November 1952. According to the Chinese, Norman Schwartz and Robert Snoddy were killed in the crash and buried near the site, which, because of the passage of time, can no longer be located. (Richard G. Fectau and John T. Downey returned to the US in 1971 and 1973 respectively. Of the twenty-five military personnel involved in the five other incidents, only one returned alive.)

In August 1956, a US Navy flying boat was shot down over the Shengszu Islands, and two bodies were returned to the US. No information is available about the plane's other twelve crewmen, the Chinese said.

A Navy F-4 Phantom was shot down near Hainan Island in April 1965. No information is available about its two crewmen.

In April 1966, a Navy KA-3 tanker was downed over the Leicho Peninsula. The remains of Kenneth W. Pugh of Lancaster, Calif., were recovered and buried, but no information is available about the three other crewmen.

Two Navy A-6s were shot down in August 1967 over the Kwangsi Chuang Autonomous Region. One crashed in a remote area and no

information is available about the two crewmen. Of the other aircraft's two-man crew, Cmdr. Robert Flynn was captured (and returned to the US in 1973). The Chinese recovered and buried the body of the second crewman, Lt. Cmdr. Jimmy L. Buckley of Sioux City, Iowa.

In February 1968, a Navy A-1 aircraft was shot down in the vicinity of Hainan Island. No information is available about the pilot.

The remains of Lieutenant Commander Buckley and Parachute Rigger Pugh are to be returned via the Chinese and American Red Cross.

★ In notifying Congress of its intent, the Defense Department in mid-December took the first official step in a move to sell Israel USAF's hottest new advanced fighter—the F-15 Eagle.

If the sale goes through, as is expected, Israel will become the first foreign country to purchase the new fighter. Iran as well as several other Mideast nations have expressed interest in buying the Eagle.

The deal with Israel is for twenty-five McDonnell Douglas-built F-15s at a cost to the Israelis of \$600 million. The transaction involves the aircraft, spare parts and engines (Pratt & Whitney), support equipment, and instruction of Israeli pilots and ground crews.

The current mainstay of the Israeli Air Force is the McDonnell F-4, which the F-15s will supplement, awaiting the arrival of the upcoming F-16. Israel has been pressing for



Decked out in military camouflage is USAF's second prototype YC-15, which made its first flight in early December. The McDonnell Douglas aircraft is in competition with Boeing's YC-14 in transport-technology development.

the F-15 for some time, as a match for the MiG-23s and other advanced aircraft the Soviet Union has supplied to Egypt, Iraq, and Syria.

The F-15 began to enter USAF's operational inventory only recently, with some twenty aircraft delivered thus far. The Israeli F-15s will come off the production line, instead of from existing US stocks as was the case following 1973's Mideast war. First deliveries aren't expected until 1977.

★ Air Force Systems Command has

undergone two important organizational changes:

- AFSC's Deputy Chief of Staff/Procurement has been redesignated DCS/Procurement and Production under Brig. Gen. Michael J. Tashjian. The production function, transferred from DCS/Systems, involves responsibility for production management, quality assurance, value engineering, labor relations, industrial facilities, industrial preparedness, and industrial material.

- A new division has been established to contend with the expand-



'Insect-like competitors in US Army's Advanced Attack Helicopter program are these two prototype YAH-64s, built by Hughes. They'll be evaluated against Bell Aircraft Co. contenders, with the winner entering the inventory in the 1980s.

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ing area of foreign military sales, under Acting Director Col. James E. Foster. The Foreign Military Sales Division is responsible to the Directorate of Development and Acquisition Policy, DCS/Systems, under Brig. Gen. Phillip N. Larsen. The new division will oversee the development of acquisition policy and procedures.

★ The return to CONUS of USAF units from Korat RTAFB, Thailand, by March 1976 will necessitate the realignment of personnel and equipment at US bases.

Hill AFB, Utah, will get the 388th TFW, late of Korat, and some fifty-four F-4Ds. In addition, the 1550th Aircrew Training and Test Wing (four HC-130s and twenty-seven helicopters) will move from Hill to Kirtland AFB, N. M.

The 75th TFS, England AFB, La., will increase from eighteen to twenty-four aircraft with the receipt of A-7s from Korat, previously deployed to SEA from England's 23d TFW.

Myrtle Beach AFB, S. C., will also receive A-7s. They'll boost the 353d, 355th, and 356th TFSs from eighteen to twenty-four aircraft each. The arriving aircraft were previously deployed from Myrtle's 354th TFW.

A TFS, equipped with eighteen F-4 Phantoms, will be activated at Moody AFB, Ga., to bring the 347th TFW up to full strength of three squadrons. (Moody transferred from ATC control to TAC on December 1, 1975.)

The 41st ARRS, McClellan AFB, Calif., will convert from two HH-3Es to six HH-53Cs as the latter return from Korat.

Also withdrawing from Korat will be the 16th Special Operations Squadron and AC-130 aircraft, destined for Eglin Auxiliary Airfield #9 (Hurlburt Field), Fla.

★ NASA's Jet Propulsion Laboratory, Pasadena, Calif., will oversee the design and manufacture of a new ocean survey satellite called SEASAT, the first R&D oceanographic satellite.

Plans call for the 4,000-pound

(1,815 kg) SEASAT to be launched early in 1978 into a near polar orbit at an altitude of 480 miles (772 km), from which it will return data on surface winds and temperatures, currents, wave heights, ice conditions, and ocean topography. The satellite will be able to monitor ninety-five percent of the world's oceans every thirty-six hours.

SEASAT hopefully could prove the feasibility of a multisatellite system for the continuous recording of global ocean dynamics and

weather. Such information would be of enormous value to a host of beneficiaries ranging from merchant shippers and commercial fishermen to pollution-control agencies and oil-exploration companies.

Lockheed's Space Systems Division has been picked to provide the satellite bus, sensor modules, satellite systems engineering, and test and mission operation services at a cost of about \$20 million. Delivery to Vandenberg AFB, Calif., is due late in 1977.

Pave Low III

The Air Force's own internal "skunk works," which created the AC-130 gunship for Vietnam, is at it again with a new night-vision rescue helicopter built around off-the-shelf avionics.

The group is the Special Projects Division at the Air Force Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, and the new helicopter is the Pave Low III, a modified Sikorsky HH-53 Jolly Green Giant, also flown in Vietnam.

The basic idea behind Pave Low III was to fill a need for night rescue capability despite the lack of funds, according to "skunk works" chief Lt. Col. William E. Craven.

In addition to performing search-and-rescue missions under conditions of total darkness and adverse weather in all geographical areas (including mountainous terrain) the rescue helicopter had to have low-level capability to penetrate hostile territory against radar-directed weapons.

The operational prototype was put together almost entirely with off-the-shelf avionics subsystems already in the Air Force inventory, and made its first flight in June. It has since gone through a series of stability control tests and navigation evaluations—mostly in Ohio—and after the first 100 flight hours has not had an abort.

Principal subsystems are a terrain-avoidance radar, forward-looking infrared (FLIR) sensor, inertial measuring unit, doppler, projected map display, and symbol generator coupled through a central airborne computer.

The APQ-158 terrain-following radar from Texas Instruments is a modified version of the radar used in the A-7 attack aircraft and provides readouts at altitudes of 100, 200, 300, 500, and 1,000 feet. It is backed up by an AAQ-10 FLIR, also from TI, which is a modified version of the OR-89 used in the Navy's S-3A antisubmarine warfare (ASW) aircraft. The computer is the IBM Four Pi Model TC-2 airborne processor also used in the A-7 and AC-130.

The only hardware required for Pave Low III that was not already in USAF's inventory are the true airspeed indicator and solid-state doppler. The airspeed indicator is a commercial model capable of measuring speeds below forty knots and was procured from J-Tec of Des Moines, Iowa. The doppler is from Canadian Marconi and is used by the air forces of other countries.

The pilot flies the aircraft by viewing the FLIR picture on a cockpit TV screen that shows the terrain ahead and below the aircraft. Also displayed on the screen are climb and dive commands derived from the radar, and steering commands from the navigation systems. Needle-type instruments are provided as backups to the central display.

Nine preprogrammed way points can be inserted into the computer prior to takeoff and be changed in flight as required. Also, the computer is programmed to provide guidance for two different search patterns to search specified areas automatically, taking into account wind drifts and other factors. The FLIR is gimballed to provide lower hemispherical coverage and has two fields of view to aid in searches.

Following the installation of the FLIR and radar subsystems in August, the Pave Low III prototype conducted long-range navigation checks through the mountains of West Virginia and Virginia and was brought to the Pentagon for static display.

The Air Force expects to make a decision in mid-1976 on whether to proceed with procurement of eight additional Pave Low III helicopters for the Military Airlift Command.



★ The US Coast Guard is emulating the other services in making provision for women pilots.

Ens. Janna Lambine, twenty-four years old and a recent graduate of Officer Candidate School, was to begin flight training at the Naval Air Station, Pensacola, Fla., in January.

Lt. (j.g.) Vivien Crea, also twenty-four and currently assigned to the Marine Environmental Protection Agency, Coast Guard Headquarters, Washington, D. C., will follow suit later this year.

Upon completion of comprehensive training, the Coast Guard said,

The prototype Pave Low III night rescue helicopter is set for a series of tests before a decision on production is made. For details on the new aircraft, see box on adjacent page.



The first of eighty Grumman F-14 Tomcat fighters to be delivered to the Iranian Air Force made its maiden flight in early December at the company's flight-test facility at Calverton, L. I. Deliveries to Iran end in mid-1978.



The first of two F-111As scheduled to be modified into EF-111A Tactical Jamming (ECM) Aircraft for the Air Force. The EF-111A will replace the EB-66. Grumman will undertake the modification program.

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the two will be fully qualified to tackle flight chores ranging from search and rescue operations to environmental protection missions.

In a related matter regarding women, the US Naval Academy will admit eighty female officer candidates early in July 1976 to begin plebe summer. Including the women "midshipmen" (Navy says it will retain that designation), the entering Class of 1980 will number about 1,400.

As with the Air Force Academy and West Point, the women will be subjected to the same educational process as the men, except where physiological differences dictate otherwise. (Since federal law prohibits women from serving aboard



DC-3, C-47, Skytrain, Dakota, whatever—they all spell "Gooney Bird" to the men who flew the remarkable aircraft before and since World War II. The Three has entered its fifth decade of service. See item below.



Airman Michael J. Valenta, left, and TSgt. Harry Gethers, George AFB, Calif., preview Maintenance Magazine, a new USAF publication due in February.

combat vessels, the women midshipmen will not participate fully in the traditional first- and third-year summer cruises.)

★ The DC-3 first flew on December 17, 1935—just thirty-two years to the day after the Wright brothers' first powered flight at Kitty Hawk.

When production of the beloved Gooney Bird ceased in 1945, Douglas Aircraft Co. had turned out 10,200 of the military version, which during the war was employed in a host of capacities ranging from paratroop transport to airborne command post. It became a legend in its own time for flights over the Hump to China.

The DC-3 is celebrated in song and story. One Gooney lost twelve feet of its left wing in a collision with a mountaintop and landed safely. Another, left to its own devices after its crew parachuted to safety when gas ran low, *landed itself*.

Spanking new, a DC-3 cost \$110,000—which wouldn't buy an engine for one of today's jet transports.

Entering its fifth decade, the Three is still going strong. It is estimated that 3,000 DC-3s are still in commercial, military, and private service around the globe, with some 500 in the fleets of the world's airlines.

A Three recently donated to the Henry Ford Museum had logged an incredible 84,875 flying hours—a mark that certainly will be surpassed by DC-3s still in harness. Said the DC-3's builder, Donald W. Douglas, Sr., "The DC-3 flies on

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and on. Who knows, perhaps she will fly on forever." Maybe so.

★ **NEWS NOTES**—Dr. John E. Naugle has been appointed **NASA Associate Administrator**, responsible for major parts of the space agency's R&D program. He has been acting in this capacity since the departure of Dr. Rocco Petrone in April 1975.

In other NASA postings, former astronaut **Donald K. "Deke" Slayton** has been named to the newly created position of **Deputy Director of Flight Operations for Approach and Landing Test** (Space Shuttle planning) at the Johnson Space Center, Houston, Tex. And **Alex P. Nagy**, previously acting Director of the Planning and Media Development Division, Office of Public Affairs, has been named **Deputy Assistant Administrator** of the office.

LTV Aerospace Corp. underwent a name change to **Vought Corp.** effective January 1.

The first issue of a new **USAF quarterly publication—Maintenance Magazine**—is due in February. With much of its contents contributed by people in the field and geared to the younger airmen, the magazine will report on a broad range of "subjects related to aircraft, missile, and weapon-systems maintenance."

DoD has picked the **US Army as Single Manager** of conventional ammunition for all the services. Headquarters for the new organization, responsible for procurement, production, supply, and maintenance/renovation, will be at **Rock Island Arsenal, Ill.**

Air Force Academy **Cadets First Class John A. Ausink and William H. Brundage** have been granted **Rhodes scholarships**, bringing to nineteen the number of Academy cadets so honored since 1959.

Air Force Academy's Parachute Team compiled 244 points, the most ever in collegiate competition, to win the **Bicentennial Intercollegiate Championships** at Boise, Idaho.

The **Department of Commerce** will sponsor an exhibition of US aerospace equipment at the **Second International Air Show**, Farnborough, England, September 5-12, 1976.

Died: Gen. Earle G. Wheeler, USA (Ret.), former Chairman of the Joint Chiefs of Staff, in Maryland in late December. He was sixty-seven. ■



Clarence L. "Kelly" Johnson, center, one of the world's most honored aircraft designers who retired in 1975 following a forty-two-year career with Lockheed, being presented the prestigious Wright Brothers Memorial Trophy at recent ceremonies in the nation's capital. At left is John P. Henebry, President of the National Aeronautic Association and a Past President and Board Chairman of the Air Force Association. Also participating in the presentation is Sen. Barry Goldwater (R-Ariz.), who is serving as Chairman of the Board of Trustees of the Aerospace Education Foundation—AFA's affiliate. Both Mr. Henebry and Senator Goldwater are major generals in USAFR.

NEW BUSINESS AND PROCUREMENT RESEARCH AWARD PRESENTED

Seven Air Force officers, nineteen former cadets, and the Department of Economics, Geography and Management of the Air Force Academy were the first recipients of the recently established Air Force Business and Procurement Research Award. The award presentations were made by Brig. Gen. Dewey K. K. Lowe, at the Fourth Annual DoD Procurement Research Symposium at the Air Force Academy.

The award recognizes people who contribute materially to managerial effectiveness of the Air Force by demonstrating superior achievement in research of business and procurement management and methods. The award is administered by the Air Force Business Research Management Center (AFBRMC). It consists of a certificate signed by the Assistant Secretary of the Air Force for Installations and Logistics and a citation outlining the recipients' contributions.

The group earned the award for its work with Project EOQ (Economic Order Quantity), a research effort that developed techniques for soliciting quantity discounts, and field tested them at Ogden ALC, Utah. The field test showed an annual savings potential in excess of \$7 million. Project EOQ was initiated under the auspices of the AFBRMC in January 1974, at the request of the Air Force Logistics Command (AFLC), Deputy for Procurement and Production.

Receiving the award were:

Lt. Col. Larry M. Austin, Lt. Col. John D. Slinkard, Maj. Sanford B. Kozlen, Capt. Michael S. Anselmi, Capt. Richard E. Carlburg, Capt. Howard A. Clark, Capt. Lawrence O. Cox, The Department of Economics, Geography and Management, United States Air Force Academy, and the following lieutenants who as cadets participated in Project EOQ:

Michael Baca, Dale D. Burchby, Edward M. Carter, Patrick J. Corrigan, Vincent Coviello, David A. Flattery, Michael K. Hawthaway, Philip D. Inscoc, William H. Jones, Stephen M. Lenze, Michael W. McCoy, J. Edgington Moats, Eugene S. Richardson, Norman K. Risner, David K. Rusk, Fred W. Stone, Jr., Nicholas Thomas, Steven W. Weiss, and Marc A. Wooten.

All were members of a class in graduate-level logistics management, and took on the research effort as a course project.

Tac Air—History's Most Potent Fighting Machine

BY EDGAR ULSAMER
 SENIOR EDITOR

The Tactical Air Command has a major responsibility for offsetting the Soviet lead in military manpower and conventional weapons with qualitative superiority in USAF's aircrews and aircraft. TAC is engaged in an across-the-board modernization of its training concepts and weapon systems.

AS LONG as the US maintains strategic counterforce and counter-value capabilities roughly equal to the Soviets, no rational Kremlin leadership is likely to cross the nuclear threshold. The logical extension of this tenet shifts a growing phase of the burden of US deterrence to conventional warfare capabilities. These capabilities, therefore, are being increased by emphasis

enough to tax the new tac air capabilities to their limits.

The paramount challenge to US general-purpose forces is the vast numerical superiority of Warsaw Pact over NATO forces, dramatized by these approximate ratios:

- A four-to-one lead in tanks;
- A nine-to-two lead in artillery;
- A three-to-one lead in air defense weapons;
- A three-to-two lead in tactical aircraft;
- A four-to-one lead in jamming equipment;
- A three-to-two lead in combat troops.

It all adds up to the fact that overall

forces at the point of major attack. Success in defending NATO against the numerically superior Pact forces rests on the problematical premise that this attack possibility is likely and that Western intelligence will provide timely warning.

If intelligence is right, NATO ground forces could achieve local superiority against the first assault echelon. The second, equally decisive, "if" is whether US and other NATO tactical airpower would be able to deal with the Pact's second echelon before it could engage NATO ground forces at the forward edge of the battle area. This, then, leads to the third requirement for a successful defense by NATO forces—the rapid achievement of local air superiority over the main battle area to permit air interdictions of Pact follow-on attacks.

In General Dixon's view, a moderately sanguine outlook is justified "for the moment," because the US has "the edge in quality." Specifically, US tactical aircraft have significantly better air-to-ground attack capabilities than the bulk of the Soviet and Warsaw Pact aircraft because of their greater payload and combat radius, more accurate weapons delivery systems, and better navigation and target-acquisition capabilities. Further enhancing the present US advantage are precision-guided munitions, including electro-optical and laser-guided weapons that have target destruction probabilities "hundreds of times higher than those of a decade ago." Equally important, in the TAC Commander's view, is the sizable reservoir of US pilots with recent combat experience.

But the qualitative advantages of US and NATO air and ground forces must be focused and integrated through joint concepts, tactics, and procedures to off-

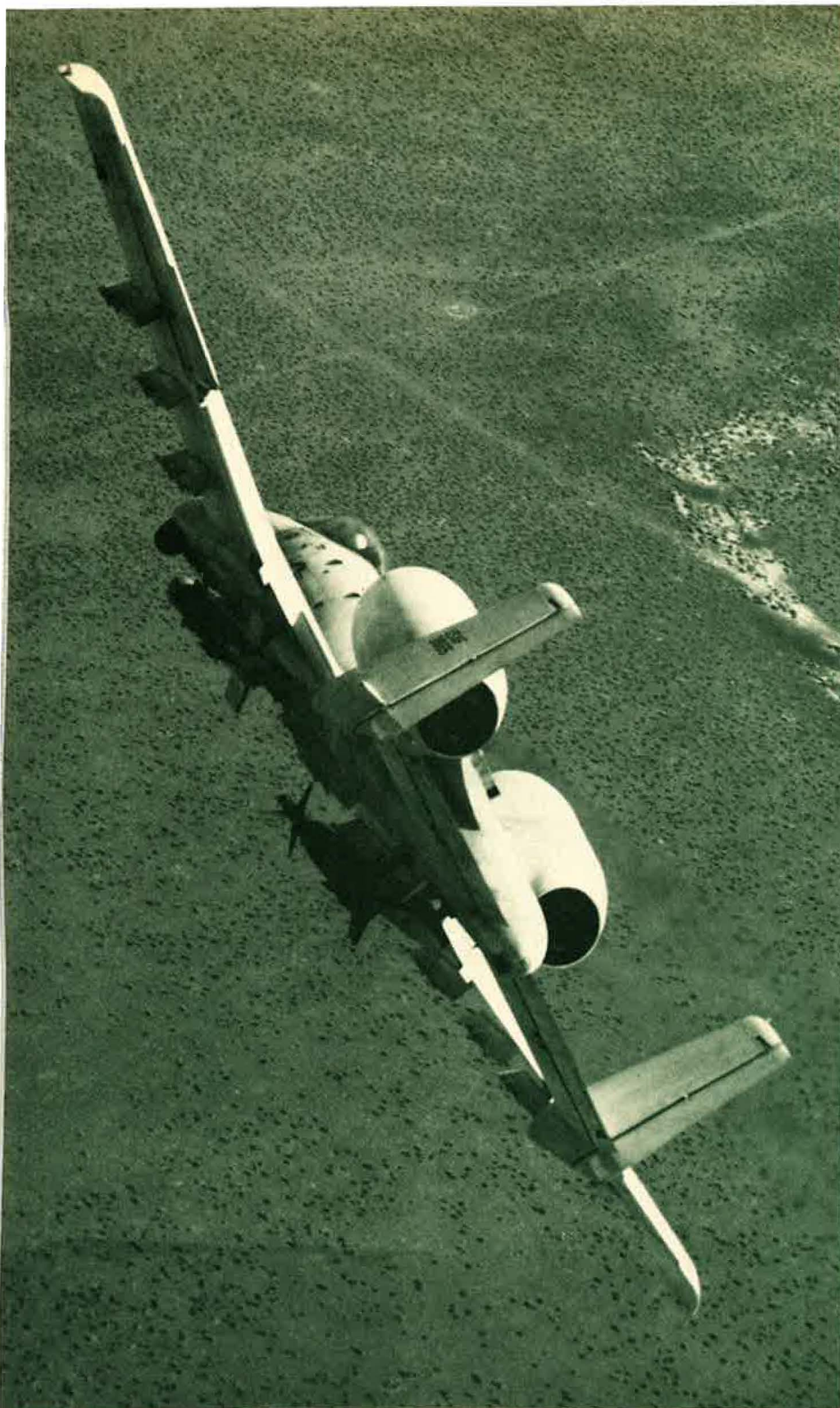


TAC considers the F-15 Eagle the world's best air-superiority fighter, capable of outperforming any potential threat aircraft into the 1980s.

in direction and through what the nation's senior tactical airpower practitioner terms a revolutionary modernization of the tac air war-fighting machine. But, as Gen. Robert J. Dixon, Commander of the Tactical Air Command, points out, the challenge is great

the enemy has a quantitative force advantage on the order of three- or four-to-one in his favor.

Compounding the problem of numbers is the likelihood that Pact forces would be used in blitzkrieg fashion along a narrow front, with a strong assault echelon opening the way for one or more follow-on echelons. To counter that strategy, US and other NATO forces would have to concentrate their



The A-10 close air support weapon system can carry eight tons of ordnance, is optimized for low-visibility operation, and provides good short-field and long-loiter capabilities.

set the Pact's numerical advantages. Central to the joint Air Force and Army approach to the European problem is agreement that the firepower of both the tactical air and ground forces has to be able to fight together as a team—the Air Force helping the Army

with close air support and the Army helping the Air Force in defense suppression, for example.

Spurring the drive toward joint concepts and procedures is recognition that, in a tactical environment, there cannot be distinct air and land battles. Neither service can go it alone. As General Dixon points out: "The Army and the Air Force must integrate their efforts. When we effectively mass and

employ the combined firepower assets of both Army and Air Force at the critical point on the battlefield, we will have the quantitative advantage, not the enemy. When we shift our tactical airpower from an area where the job is done, we can achieve a quantitative advantage in a new location."

The Air-Land Battle

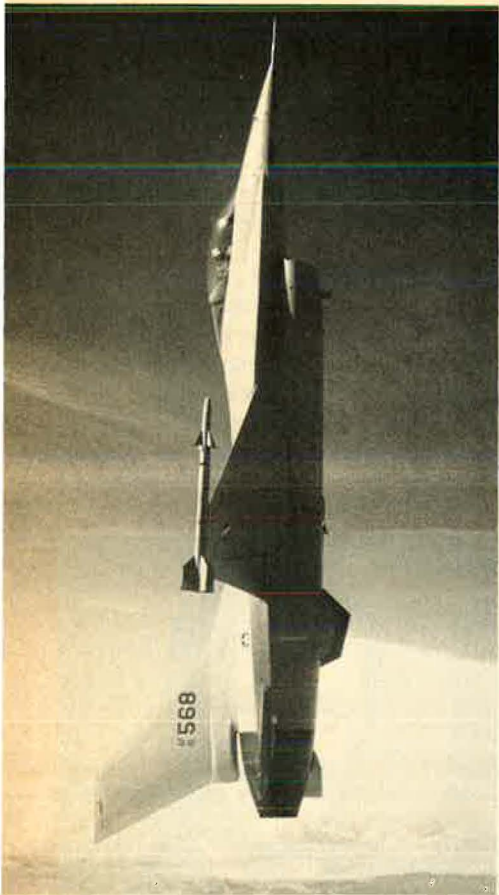
The principal adversary TAC-trained forces are likely to face in a NATO war is Soviet Frontal Aviation, TAC's rough equivalent in the USSR's force structure. TAC's analysts believe that the tactical fighters assigned to Frontal Aviation are rugged, easily maintain-



TAC Commander Gen. Robert J. Dixon equates USAF's European requirement with the ability to "simulate precisely the total energy product of the force and measure readiness by new standards."

able, and available in sufficient quantities to carry out massive, shallow interdiction missions. Even though they appear to lack the range and payload required for deep interdiction on a scale comparable to USAF aircraft, their trend is also toward quality.

There are two other significant factors. The magnitude of the Pact's electronic warfare capabilities is, as General Dixon puts it, "shocking," meaning that NATO's command and control system will be degraded, penetration and survivability reduced, and the coordination of air and ground forces impaired. Secondly, the Pact's air defense system is formidable. The resultant challenge is major but "won't put us out of business," since both USAF's tactics and equipment are being modified and modernized to counter these closely related threats.



The F-16 Air Combat Fighter, according to General Dixon, is "an essential, versatile element" of tactical airpower.

On the other hand, NATO appears to enjoy a major deterrent advantage in theater nuclear weapons, with a total of about 7,000 compared to the Pact's 3,500. Improving the Air Force's theater nuclear forces (TNF), and the perception of their war-fighting capability, depends on how well the gap between strategic nuclear and conventional non-nuclear deterrence can be filled. TNF must be designed to minimize collateral damage and the risk of escalation, and to help bring the conflict to a close.

Pact Air Defense Capabilities

In a NATO war, USAF's tactical air forces would have to penetrate multiple layers of Pact air defense systems, ranging from radar-directed Antiaircraft Artillery (AAA) to radar-directed surface-to-air missiles (SAMs) and many air defense aircraft, all deployed in depth. Building on experience the Soviets gained in Southeast Asia, the Pact's air defenses provide redundant, overlapping coverage, with the SA-2s and SA-3s (of North Vietnam fame) complemented by the mobile SA-4 and SA-6 SAM systems. The SA-4 (Ganef)

SAM is twin-mounted on tracked carriers and used against medium- to high-altitude intruders. The SA-6 (Gainful) is a triple-mounted missile used against low-flying aircraft. The SA-4s and SA-6s, in turn, are protected by the new, self-contained SA-8s, SA-9s, hand-held SA-7s (Strela), and ZSU-23-4 AAA. This sophisticated array of defense weapons is backed up by fighter aircraft and ground-support systems that, combined, pose a day-and-night, all-weather threat to allied aircraft from the ground up.

There are three fundamental ways to cope with this defensive network: to avoid, to suppress, or to destroy it. Singly, none of these options is likely to solve tac air's penetration problem. In combination, and backed up by judiciously used, modern electronic warfare (EW) capabilities, they may.

The functions of negating or reducing the vulnerability of tac air fighters and

countering EW threats are indistinguishable. Tac air operations in Europe depend on EW capabilities for target acquisition, weapons guidance, and weapons effectiveness. To do the job, the three principal components of EW—electronic support measures, electronic countermeasures (ECM), and electronic counter-countermeasures (ECCM)—must work together.

The importance of ECM, a relatively quantifiable element of EW, was brought home to US air tacticians in Southeast Asia. The Navy concluded, from analyses of air operations between 1965 and 1972, that it would have lost five times as many strike aircraft had it not been for ECM. USAF concluded that the fifteen B-52s it lost during the Linebacker operations over North Vietnam would have totaled between seventy-five and 100, without ECM. Supporting conclusions have come out of the Mideast War in October 1973.

Maintaining Operational Readiness

To achieve the total operational readiness required to fight a NATO war, "we must be able to simulate precisely the total energy product of the force and measure readiness by new standards," General Dixon told AIR FORCE Magazine. The practical meaning of this statement to TAC's single most important human assets, its combat pilots, is pervasive.

Statistical evidence supports TAC's thesis that most losses occur during a pilot's first eight to ten combat missions; if he survives, he matures into a combat veteran with "good survivability." In a practical sense, "this means that somehow we must find a way for the new pilot to get his eight to ten missions in *before* he goes to war," General Dixon said. This clearly represents TAC's toughest training challenge.

The first requirement is to train aircrews in unit flying at the faster pace expected in the first crucial days of combat. TAC's answer is to have a unit "surge" and do a month's flying in a week which "gets close to the real thing. It means readiness for the aircrews, ground crews, supply, mess hall, and so on, all of whom have to work twelve hours a day in two shifts on a sustained basis just as they would in war."

Secondly, through its "Red Flag" program TAC attempts to make combat training as totally real as possible. "We will take a squadron, its people, its gear, and its aircraft and simulate overseas deployment by flying them for eleven-and-a-half hours to Nellis (the instrumented air combat range in Nevada). SAC provides the tankers and MAC the airlift for the staff, equipment, and spares. We have them unpack and fly ten missions under physical and mental stress of near real war environment. The aircraft will drop live ordnance, and we will have Army ground forces there to test joint doctrines and procedures.

"The only thing we can't do, of course, is fire live air-to-air munitions, but we have the aggressor squadron, gun cameras, captive missiles, and air combat maneuvering instrumentation, along with simulated SAM systems. We will be able to tell the aircrew quite convincingly if they would have been shot down and why," the TAC Commander said.

At present, TAC operates a single "Aggressor Squadron" (and is forming another) of twenty-two pilots, six radar weapons controllers, and twenty T-38 aircraft camouflaged to simulate known threat color schemes. The squadron's crews are experts in Soviet tactics, techniques, and personnel. The T-38 is comparable to the MiG-21F at airspeeds to Mach 1.1 and similar in size, wing loading, and engine performance. The Aggressor Squadron's T-38s are being replaced by F-5Es that can simulate later MiG-21 models. By the end of FY '77, TAC is scheduled to have two Aggressor Squadrons equipped with F-5Es.

The central EW problem, TAC's experts maintain, is not just technology—which appears capable of meeting the requirements—but rather the funding needed to bring new systems into the inventory in quantity. The most pressing need is for devices that are less susceptible to threat changes. The present ECM system on F-111 aircraft, for instance, is based on 1963 technology and keyed to a radar threat of ten years ago. (An F/FB-111 EW improvements program is in progress. See p. 27.) New ECM systems incorporate reprogrammable software features, and can be modified quickly to cope with changing threats. Also, power management ECM techniques, known as “smart electronics,” permit all available ECM power to be applied on the precise portion of the frequency spectrum that poses the principal threat at a given moment.

Being developed for the inventory,

and gaining steadily in importance and capability, are defense suppression standoff weapons of the electro-optical and modular-guided glide bomb variety with operating ranges of up to fifty miles. (By adding a propulsion stage, the range of these weapons could be extended.) When linked to the grid of a Precision Location Strike System (PLSS), currently under development, these weapons can be used against fixed-site emitters and similar targets whose locations can be established in advance. (This capability would accrue also to IRBMs [intermediate-range ballistic missiles] and strike RPVs [remotely piloted vehicles] if and when technology permits such systems.)

The most pressing EW need is being attacked through the development of more capable and versatile systems that can anticipate and negate future EW threats from the outset rather than rely on quick-reaction capability (QRC)

programs that, in the past, have had the usual shortcomings of makeshift remedies. These improvements, when available, will permit integration of all EW elements and comprehensive standardization of missionized modules that can be plugged in to meet the specific requirements of individual missions. As a result, both training for and management of EW functions will be facilitated greatly, in the view of TAC planners.

Complementing these evolutionary advances in USAF EW systems are several new EW systems whose combined capabilities will aid tactical airpower immensely in a high-threat environment. These include AWACS, the airborne warning and control system, TAC's new versatile electronic brain and eye in the sky; the F-4G Advanced Wild Weasel, capable of destroying sophisticated mobile air defense systems; the HARM antiradiation missile that can destroy threat radars while the launching aircraft stands off at a safe distance; the EF-111A that will furnish unprecedented jamming capability either by standing off or by penetrating; the Precision Location Strike System that could give tac air an all-weather strike capability; and a variety of RPVs being considered for chaff seeding, jamming, decoying, defense suppression, and harassment.

These support systems, if procured, can all contribute to the effectiveness of the strike forces that will determine the success or failure of USAF's tac air operations in Europe or anywhere else. It is in this context that General Dixon justifies his prediction of a “super bright future for our tactical airpower.” Pointing out that the planned record crop of four new tactical aircraft currently in full-scale development or initial procurement will give USAF's tactical airpower unrivaled qualitative fighting capability, he said:

“After exhaustive and very successful testing, the F-15 is entering the inventory now. We believe it is the best air-superiority fighter in the world. The A-10 development program is well under way, and it will give us a better capability for close air support than we have ever had. We have just selected the F-16 for full-scale development, with high hopes for improving our own inventory while bringing improved capability and standardization to our allies. Most important of all, the new AWACS is being procured to give us vision of the battle scene and make us

The second benefit expected from this new training technique is a melding of Air Force and Army procedures, doctrines, and concepts in line with the Air-Land Battle philosophy. “We are going to do the job together with a cohesive force structure. We will explore who does what best, who is lacking what capability, and how to fill the gaps or, conversely, who will give up what if there are duplications in function or equipment. We will do this across the spectrum of the Air-Land arena—in EW, defense suppression, close air support, battlefield interdiction, and coordination of A-10 and helicopter operations. We have agreed already with the Army Training and Doctrine Command (TRADOC) that TAC will be the airspace manager with the responsibility to furnish the jam-resistant radar surveillance and control systems.”

Although joint operations at Nellis at first will be confined to Army and Air Force active and Reserve Force units, General Dixon believes that US Navy and NATO forces will participate later on. “We want diverse units from diverse services. We want to be able to put two armies on the ground and have one attack Nellis AFB and, in case of flawed base defense, postulate destruction of half the aircraft or some other form of preemption and then say ‘now try it.’ Nellis has the size and instrumentation so that we can duplicate battlefield situations in Europe and elsewhere. We know we can put as many as 5,000 tanks, superimposed on the geography of various potential theaters of war, into Nellis. We can make these tanks out of styrofoam so we can afford to take them out with live ammunition without running up exorbitant costs.”

The job description that TAC and TRADOC have assigned themselves in creating a cohesive force structure is “quite simple: Working as a team we must be able to bother the enemy twenty-four hours a day whether he is standing still or moving. When I say bother him, I mean render him ineffective through destruction or suppression.

“We believe that we can take this concept one step further and apply it to R&D through mission analysis of specific functions. As a result, we will be able to demonstrate to the Congress and the taxpayer that we have looked at a problem coherently and come up with the systems needed to fill the gaps in the context of a cohesive force structure.”

By far the most valuable benefit to be derived from the joint development and test of tactical warfare equipment and techniques, General Dixon points out, “is to come up with trained, competent people who won't be lost during the first three days of a war.” To that objective—and deterring or, if necessary, winning any future war—the 82,000 active-duty and 58,000 Reserve professionals of the Tactical Air Command are totally committed.

better able to manage our resources— in peace, in avoidance of war, and, if need be, in combat.”

TAC's New Star Performers

The highly maneuverable F-15 Eagle features an airspeed greater than Mach 2 and a combat thrust-to-weight ratio of 1.4 to 1. It carries four AIM-7F medium-range missiles, four AIM-9 short-range missiles, and more than 900 rounds of 20-mm ammunition. TAC considers it *the* air-superiority fighter, expected to outperform potential threat aircraft into the 1980s. The F-15's EW suit includes new, sophisticated tactical electronic warning systems that help penetrate threats. They are all carried internally and include a radar warning receiver, a countermeasure set, and countermeasure dispenser and tail warning sets. The latter two are still in development but scheduled to become operational in the late 1970s.

Augmenting the F-15 in the air-superiority role, and the A-10 in the ground-support role, the F-16 lightweight Air Combat Fighter, a multi-mission aircraft, is slated to replace the F-4 in the coming years. The F-16's ability to function as a swing force in both roles, plus its lower price, have resulted in a programmed Air Force buy of 650. General Dixon considers the F-16 “an essential, versatile element” of tactical airpower. What makes the F-16 doubly attractive is its selection by four NATO countries as the replacement for their F-104s, an important forward step in equipment standardization and modernization of NATO forces.

In its air-to-air role, the F-16 can carry up to six AIM-9s and 515 rounds of 20-mm ammunition. With a combat thrust-to-weight ratio greater than 1.3 to 1, and its design emphasis on superior performance in the high subsonic and low supersonic regimes—manifest in a demonstrated Hi-G maneuvering capability—TAC considers the F-16 a worthy partner for the F-15 in the air-superiority mission.

Aiding the F-16's multimission capability is its fly-by-wire feature (electronic rather than hydraulic flight control activation) that permits more precise control for target tracking, higher supersonic and subsonic turn rates, and less concern over shifts of the center of

gravity. F-B-W also boosts survivability.

Another advanced feature is the F-16's all-digital stores management system that feeds information about weapons selection and delivery mode to the fire-control computer. This digital system will make it easy to add new weapon systems should that become necessary. The F-16 is equipped with an internal chaff or flare dispenser and an advanced radar warning receiver. It can carry an ECM pod, but an internal ECM system is under study.

The aircraft can carry more than 10,000 pounds of ordnance with an expected delivery accuracy of seven to ten mils. It is to be nuclear capable, equipped with a TV display for both Maverick and electro-optical (EO) bombs, and can accommodate the Paveway Laser Spot seeker. Thus, it will be able to deliver “smart” weapons. Another important feature of the F-16's radar system is the High Resolution Ground Map (HRGM), essential for radar bombing and navigation.

The third newcomer to tac air is the A-10, an optimized close air support weapon system. The programmed A-10 buy is 733, with the first production aircraft having been delivered to the Air Force by Fairchild Industries in November 1975. The aircraft's high payload—eight tons of general-purpose and specialized ordnance—its 30-mm gun, its optimization as a tank killer, its long loiter, rapid turnaround, good short-field capability, and high survivability make it the most effective close air support aircraft on the horizon, according to TAC.

Moreover, the A-10 can continue to provide support during limited visibility when high-speed jet aircraft begin to encounter problems in the close air support mission. The highly maneuverable A-10 can operate under weather conditions as low as 1,000-foot ceiling and one- to two-mile visibility.

High-speed jets, by contrast, have difficulty providing visual close air support below about 2,000-foot ceilings and three-mile visibility. Weather below these minimums prevails in Europe and Korea twenty-seven percent of the time.

As General Dixon points out, it is important for the Air Force “to acquire the proper mix of capabilities in our force. Because that proper mix varies

with our national purpose, our military role, and the threat, we are developing the F-16 to go right in the middle between the F-15, the superb air-superiority vehicle, and the A-10, which is just as superb in the close-support role. If there is a need in either role, the F-16 can help.”

AWACS Vital in NATO Scenario

The E-3A AWACS, General Dixon points out with conviction, will “enable us to get the most out of our other tactical airpower assets and really give us a fighting chance.” From TAC's point of view, AWACS's virtues are pervasive. A sophisticated command and control vehicle combining advanced radar and computer technologies, AWACS can be deployed and employed along with tactical task forces.

In a NATO war, AWACS is an essential extension of range-limited, ground-based radars that cannot compete with the E-3A's high resistance to ECM. Patrolling AWACS aircraft, searching beyond enemy borders for tell-tale mobilization activities, represent a major deterrence factor because, as General Dixon points out, “the element of surprise is denied the aggressor if any sizable force is involved.”

If hostilities do break out, AWACS will control both defensive and offensive missions. AWACS is an essential element of and extension to the ground-based Tactical Air Control System, but also can act autonomously when necessary. AWACS's utility will be increased further when the Joint Tactical Information Distribution System (JTIDS), an advanced digital data system that links all data collection points within a theater, becomes operational some time in the 1980s. The E-3A's vast computing and radar capabilities can be made available instantly and automatically to all users of the JTIDS net.

The synergism of these new combat and command and control systems as they become available, combined with such established high-performance systems as the F-111, will create what General Dixon terms “the most potent and efficient fighting capability of all time.” Training, exercising, and shaping this force to meet a range of changing threats during a period of reduced flight training is TAC's foremost challenge. ■

Needed: A New Family of EW Systems

BY EDGAR ULSAMER
SENIOR EDITOR

Electronic warfare capabilities decide the outcome of air combat to a constantly increasing degree. Under development or in a planning state are USAF weapon systems that can provide these vital capabilities even in the high threat environment foreseen for the 1980s.

THE present revolution in US tactical airpower is the product of many new and diverse weapon systems that share common traits: They are integrated to form a cohesive force through mutual support, and their effectiveness, to a large and increasing measure, depends on sophisticated electronic subsystems and components. The three new weapon systems rated by Gen. Robert J. Dixon, Commander of the Tactical Air Command, as tac air's top priorities in the defense-suppression area mirror these qualities. They are the F-4G, HARM, and EF-111A, which together offer a comprehensive, flexible mix of tactical options for jamming or killing threats to penetrating strike forces.

The F-4G (Advanced Wild Weasel) is a follow-on to the F-105 Wild Weasel of the Southeast Asian war and incorporates sophisticated electronic warfare capabilities. It is an F-4E modified to locate threat radars. The F-4G sorts out those hostile systems that pose the

most acute dangers to the attacking force and then "cues" (directs) anti-radiation missiles against these targets. The Advanced Wild Weasel's software is reprogrammable to cope with changing EW threats. The F-4G will employ a variety of versatile ordnance including Shrike (AGM-45), Standard ARM (AGM-78), and HARM (AGM-88). Other ordnance options include the CBU Rockeye area weapon (for suppression), and the Maverick electro-optical missile for attacks against visually identified targets from a standoff position. From TAC's point of view, the F-4G force (a buy of 116 aircraft is programmed) must be trained to operate in close coordination with such other defense suppression components as the EF-111A, TERC (Tactical Electronic Reconnaissance, which locates and "fingerprints" threat radars), and PLSS (Precision Location Strike Systems).

Closely linked to and extending the lethality of the F-4G is the High-Speed Anti-Radiation Missile (HARM), currently under joint development by the Navy and USAF. This missile weighs less than 800 pounds and will permit standoff attacks on air defense systems from outside the reach of all known SAMs. The missile is highly maneuverable, fast, locks on specific targets,

and provides real-time flexibility against various threat systems.

The EF-111A Tactical Jamming System

The Southeast Asian and Yom Kippur wars brought out the critical need to furnish strike and reconnaissance forces with broad protection against radar-augmented weapons. TAC concluded that this protection should be available for penetration, close air support, and standoff jamming missions. The F-111A airframe, already in USAF's active inventory, has the speed, endurance, range, and self-defense capabilities required for diverse jamming missions. It is being integrated with the ALQ-99 jamming subsystem now in production for the US Navy's EA-6B. The EF-111A will be a replacement for the EB-66 aircraft that provided jamming support during the Southeast Asian war. Currently in full-scale development by Grumman Aerospace Corp., the EF-111A will combine the updated ALQ-99—carried internally—with advanced digital avionics in a manner that promises effectiveness against a broad range of existing and projected EW threats.

The copilot's station in the EF-111A has been redesigned to incorporate controls and displays for the Electronic



The E-3A AWACS is expected to multiply the effectiveness of USAF's tactical forces.

Warfare Officer. While the EA-6B required an EW crew of three and the EB-66 four, the digital computer control concept of the EF-111A will permit one-man operation of the aircraft's electronic warfare systems. The EF-111A will use special power generators and cooling equipment to drive and protect its high-powered jamming transmitters. The aircraft will be equipped with a terminal threat warning system and a self-protection subsystem, both of which are being developed for other Air Force programs. In addition, the aircraft's unique terrain-following capa-

bility, an integral feature of all F-111s, provides effective protection, even in a high-threat environment, in the view of TAC planners.

ECM Update Programs

USAF's current, comprehensive electronic countermeasure update program is of pervasive importance to tactical airpower. The new generation ALQ-131 ECM system is considered to be an EW breakthrough that provides the versatility, modularity, and software computer control needed for the 1980s. Although initially carried in a pod, the

ALQ-131 can be adapted to an internal system because of its standardized modular design. Since modules can be selected freely, the system can be configured to cover the total range of threat radars; for a specific EW mission; or to augment the onboard ECM capability. With this system, tactical air commanders have the option to arrange the ECM equipment of their force to provide self-protection against terminal threats on a limited basis or with enough flexibility to handle new threats as they are encountered. Finally, by using additional modules, the system can be upgraded for full band operation to blank out all hostile radars.

The new ECM system is easier to maintain than the pods it will replace (such as the ALQ-119), its software can be programmed against various threats, and can be modified further by the addition of new modules and other technical features as the need arises. Other options include the addition of a ram air turbine generator if additional electrical power is needed, the ability to double up on specific threat bands, and the use of a receiver/processor (smart electronics) to furnish power management.

The ALQ-131 system will enter full production early this year and be deployed on F-111 and F-4 aircraft. Other ECM improvement programs are the ALQ-135 system of the F-15 (carried internally) that is fully automatic and reprogrammable, and the ALQ-137, an internal ECM repeater system that provides frequency extension as well as hemispherical coverage and power distribution for the F-111F.

Another facet of the F-111's EW improvements program involves the ALR-62 radar warning receiver, which will replace a system that is based on early 1960 technology. The ALR-62 will provide threat warning, identification, and azimuth information. In addition, the new system permits frequency extension, digital processing, software programming and alpha-numerics display to aid the crew in interpreting data. Installation of these new systems necessitates retraining TAC personnel in software maintenance to cope with the systems' inherently high and flexible capabilities.

Advances in Smart Weapons

Tac air's prime function is to find, attack, and destroy targets; hence the



Top: The Tactical Air Command is scheduled to operate two so-called "Aggressor Squadrons" by the end of next fiscal year. These units will operate F-5E aircraft camouflaged to simulate known threat color schemes. The performance of these Northrop aircraft permits accurate simulation of late-model MiG threat aircraft. Bottom: The instrumented air combat range at Nellis AFB, Nev., will be the site of the "Red Flag" exercises.

emphasis on target acquisition, tracking, and designation. Three advanced systems of this type are currently under development. The Pave Spike day tracking/laser designator system uses electro-optical techniques to designate targets for ordnance delivery through laser guidance. When integrated with the F-4's avionics, Pave Spike permits laser designated ordnance delivery by either the designating or other aircraft. The designator pod is carried in the aircraft's left forward missile well and displays a TV picture in the aircraft's front and rear video scopes. The weapon system operator acquires and then tracks a particular target using a modified radar hand control.

The programmed buy of Pave Spike systems is 156, with delivery scheduled to be completed by December 1976. The Pave Spike pod can be operated up to Mach 1.2 and six-G loading. The system uses common optics for both the television and laser compo-

nents, with a gimballed mirror providing precise sight alignment.

USAF's F-4Es as well as F-111Fs are being equipped with a day/night, all-weather capability to acquire, track, and designate ground targets, using an imaging infrared sensor system and a laser ranger designator system. The system permits the designating aircraft to deliver guided or unguided ordnance or it can designate targets for other aircraft carrying laser-guided weapons. Pave Tack also will serve as the primary acquisition sensor for laser and IR Maverick missiles and be compatible with all electro-optical weapons in the Air Force inventory.

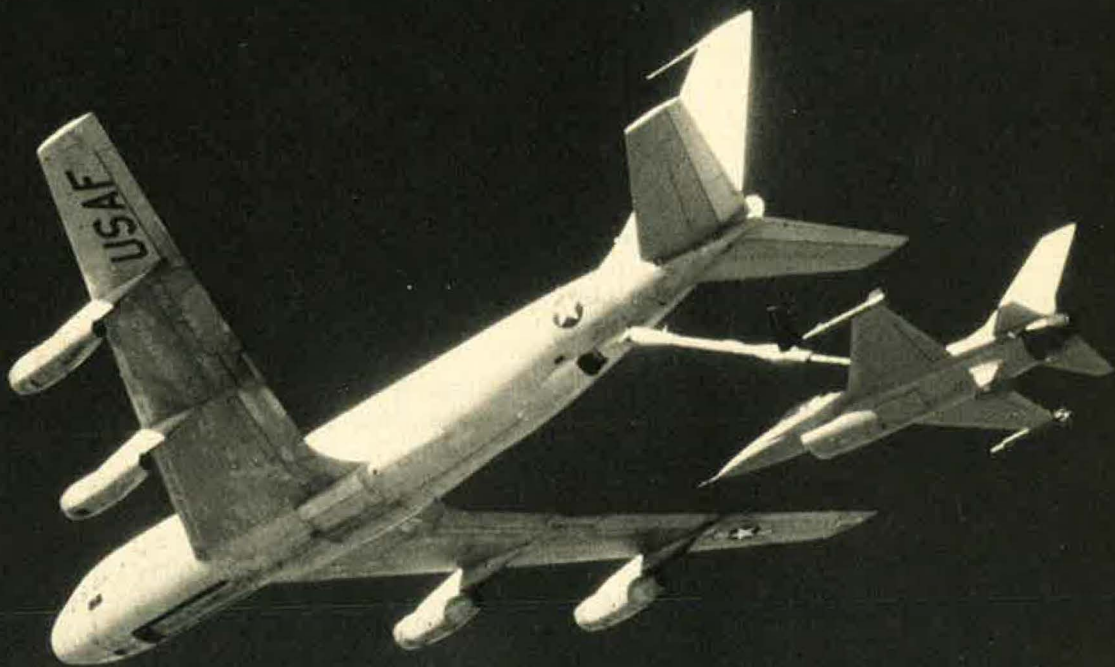
Consisting of a high-performance FLIR sensor, a laser-ranger designator, and associated optics and electronics, Pave Tack shows the operator a TV picture of what the sensor is aimed at. The Pave Tack pod is carried on the centerline station of the F-4E and in the weapons bay of the F-111F. In the

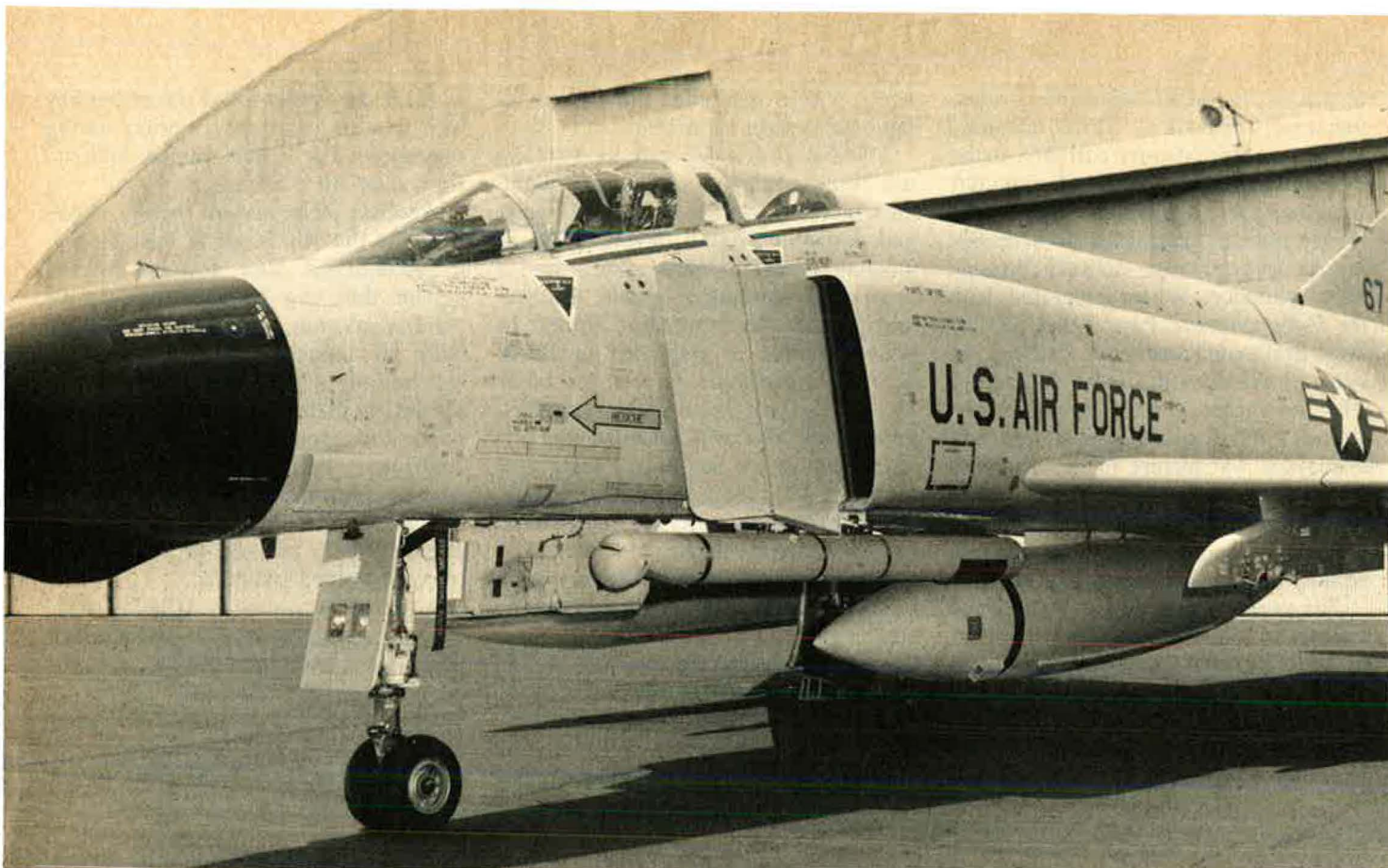
F-111F, the pod is rolled out of the bay into a semisubmerged position during operation. The system can be adapted for use on other aircraft.

Another new system being developed by the Air Force is Pave Penny, a miniaturized laser search-and-track system that can be used by various combat aircraft, including the A-10 close air support system. Pave Penny can be used day or night and will pick up targets illuminated by either an airborne or ground-based forward air controller. This designator gives the pilot a head-up display and can be integrated with the aircraft's weapons release system or used to "cue" other types of guided weapons.

A major advance in USAF's software management of EW systems can be expected from the pending establishment of an EW Software Center at Warner Robins Air Logistics Center at Robins AFB, Ga. The Center's specialized computer will be used to re-

TAC's "Red Flag" program centers on deployment of entire TAC units under carefully simulated, warlike conditions. These deployments involve support by SAC's tanker forces as well as airlift by MAC units for staff, equipment, and spares.





The Pave Spike electronic warfare system, scheduled for deployment on F-4E and F-111F aircraft, provides a day/night capability to acquire, track, and designate ground targets, using an imaging IR sensor and a laser ranger designator system.

program EW systems instantaneously in case of threat changes.

Precision Location Strike Systems

Tactical Air Command planners view the collection of Air Force programs coming under the heading of Precision Location Strike Systems as "revolutionary." PLSS will give theater commanders the capability to detect, identify, locate, and strike enemy radar sites associated with early warning, ground control intercept, and surface-to-air missile threats, according to Air Force Systems Command spokesmen. These systems use TOA/DME (time of arrival, distance measuring equipment) to create a precise electronic coordinate system within which guided weapons can be directed against targets located either by detection of electronic emissions or from other intelligence information.

Four programs make up PLSS. The Advanced Location Strike System (ALSS) is a prototype system that demonstrates the technical feasibility and potential capability of the DME concept. ALSS has been tested under operational conditions. PELSS, the Precision Emitter Location Strike Sys-

tem is a follow-on to the ALSS, currently in source selection. The Photogrammetric Targeting System (PTS) is in an early stage of development and feeds information about targets located through aerial photography into the DME coordinate structure for strike purposes. The Emitter Location System (ELS) is about to enter feasibility demonstration. Its purpose is to improve the capability to detect and precisely locate electronic emitters. The four components of PLSS are expected to achieve operational status in the early 1980s.

RPVs and Electronic Warfare

In FY '76, the Air Force allocated less than one percent of its R&D budget to the development of remotely piloted vehicles (RPVs). In FY '77, that percentage can be expected to double. For the remainder of this decade, USAF planners predict a slow, steady growth in RPV development.

Now and for the foreseeable future, RPVs will be used mainly in reconnaissance and electronic warfare missions. Earlier overblown hopes that RPVs are going to revolutionize warfare overnight have given way, accord-

ing to Air Force Under Secretary James W. Plummer, to the recognition that these systems "can be a valuable adjunct to our military capability, but developing their full potential will require a good deal of time." Operational combat experience with RPVs in the past involved successful but limited recce and SIGINT (signal intelligence) missions during the Southeast Asian war and for SAC operations elsewhere by recoverable systems. Expendable RPVs were used as EW decoys in support of tactical aircraft penetrating high-threat environments during the October 1973 Middle East war.

TAC's current and planned use of RPVs and drones extends from such EW missions as chaff dispensing and ECM to modular multimission RPVs that can be used flexibly in reconnaissance and EW roles, with a possible future strike role. When developed and available, these unmanned systems, especially when used in a high threat environment, will reduce the number of manned aircraft required for such missions.

Tactical Electronic Warfare Support (TEWS) RPVs fall into two general categories: expendable and recoverable

systems. Some expendable systems are currently under development with the objective of confusing and saturating the enemy's air defense system with a large number of EW decoys and homing on key sensors to harass or destroy them. The Air Force, Army, and Defense Advanced Research Projects Agency (DARPA) are working jointly

How TAC Works With USN

The Air Force's collateral functions in support of the US Navy are interdicting enemy seapower through air operations; conducting antisubmarine warfare and protecting shipping; and aerial minelaying operations. The Air Force recently published an "Aerospace Operational Doctrine for Sea Surveillance" that charges the commands to develop plans for sea surveillance operations within their intrinsic capabilities, according to Lt. Gen. John W. Pauly, Deputy Chief of Staff, Plans and Operations, Hq. USAF.

Tactical Air Command, therefore, is working closely with the US Navy in support of these missions, according to its Commander, Gen. Robert J. Dixon. During the past year, TAC staged five joint exercises with the Second Fleet and other Naval units in the Atlantic, involving F-111, RF-4, A-7, and F-4 aircraft. Purpose of these exercises is to develop special tactics, evaluate weapon systems, and train in sea surveillance, including ship recognition and identification.

Similar exercises are scheduled for this year off the West Coast, involving F-111 aircraft from the Tactical Fighter Weapons Center, units of the Twelfth Air Force, and elements of the Third Fleet.

TAC's effectiveness in support of Navy missions, General Dixon points out, is not yet fully matured: "These kinds of capabilities don't spring up full-blown overnight. We are proceeding apace in this area, and I am sure the pace will increase. I think also that we will have to be very careful so that armchair strategists don't develop the notion that what we are doing is a form of internecine warfare between the Navy and the Air Force."

on technology for expendable low-cost airframes, threat detectors, jammer packages, and warheads for such vehicles. One recoverable RPV system is currently in production, the AQM-34V that can be used for chaff dispensing and escort jamming.

TAC, along with other DoD and Air Force organizations, is exploring the potential utility of RPVs for a range of new missions, including delivery of electro-optically guided as well as area weapons. (The Air Force Systems Command demonstrated in 1971 that a TV-guided RPV can launch Maverick missiles against radar vans.) For the time being, RPVs are payload-limited, a quality that militates against their cost-effectiveness in the strike role.

In intelligence-gathering missions, RPVs appear capable of real-time reconnaissance using TV as well as sensor delivery and sensor relay.

In the area of general support, RPVs of the Compass Cope type (endurance in excess of twenty-four hours and altitude capabilities above 50,000 feet) show considerable promise as a platform for side-looking airborne radar

sea surveillance missions, nuclear sampling, and weather recce.

TAC is investigating a low-cost "mini-RPV," weighing no more than 100 pounds and priced at about \$10,000, to perform in EW, defense suppression, target designation, and surveillance missions. Another promising mini-RPV, under investigation by DARPA, involves a design that folds into a missile case and can be shot like a rocket from an aircraft. The operational range of such a system is several hundred miles. Equipped with a lightweight, low-cost radar or other sensors, such a vehicle can be used to detect a wide range of ground-based weapons.

RPV development programs of direct concern to TAC include the harassment drone that entered systems test in December 1975; the tactical expendable drone, scheduled for concept verification test early in 1976; the DC-130H preproduction prototype multiple drone control aircraft slated for testing in September 1976; and the BGM-34C prototype TEWS/Photo/Strike multimission RPV expected to enter flight testing in August of this year. ■



Top: The F-4G Wild Weasel electronic warfare system can be quickly modified in terms of computer software to meet changing threat situations. Bottom: Pave Penny, shown here on an A-7, is a new miniaturized laser search and track system that picks up FAC-designated targets.

An AFROTC cadet colonel twenty years ago, Thomas C. Reed, USAF's eleventh Secretary, has served his tour on active duty and recognizes people as our longest lead-time asset. Old friends are the best friends, and the Air Force has one in . . .

Thomas C. Reed, USAF's New Secretary

THOMAS C. Reed, new Secretary of the Air Force, has made it a habit to come out on top in USAF.

In 1956, he graduated first in his class in mechanical engineering at Cornell University. Possibly more important, from the standpoint of his subsequent career, he was the highest ranking officer, Cadet Colonel, of his Air Force ROTC unit at Ithaca and a distinguished military graduate.

A big man, energetic, with a background of success in science and business, as well as five years of active duty in USAF, Mr. Reed comes to the Head Shed from a post as Director of Telecommunications and Command and Control Systems in the office of the Secretary of Defense.

A couple of days before his confirmation was voted by the US Senate, the new Secretary had a quick answer when asked about priorities. He first made it clear he did not seek the job, but looked forward to it as a fresh challenge.

The No. 1 subject for attention from USAF's Secretary, he said, is people.

"Most of the money—over half the budget—goes

into recruiting, training, and paying personnel," Mr. Reed said. "It is the longest lead-time item of all USAF's assets. Few seem to realize we are recruiting Chief Master Sergeants to maintain complex equipment in the year 2005. It is vitally important that we do everything we can to improve their morale and their dedication, as well as their technical competence. The only way to control costs in this area is to

control the numbers and quality of the force."

He made a similar observation about the officer corps—he will recruit officers to run USAF thirty years from now—and he expressed distress over current efforts to curb fringe benefits. They are being shot at in the press and on Capitol Hill, he observed, and certainly will face stern examination. But, in his opinion, they cannot be brushed

away lightly without damaging morale.

Mr. Reed has interesting qualifications for dealing with personnel problems. He was cochairman of Ronald Reagan's gubernatorial campaigns in California in 1966 and 1970 and wound up in Sacramento as chief of personnel for the governor. He says he had a choice of jobs in that administration, and selected the one that would let him make sure the Reagan administration was staffed by the most competent people available in California.

Mr. Reed points to three other USAF interests that will get special attention:

- Technology, another field that involves long lead-time efforts. Regardless of what decisions are made, with congressional approval, on the procurement and deployment of weapon systems, the state of the art must be advanced. Mr. Reed, like the rest of USAF, is aware of the Soviet effort in research and development and apprehensive about it. The pursuit of weapon-system technologies, he said, cannot be relaxed, no matter what we decide to buy and put in the arsenal.

- The management of



The new Secretary of the Air Force (center) and Mrs. Reed greet well-wishers after the swearing-in ceremony.

BY CLAUDE WITZE
SENIOR EDITOR

USAF procurement. Mr. Reed said he is going to take a new and close look at the relationship of the Air Force to industry and contractors. "We must make sure," he said, "that all relationships are prudent and proper." Even while still sitting in his old telecommunications office, he said he already was trying to enlist a new Assistant Secretary for Financial Management, a desk that has been vacant since the recent retirement of William W. Woodruff. The new Assistant Secretary, Mr. Reed said, will have direct responsibility to monitor relationships with industry and enforce regulations. He was seeking a man, he declared, "who will be capable and energetic on costs and audit control."

• "A new Secretary," Mr. Reed said, "should take a fresh look at the whole operation of USAF. This does not mean that massive changes are coming, but the long-term outlook must be examined again." In this connection, it was clear from his remarks that he will lean heavily on his Under Secretary, James W. Plummer. He pointed out at least twice in an interview that he had helped enroll Mr. Plummer

for his Pentagon job, and has high confidence in his abilities. The civilian team heading USAF, in other words, has started in step.

Among the subjects on which Mr. Reed can offer real expertise is communications. This gets down to the level of saying what he means in plain language. There is no gobbledegook.

"The defense budget is not being increased," he says. "It is being inflated."

Here's another: "The advent of telecommunications, computers, satellites, data relays, etc., means that both sides can count. There are no secrets. The [enemy] armor around Saigon never fired a shot. It didn't have to. Everybody knew what the result would be. The danger to the free world is now a crumbling of the will, an inability to cope with exploding challenges."

He had an observation about Congress:

"In the professional community, some may be unimpressed by the technical qualifications of those in the Congress who must pass on our programs. But there's another side to that question: Senior members of Congress have seen it all before.

"While some of us come and go at the pleasure of the incumbent President, the senior members of the authorizing and appropriating committees have seen wars, revolutions, and a host of technical marvels and disasters unfold before them. They have watched this passing parade from their seats on the committees. When their turn comes to be chairman, they have already seen many a crisis through, from beginning to end. They know the price of every pit-fall.

"It is all well and good if those chairmen, those committees, decide, in all their wisdom, to cut military expenditures. If they decide, consciously and accountably to their constituents, that a second-class strategic posture is acceptable for the US, then so be it."

Main focus of the Reed interest in communications goes beyond communicating with people, which he does well. Command and control, he argues, is becoming a more critical component of our military skills each year. In war, he said in the interview, "superiority will go to the nation with the best connectivity."

He was reminded that

Walter Dornberger once said, "If I were a Russian going to war, first I would make you blind."

Mr. Reed agreed heartily with the German scientist. And, he pointed out, the proliferation of nuclear capability, even to third-power nations, makes communication—and military command and control—more vital than ever. "If one of them goes off," he queries, "whose was it, what does it mean, and what should we do?" The war in the Middle East has already proved how fast things can move, and further demonstrations may lie not far ahead. Command and control assets and capabilities are among the targets that pay highest dividends to an aggressor.

Mr. Reed put it in more formal words in a recent address in California:

"Arms reduction is a door through which we must pass if we are to remain free of the burdens of a garrison state. But success at the SALT talks will bring new challenges. With a fixed, or hopefully shrinking number of weapons, security goes to those who can remain fully in control of those limited weapons, including those held in reserve, throughout

the full spectrum of crises.

"Nuclear proliferation poses a different challenge. Nuclear weapons held by numerous nations with uncertain allegiances are bound to be destabilizing. As the number of such nations increases, the potential for trouble goes up exponentially. We will have to keep very accurate tabs on all the forces of a great many powers. In the event of a nuclear detonation, especially a small or 'accidental' attack on the US or the Soviet Union, we will need very rapid information and reliable communications with the Soviets to contain such a crisis."

Mr. Reed sees a parallel between politics and war. "A good try doesn't win," he said. "It has to be better than that. Forty-eight percent is not enough. And in a campaign, as in a war, near the end the spending runs high. You can't skip through the contest without a proper force structure, weapons, and men."

This is one of the reasons why the new USAF civilian chief, an ROTC product himself, is a firm believer in the Total Force Concept and maximum utilization of the Reserves and Air Na-

tional Guard. In his previous job, Mr. Reed says, he was present at the 1974 meeting where it was decided to give the Air Reserve Forces (USAFR and ANG) a strategic offensive role with the KC-135 tanker. He voted for it.

In his days on active duty with USAF and, later, in business, Mr. Reed made many friendships that helped give him insights into the Pentagon. Fresh out of Cornell, he joined USAF in 1956, and his new commission qualified him for a job as technical project officer on the Minuteman reentry vehicle system with the USAF Ballistic Missile Division. He stayed three years on this assignment, during which he went to classes at the University of Southern California and earned his Master of Science degree in Electrical Engineering.

That was 1959, and he was reassigned to the Lawrence Radiation Laboratory of the University of California. After a couple of years there on active duty, he was discharged in 1961, as a lieutenant, but stayed another year at the laboratory in Livermore as a civilian employee. He worked on thermonuclear weapons, con-

tinuing as a consultant on these projects until 1967.

It was in 1962 that he organized Supercon Ltd., of Houston, Tex., and served as its managing partner. The firm developed and produced alloys for superconducting at cryogenic (very cold) temperatures.

Without giving up his interest in Supercon, Mr. Reed in 1965 organized the Quaker Hill Development Corp., in San Rafael, Calif., and served as treasurer, president, and chairman. The firm has agricultural, recreational, and construction interests in California and Colorado.

It was at the Lawrence Lab that he came to know John S. Foster, Jr., who was Director of Defense Research and Engineering from 1965 to 1973. Also at Lawrence was Dr. Harold Brown, Mr. Foster's predecessor as DDR&E and himself Secretary of the Air Force from 1965 to 1969. Another professional connection of those years was with Dr. Robert C. Seamans, Jr., who was USAF Secretary from 1969 to 1973. Dr. Seamans had been an expert on guidance equipment at MIT and later Chief Engineer of the Missile Elec-

tronics and Controls Division of RCA, a field in which Mr. Reed was becoming expert.

In addition to all this, Mr. Reed disclosed, one of his major financial partners in Supercon Ltd., in Houston, was Dudley C. Sharp. Mr. Sharp was Secretary of the Air Force from 1959 to 1961, after serving as both an Assistant Secretary and Under Secretary.

Mr. Reed's political connections include a period, from 1968 to 1972, when he served as a Republican Committeeman from California. This preceded his first job in the Defense Department as an assistant to the Secretary, starting in late 1973. He was moved to the telecommunications post in February 1974.

Mr. Reed's family lived in Greenwich, Conn., when he was born in a New York hospital on March 1, 1934. Harold Brown, who took the USAF post at thirty-eight, is the only man who became Secretary at an earlier age.

Mr. Reed calls Ross, Calif., his legal residence, but lives now in Alexandria, Va., with his wife, two sons, and a daughter. Mrs. Reed is the former Leslie Jean Papenfus. ■

The US role in NATO is changing from predominance to partnership to the point where this country needs NATO as much as NATO needs the US. This is the reason behind . . .

Fundamental Changes In NATO's Standardization Policy

By Gen. T. R. Milton, USAF (Ret.)

THIS past December, NATO held, in Brussels, its semiannual high-level meetings. The proceedings were carried out, as always, with some pomp, a little ceremony, and, at the end, communiqués.

Despite the fact that communiqués are the visible product of any international conference, reading these documents is practiced mainly by obscure diplomatic theologians. There is a school of thought, in fact, that believes it a waste of time to produce a new communiqué for each meeting.

Thus, it was easy to miss the fact that there is evidently a new seriousness of purpose in NATO on the subject of standardization. This is a very old subject and one that has been a favorite topic of NATO discussion for years. The difference is that there now is a serious note to the discussions. It is welcome news to those of us who believe that NATO is, more than ever before, an essential factor in the preservation of a non-Soviet Europe and to those of us who also believe that NATO badly needs a shot in the arm.

One of the great shortcomings of the Alliance from the start has been its wholly democratic, which is to say, unregimented, nature. In creating the post of Supreme Allied Commander, Europe (SACEUR), the NATO nations agreed to the need for an integrated military structure. They assigned SACEUR forces, with a few strings on them, and gave him a voice in determining the military needs of the Alliance. In theory, this should have been the key to standardization, but, unhappily, it has not been. After twenty-six years, NATO is still a collection of national forces equipped, organized, and supplied according to the dictates and notions of individual, and ever-changing, governments.

In times gone by, this mixed-bag approach did not really matter. The very fact of US nuclear superiority was the real deterrent to Soviet power plays in Europe, and SACEUR was the US agent on the scene. The rest of the NATO array, while not exactly window dressing, was more to give substance to the fact of an alliance than it was to deter the Soviets. The times, however, have worked some subtle changes in this game of "How to Win in Europe Without Actually Fighting." There is détente, and SALT, to name two things that have taken some of the edge off our nuclear threat. There is also the fact of Russia's own nuclear threat. To oversimplify, things are more complicated than they used to be.

As things get more complicated in calculating the European balance, the importance of conventional forces becomes more evident. If, for instance, the Soviets decide one day that a simple straightforward thrust into Western Europe, on some pretext or another, is unlikely to bring on massive US retaliation, the temptation is there. It then becomes essential to have in place, and clearly ready to offer great resistance, NATO conventional forces. These forces, moreover, should be able to fight as integrated forces, which is, after all, the idea behind Allied Command, Europe. The present NATO forces may be integrated in spirit, but there is little ability to service one another's airplanes, or tanks, or, for that matter, do basic logistic cross-servicing.

The decision on the part of Norway, Belgium, the Netherlands, and Denmark to buy the General Dynamics F-16 was a great step toward standardizing the air forces in the 1980s. It was, however, a step taken in the expectation that we would take one of our own. Over the years, and

beginning with the post-WW II aid programs, it has appeared to Europeans that standardization meant to the US "Buy American." The record of the past decade bears out that European belief, with US arms sales outweighing US purchases more than ten to one.

In former times, when the US held most of the strategic cards, this was probably an acceptable ratio. It was, in a way, how the allies paid their dues. However, that was in former times, now gone by. In these times, we may need our allies as much as they need us. If that is so, then we are going to have to meet them part way on this matter of standardization or, to use a NATO word, rationalization, which means, roughly, the art of the possible.

If, in short, the Europeans buy the F-16, then what do we buy? The Germans make an excellent tank in the Leopard. A senior US Army commander once remarked to me that he would be happy to be equipped with Leopards. In Liège, that ancient Belgian city of armorers, Fabrique National makes a wide variety of firearms. The British are still eminently capable in the whole field of armament production. And then there are the French.

The victory of the General Dynamics F-16 over its opponent in the fighter sweepstakes finals, the Dassault F-1, was a traumatic one for France. It may also have marked a great turning point in the Alliance, for the very isolation of France from the military structure of NATO was a factor in choosing the F-16. Since that decision of the NATO consortium, the French have taken two significant steps: They have abandoned production of the F-1, and they have evidenced interest in joining with their NATO colleagues on European arms standardization.

It is, assuredly, only a step that the French are taking back toward full membership in NATO, but it *is* a step. When we consider how far away they were a few years ago, it seems a very big step indeed. If they will take an active part in standardizing the weapons of NATO, even if their motives are based on a desire for a share of the market, the French will have done a great service to the Alliance.

Equally, if we can overcome our own antipathy to foreign buying, and Congress and the labor unions can see the big, not the local, picture, we might see NATO amounting to something just when we need it most. ■

The National Aeronautics and Space Administration, the Air Force, and other elements of the Defense Department are cooperating closely and productively on a number of programs to advance aeronautical technology. In this article, a senior NASA executive and former USAF R&D manager talks about the wide range of efforts his agency pursues to maintain US preeminence in military and commercial aircraft design . . .

NASA's Goal: Keeping the US Number One in Aeronautics

BY DR. ALAN M. LOVELACE
ASSOCIATE ADMINISTRATOR OF NASA
FOR AERONAUTICS AND SPACE TECHNOLOGY

AERONAUTICS has repeatedly demonstrated its vital role in national defense through several major wars and in the maintenance of peace. Air transportation has emerged as the dominant mode of US public travel. Today, seventy-eight percent of the free world's civil transports are built in this country, contributing billions of dollars to our export trade.

For the doubting Thomas, these facts provide indisputable evidence that US government and private industry investments in aeronautical research and technology yield major dividends in the years that follow.

The US position of strength in world aviation was not achieved overnight nor without hard-nosed budget decisions and keen foresight in determining aeronautical research and technology priorities.

Today, economic factors, environmental considerations, market characteristics, growing international competition, and other pressures are forcing a new assessment of the probable and possible directions of civil and military aeronautical developments through the year 2000 and of the technologies required to support these projections.

Though the US presently dominates the world aircraft market, the challenge to this dominance is real and growing. The market is highly competitive and critically dependent on superior technology. Small margins of technical advantage in both civil and military systems can mean the difference between winning and losing sales worth billions of dollars. In the face of the financial support given to foreign competitors by their governments—which may exert nationalistic pressures on purchasers under their influence—the technology margins must be pronounced in favor of US products if they are to continue competing successfully.

Also, current economic conditions; the cost of design, development, and operations; and the outlook for profitability are adversely affecting the US aviation industry's ability to maintain its dominant position. Future US aeronautical systems must incorporate the products of advanced, high-cost technical developments to be acceptable and competitive in the world marketplace.

Accordingly, the National Aeronautics and Space Administration (NASA) is addressing high-risk technology development of potential near-term applicability, as it relates to fuel conservation, safety, and noise and emission reduction. NASA is also supporting the development of long-range technology that will provide major gains in performance, productivity, and commercial service. Thus, when the point of designing new military or commercial aircraft is reached, a major step forward can be made at lower technical and financial risk.

Advancing technology is an area in which NASA should be the principal government agency. NASA must help assure that, despite near-term pressures on the government and industry, the country does not abridge its future by technological default. Aeronautical research and technology development will continue to be of vital importance to the US as a factor in better transportation, greater military preparedness, and sustained world leadership.

Looking at the Future

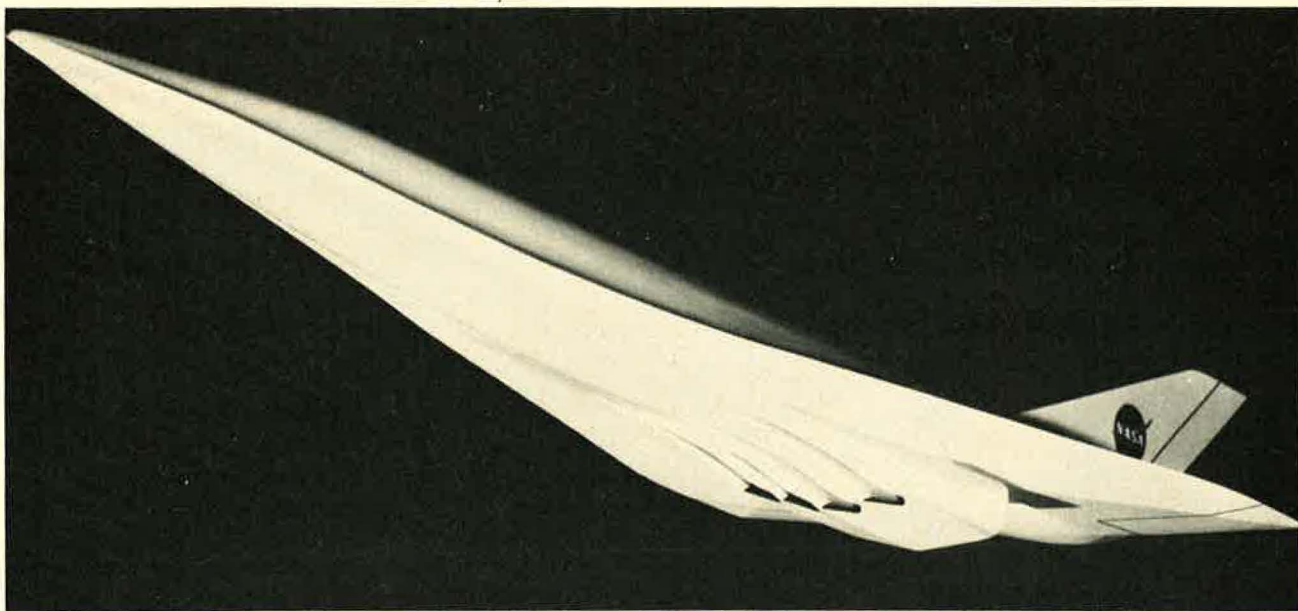
In civil air transportation, an average annual growth rate of five percent is anticipated. This is somewhat lower than the growth rates experienced in the boom years of the 1960s. On the other hand, more rapid growth is projected in the specialized short-haul, general aviation/busi-

ness aircraft, long-haul cargo, and utility aircraft/rotorcraft areas. Most of these higher growth areas will require aircraft based on special-purpose advanced technology.

Over the next ten years, development in both civil and military systems largely will be in the form of derivatives or improvements of current aeronautical equipment. In the mid-1980s and

genances will be more apparent in the supersonic developments and highly specialized combat systems.

There are a number of technically feasible developments that are less likely to be introduced in this period. They include hydrogen-fueled and nuclear-powered aircraft, hypersonic vehicles, VTOL transports, and ultra-large cargo



The US space agency is evaluating a number of design concepts like the one shown here. The objective: to develop a hypersonic commercial transport for the 1985-2000 period that will be both economical and environmentally acceptable.

beyond, however, advanced systems will be required to meet the needs of air transportation, defense, and international competition.

The major new civil aircraft developments foreseen for the 1985-2000 period include efficient short-range and medium-range subsonic transports, possibly including later V/STOL versions; highly energy-efficient subsonic passenger and cargo long-haul transports; and an economical, environmentally acceptable supersonic transport.

Anticipated new military developments are conventional and unconventional systems compatible with a potential international environment in which considerably less dependence is placed on overseas and en route bases. These systems include very-long-range reconnaissance, patrol, and logistic support aircraft; multimission rotorcraft and V/STOL aircraft both for forward-area land applications and for small-ship and other naval air operations; and improved tactical systems emphasizing optimum combinations of advanced aircraft, new weapons, maneuvering missiles, and remotely piloted vehicles.

Both civil and military systems are expected to require similar new technology developments for subsonic flight vehicles. Technology diver-

aircraft. Depending on the outcome of current feasibility studies for specialized military and civil applications, lighter-than-air vehicles could conceivably be added to this category.

Today's Decision

Where should the US industry concentrate its research and technology effort to support aviation needs of the future? Today, a large part of NASA's aeronautics program relates to that question.

NASA's program should do three things:

- Provide improved understanding and confidence in the major technical disciplines;
- Generate and, where necessary, demonstrate the technology required to alleviate current aeronautical problems and to support development of the important anticipated next-generation systems; and
- Establish the research foundations for more advanced systems for the longer-range future.

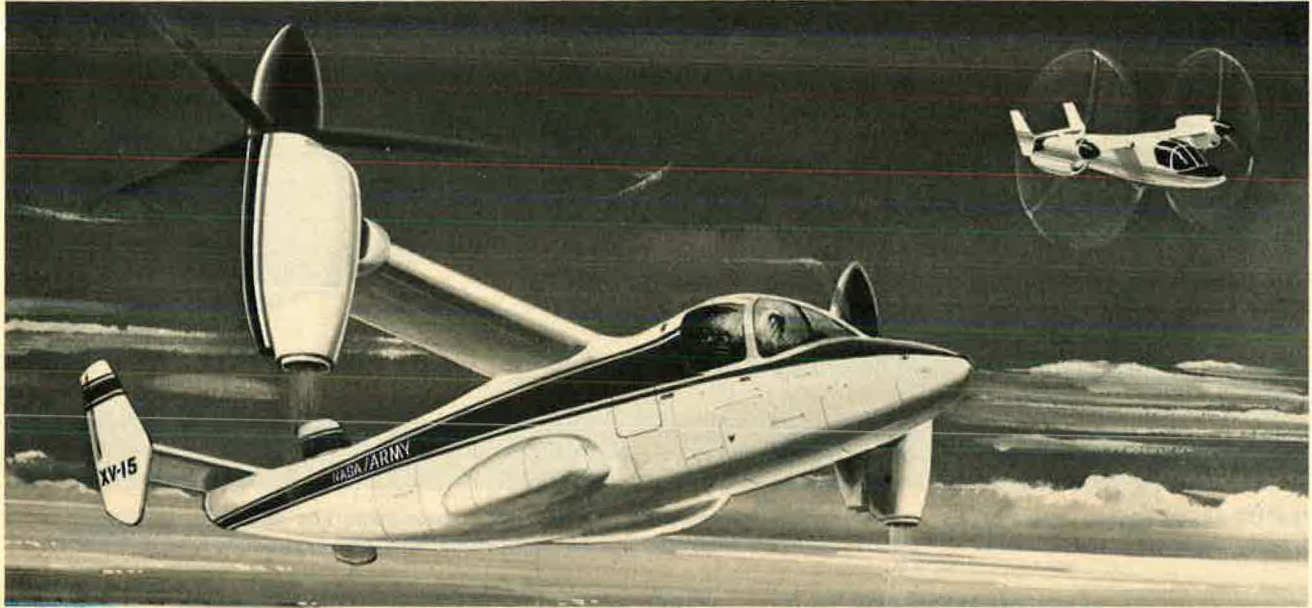
As an example, NASA has joined USAF in a program called the Highly Maneuverable Aircraft Technology (HiMAT) program, which incorporates advanced technologies from various

disciplines into two subscale, remotely piloted research vehicles to develop high maneuverability for future manned aircraft. The remotely piloted research vehicle technique provides a cost-effective means of flight testing advanced, high-risk technology without endangering test pilots. The two vehicles are to be delivered to the NASA Flight Research Center in late 1977.

NASA decided about two years ago to intensify its airfoil research programs directed at providing greatly improved airfoil design methods and a stronger foundation of basic airfoil

turbine engine design and prediction techniques; fan and compressor flutter; identifying and understanding noise sources; noise propagation, suppression, and acceptance criteria; and reducing undesirable engine emissions.

NASA's most serious concern over emissions is reflected in its development of technology for practical combustor systems that can operate efficiently in all flight regimes and still meet acceptable criteria for oxides of nitrogen emissions. Among these criteria are the very stringent stratospheric cruise standards recommended in



Tilt-rotor aircraft, shown here in artist's concept, are among the promising designs currently under study. Aeronautical visionaries forecast a number of roles for planes that combine helicopter and standard-aircraft characteristics.

data. NASA has emphasized improved supercritical airfoils for greater efficiency and maneuverability under various flight conditions, low-speed airfoils with improved lift-to-drag (L/D) ratios, airfoils tailored specifically for helicopter rotors, and very thick airfoils for potential future large cargo vehicles.

One primary research objective is to develop and validate computational design methods that can be used with confidence to analyze complex external and internal flow phenomena, aeroelastic structural behavior, and the interactions among aerodynamic, structural, and control dynamics. The ability to integrate and optimize these interactions early in the design process should result in a better design, fewer subsequent modifications, and considerable reduction in development cost.

NASA is continuing a broad program of propulsion research, on both components and advanced full-scale engines. Emphasis is on

the Department of Transportation Climatic Impact Assessment Program and by the National Academy of Sciences.

The propulsion programs also include research on the use of composites in turbine engine fan blades. Significant progress has been made in achieving blade resistance to foreign object damage. It soon may be possible to realize the benefits of composites in reduced engine weight, cost, and fuel consumption.

NASA's aviation safety research involves intensified activity in aircraft fire technology, the wake vortex effects of aircraft in flight, and human factors. New materials are being sought that have low flammability and produce a minimum of smoke and toxic products. The program also includes analytical and empirical studies of fire dynamics and fire environment, and investigating the basic chemistry of the behavior, viscosity, and misting of spilled fuel.

The vortex created by heavy aircraft has been reduced by altering span load distribution; for example, by differential deflection of wing flap segments, and by outboard spoiler deflection. In

Dr. Alan M. Lovelace has been NASA's Associate Administrator for Aeronautics and Space Technology since September 1974. His earlier association with the Air Force goes back to 1954, when he joined the staff of Air Force Systems Command's Materials Lab. He rose through a series of assignments to Director of the Materials Lab and, in 1972, became AFSC's Director of Science and Technology. Dr. Lovelace has published many technical papers and is the recipient of seven major awards, including the Air Force Decoration for Exceptional Service and the Air Force Association/AFSC Meritorious Award for Program Management.

one series of flight tests, the safe trailing distance of a jet trainer following a heavy transport was reduced to about three miles, compared with an initial seven to nine miles before alteration. This is encouraging, but a lot of analytical, laboratory, and flight work remains to be done before we understand fully the complex interactions in aircraft descent and flight near the ground, and to establish criteria for practical design solutions to the vortex hazard.

Another area of safety research is concerned with reducing the likelihood of human error. This program includes simulation studies of crew-duty allocation and procedures during reduced visibility approaches. Through an agreement with the Federal Aviation Administration, NASA will collect and analyze safety reports submitted by pilots, controllers, and others using the National Air Transportation System. The results of the NASA analyses will be distributed throughout the aviation community as an aid to safety, understanding, and education.

These examples illustrate the kinds of research NASA believes essential in each of the major aeronautical disciplines.

Next-Generation Aircraft

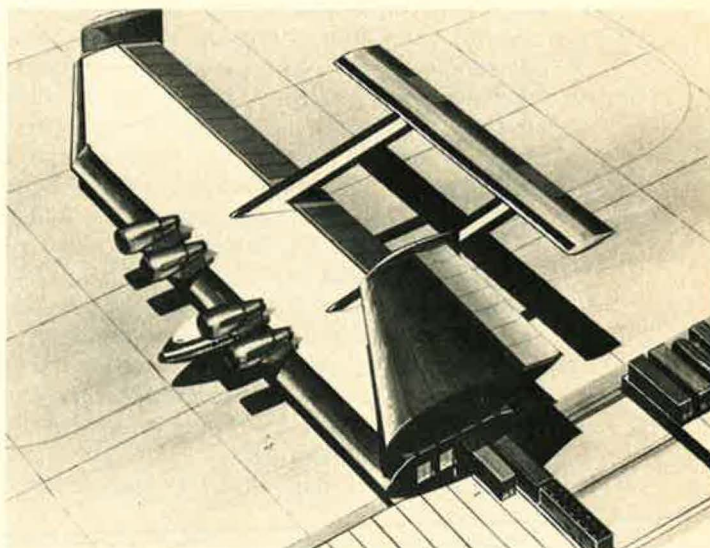
The major pressure for improved technology in the next-generation subsonic transports will almost certainly be the concern for energy efficiency. We have, of course, been working on this problem since long before the cost and availability of fuel became primary considerations. After all, drag reduction, high L/D ratios, low specific fuel consumption, high strength-to-weight ratios, efficient controls, and so on have been passions in aeronautics research for many years. The difference now is one of degree, but it is substantial enough so that NASA has recently completed a study to define opportunities and recommend programs to accelerate the readiness of advanced fuel-conservation tech-

nology for new transport aircraft. Although energy efficiency is the primary objective, these advances must be pursued without compromising environmental quality or safety.

Six programs were recommended by the study—three in propulsion, two in aerodynamics, and one in structures.

Very briefly, the three propulsion programs include engine component improvement for new production of current engines or near-term new engine design; a more ambitious fuel-conservation effort involving new cycles for next-generation engines; and a serious look at modernized turboprops. Of the three, modernized turboprops offer the best potential for fuel savings, *if they can be made reasonably competitive with turbofans in speed, altitude, vibration, and overall passenger appeal.*

The two aerodynamic programs are a combination of supercritical aerodynamics and active control technology to improve fuel conservation, and a renewed effort to achieve practical laminar-flow control. Again, laminar-flow



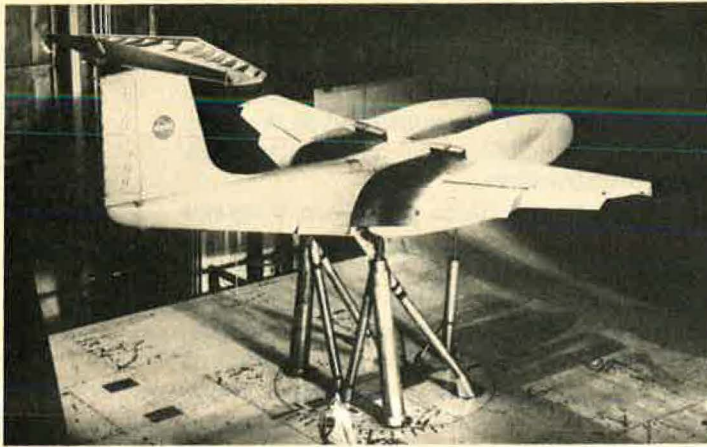
Artist's concept of a large cargo aircraft that carries freight and fuel in its wing, with hoped-for savings in operating costs.

control offers promise of very great savings, but the risk is high and NASA is talking of perhaps 1990 as the introduction date.

The final recommendation was to extend the design, construction, and flight experience on composite primary structures so they can be used with confidence in tail, wing, and fuselage manufacture.

STOL and VTOL

The advantages of STOL and VTOL capability for reduced airspace and airport requirements, improved terminal operation efficiency,



Under wind-tunnel test, an upper-surface blown flap propulsive-lift research aircraft—a unique design that combines several advanced technologies.

military applications, and special utility or “boondock” missions will be increasingly important in the years ahead. They have figured prominently in NASA’s research and will continue to be emphasized.

In the near-term, priority in VTOL technology should be given to rotocraft—conventional helicopters, advanced helicopters, and tilt-rotor aircraft. Technology needs include rotor materials, transmissions and gear boxes, control systems, noise and vibration reduction, and the whole gamut of technologies that increase range and speed. The NASA/Army rotor systems research aircraft and tilt-rotor research aircraft programs are intended to provide the capability for flight research and proof-of-concept phases.

Further downstream, but still of considerable interest, are the higher-performance VTOL concepts such as the lift-cruise fan on which NASA has been working with the US Navy. The Navy interest is in small-ship operations and fleet support.

While it is too early to define specific civil transport applications, they are expected to come into focus as the technology and the military programs evolve.

As for STOL, NASA has been concentrating for some years on powered-lift technology for short-haul transports. Most of NASA’s recent powered-lift flight research and STOL operating experiments have been conducted on the NASA/Canadian C-8 Augmentor Wing Research Aircraft.

NASA is working closely with the Air Force in the flight test programs of their AMST powered-lift STOL prototypes. NASA is also less than a year away from starting ground tests on the Quiet Clean Short-Haul Experimental Engine and in the final contractor selection for the Quiet Short-Haul Research Aircraft. Our objective is to provide a solid technology base for civil and military powered-lift transport design.

As for the future of supersonic transportation and NASA’s Supersonic Cruise Aircraft Research Program, let me state my own position briefly. There are people who don’t seem to realize that the British-French Concorde SST really exists. Concorde is real, and the people who have brought it along this far deserve a lot of credit. They have worked hard to overcome supersonic drag in all its forms—aerodynamic, social, and political—and, as we know all too well, that can be a rough job.

Whether the Concorde marks the dawn of a new supersonic age is not known as yet. My own feeling is that supersonic flight eventually will become a significant factor, at least in transoceanic air transportation, that the Concorde, like any pioneer, will one day be replaced by more advanced systems, and that supersonic research toward reduced noise, emissions, drag, weight, and fuel consumption must continue so that rational decisions on further development can be made.

Longer Range Visions

Some possible next-generation transports that require technology preparation now include several that may not materialize until the 1990s. Should they form the outer limits of our research on future transports? No, they should not. Resource constraints will force more emphasis on the near-term, high-probability prospects. However, NASA and the entire aeronautical research community must continue to generate new and more ambitious options beyond the present planning horizons. NASA programs will continue to include research on hypersonic cruise flight, hydrogen-fueled aircraft, ultra-large cargo aircraft, and several equally far-out possibilities.

The problem is to decide how to pace these long-lead efforts—how many people and dollars to devote to them now, how far to go beyond the conceptual stage, when to make the decision to shift gears from studies to development, and how to maintain enough momentum during a long, thin stretchout so that the low-level effort is meaningful and not just a token.

As it has been in the past, hard-nosed budget decisions mixed with a lot of foresight are needed to keep this nation preeminent in world aviation. ■

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Engineering model of McDonnell Douglas AV-8B Advanced Harrier

MCDONNELL DOUGLAS
MCDONNELL AIRCRAFT COMPANY
(A Division of McDonnell Douglas Corporation); Headquarters: Box 516, St. Louis, Missouri 63166, USA

AV-8B ADVANCED HARRIER

In late 1973 and early 1974 the British and US governments received for approval various proposals for an advanced version of the Hawker Siddeley Harrier (see UK section of the 1975-76 *Jane's*). Subsequent to this came the announcement, on 15 May 1975, of a British order for 25 maritime Harriers for the Royal Navy (see *October 1975 "Supplement"*).

Two months before the announcement of this order, the British Secretary of State for Defence, Mr Roy Mason, had stated that there was "not enough common ground on

the Advanced Harrier for us to join in the programme with the US", and development studies for a US version have therefore been continued primarily by McDonnell Douglas to meet requirements of the US Navy and Marine Corps. These have broadly been concerned with two alternatives: the so-called "AV-16A" based on the Rolls-Royce Pegasus 15 engine, and the lower-cost "AV-8B" (or "AV-8+") utilising an existing or future growth version of the present Pegasus 11 power plant. A full-scale mockup of the latter version has been completed, and initial funding for contract definition has been requested (\$4.3 million for FY 1976 and \$2 million for the FY 1977 transition period). Development plans for the AV-8B were approved by the Chief of US Naval Operations on 30 September 1975, and at the time of writing (late November 1975) were awaiting

submission to the Defense Systems Acquisition Review Council. The description which follows relates to the AV-8B as envisaged at that time.

Essentially, the objective of the Advanced Harrier programme is to evolve a version which, without too much of a departure from the existing Harrier airframe, would virtually double the aircraft's weapons payload/combat radius. The USMC has stated a requirement for 336 Advanced Harriers, and McDonnell Douglas plans to modify two existing AV-8As as prototypes for the AV-8B. These are to fly in late 1978 and early 1979, with USN preliminary evaluation beginning in mid-1979. Two production-standard aircraft would then be built, to fly in early 1981, with Navy BIS (Bureau of Inspection and Survey) trials following in Spring/Summer 1982. By this time deliveries

would have begun (in late 1981) of an initial batch of 10 production aircraft. The first of the main production batch would follow in Autumn 1982, the AV-8B becoming operational by the beginning of 1983. McDonnell Douglas would be prime contractor for the airframe, with Hawker Siddeley as subcontractor; prime engine contractor would be either Pratt & Whitney or Rolls-Royce, with the other as subcontractor.

The major changes proposed in the AV-8B are the adoption of a supercritical-section wing; modification of the air intakes; augmentation of lifting surfaces; strengthening of the main landing gear; improvement in weapon carrying and delivery capability; and various equipment changes, including the addition of passive electronic countermeasures (ECM). All known details of the changes follow:

WINGS: Cantilever shoulder-wing monoplane, of broadly similar planform to Harrier/AV-8A but of supercritical section, approx 20% greater in span and 14% greater in area. 10° less sweepback on leading-edges, and non-swept inboard trailing-edges. Composite construction, of aluminium alloy and titanium and making extensive use of graphite epoxy in the main multi-spar torsion box, ribs, skins, outrigger fairings, and wingtips. Trailing-edge flaps, of substantially greater chord than those of AV-8A, and drooping ailerons, are also of graphite epoxy construction.

FUSELAGE: Generally similar to AV-8A, but with additional lift-augmenting surfaces. These comprise a fixed strake on each of the two underfuselage gun packs, and a retractable forward flap just aft of the nosewheel unit. During VTOL modes the "box" formed by the ventral strakes and the lowered nose flap would serve to augment lift by trapping the cushion of air bounced off the ground by the engine exhaust. This additional lift would allow the AV-8B to take off vertically at a gross weight equal to its maximum hovering gross weight.

LANDING GEAR: Main landing gear strengthened to cater for higher operating weights. Outrigger wheels and fairings moved inboard, to approx mid-span beneath each wing between flaps and ailerons.

POWER PLANT: One Rolls-Royce Bristol Pegasus 11 vectored-thrust turbofan engine. This may be either the standard 21,500 lb (9,752 kg) st Mk 803 (F402-RR-401) as in the AV-8A, or more powerful proposed versions designated Pegasus 11D or Pegasus 11+. Engine air intakes redesigned, with elliptical lip shape (to reduce nozzle loss) and double instead of single row of suction relief doors. Increased fuel tankage available in wings, raising total internal fuel capacity (fuselage and wing tanks) from approx 5,000 lb (2,268 kg) in the AV-8A to more than 7,000 lb (3,175 kg). Each of the four inner underwing stations capable of carrying an auxiliary fuel tank.

ELECTRONICS AND EQUIPMENT: Improved attitude and heading reference system.

ARMAMENT AND OPERATIONAL EQUIPMENT: Twin underfuselage gun/ammunition packs, as in AV-8A, but probably each mounting a US 20 mm M-197 cannon instead of a 30 mm Aden gun. Single 1,000 lb (454 kg) stores point on fuselage centreline, between gun packs. Three stores stations under each wing, the inner one capable of carrying a 2,000 lb (907 kg) store, the centre one 1,000 lb (454 kg), and the outer one a Sidewinder missile. Including fuel, stores, weapons, and ammunition, and water injection for the engine, the maximum useful load for vertical take-off would be more than 7,000 lb (3,175 kg), and for short take-off nearly 9,000 lb (4,080 kg).

Typical weapons may include Mk 82 Snakeye bombs, and laser or electro-optical guided weapons. Main weapon delivery by Angle Rate Bombing System (ARBS), comprising a dual-mode (TV and laser) target seeker linked to a Marconi-Elliott head-up display via an IBM digital computer. Passive ECM equipment.

DIMENSIONS:

Wing span:
 AV-8A 25 ft 3 in (7.70 m)
 AV-8B approx 30 ft 3½ in (9.23 m)
 Wing area (gross):
 AV-8A 201.1 sq ft (18.68 m²)
 AV-8B approx 230 sq ft (21.37 m²)

WEIGHTS:

Basic operating weight, empty:
 AV-8A 12,200 lb (5,533 kg)
 AV-8B 12,400 lb (5,624 kg)
 Max T-O weight:
 AV-8A over 25,000 lb (11,339 kg)
 AV-8B 29,000-30,000 lb (13,154-13,608 kg)

Max landing weight:
 AV-8B 19,400 lb (8,799 kg)

PERFORMANCE (AV-8B data estimated):

AV-8A operational radius with external loads shown:
 vertical T-O, 3,000 lb (1,360 kg)
 50 nm (57 miles; 92 km)
 short T-O (600 ft; 183 m), 5,000 lb (2,268 kg)
 125 nm (144 miles; 231 km)
 short T-O (1,500 ft; 457 m), 8,000 lb (3,630 kg)
 222 nm (255 miles; 411 km)
 short T-O (1,000 ft; 305 m), 3,000 lb (1,360 kg)
 360 nm (414 miles; 667 km)
 AV-8B operational radius with external loads shown:
 vertical T-O, 7,800 lb (3,538 kg)
 100 nm (115 miles; 185 km)
 short T-O (1,000 ft; 305 m), twelve Mk 82 Snakeye bombs, internal fuel, 1 hr loiter
 more than 150 nm (172 miles; 278 km)
 short T-O (1,000 ft; 305 m), seven Mk 82 Snakeye bombs, external fuel tanks, no loiter
 more than 650 nm (748 miles; 1,204 km)

CASA CONSTRUCCIONES AERONAUTICAS SA; Head Office: Rey Francisco 4, Apartado 193, Madrid 8, Spain

CASA C.212 AVIOCAR

Confirmation has now been received of manufacturer's designations for four current versions of the Aviocar, and the following variant/order details amend and update those given in the item on this aircraft in the October 1975 "Supplement":

C.212A. Standard military freighter/paratroop transport version, ordered by the air forces of Indonesia (3), Jordan (3), Portugal (22), and Spain (32). Portuguese and Spanish Air Forces have options on a further 8 and 18 respectively.

C.212B. Photographic survey version. Six of the 8 pre-production Aviocars were completed to C.212B configuration for the Spanish Air Force; two others have been ordered by the Portuguese Air Force.

C.212C. Passenger transport version. Three ordered by Indonesia, for operation by Pelita Air Service (Pertamina Oil Co), of which the first (PK-PCK) was delivered in July 1975. One ordered by Royal Jordanian Air Force, as VIP transport; Spanish Air Force holds options on two of this version.

C.212E. Navigation trainer version. Two of the 8 pre-production Aviocars were completed to C.212E configuration for the Spanish Air Force.

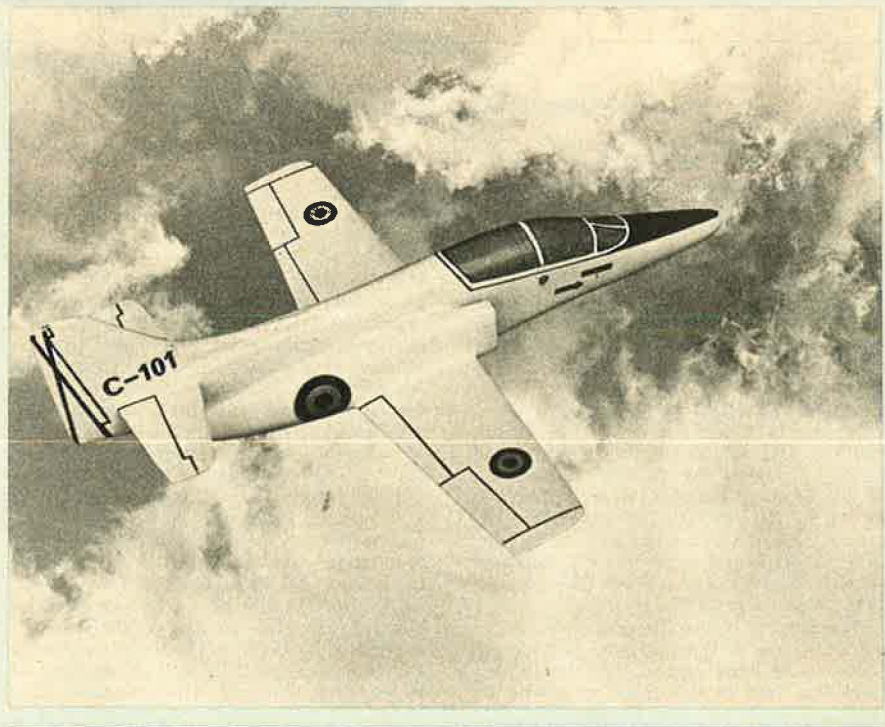
Indonesia has an option on a further 10 Aviocars, of a version not disclosed at the time of going to press.

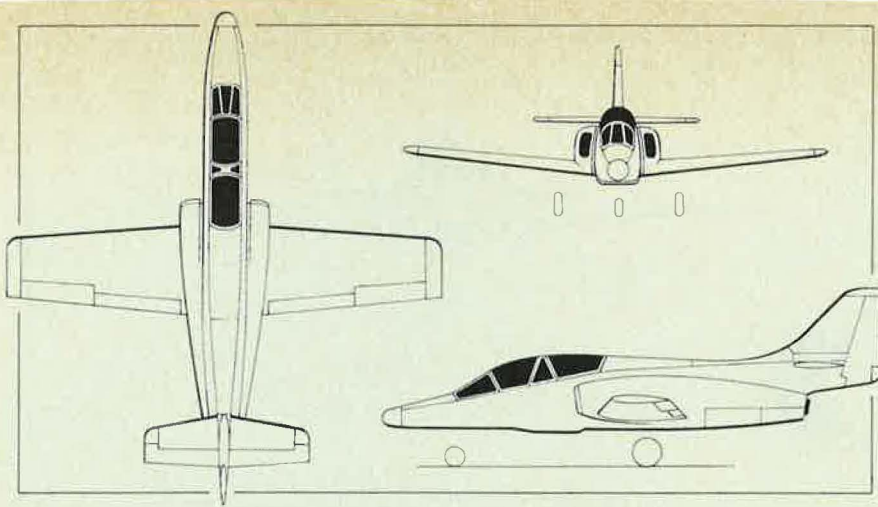
Thus, in addition to two prototypes and eight pre-production aircraft, a total of 66 Aviocars have been ordered, with a further 38 on option. Deliveries totalled 42 by November 1975. Negotiations regarding licence assembly of the aircraft in Indonesia are still under way.

CASA C-101

On 16 September 1975, CASA and the Spanish Ministerio del Aire signed a development contract for a new basic and advanced military jet trainer aircraft. This

Model of the CASA C-101 (Garrett-AiResearch TFE 731 turbofan engine)





CASA C-101 two-seat basic and advanced trainer and light tactical aircraft (Michael A. Badrocke)

has been given the manufacturer's designation C-101. The contract, worth 1,297 million pesetas (\$22 million), covers design, development, and the construction of six prototype aircraft of which four are for flight test and two for structural testing. First flight is anticipated in 1977.

To minimise cost and maintenance problems, the C-101 will be built on modular lines, with ample space within the airframe for equipment for any training mission likely to be required in the 1980s. The C-101 will also have the capability of carrying out such additional duties as ground attack, reconnaissance, escort, weapons training, electronic countermeasures (ECM), and photographic missions. Use of a high bypass ratio engine will permit the aircraft to carry out low-level, long-endurance sorties.

The general appearance of the C-101 is shown in the accompanying illustrations. Northrop (USA) and MBB (Germany) are to collaborate with CASA in the development programme.

TYPE: Tandem two-seat basic and advanced trainer and light tactical aircraft.

AIRFRAME: Cantilever low-wing monoplane, of conventional all-metal construction.

LANDING GEAR: Retractable tricycle type, with single wheel on each unit.

POWER PLANT: One Garrett-AiResearch TFE 731 turboprop engine, installed in rear fuselage. Lateral intake on each side of fuselage, abreast of second cockpit. Prototypes will evaluate both the TFE 731-2 (3,500 lb; 1,588 kg st) and TFE 731-3 (3,700 lb; 1,678 kg st) versions of this engine before a final choice is made.

ACCOMMODATION: Crew of two in tandem under individual cockpit canopies.

DIMENSIONS, EXTERNAL:

Wing span	34 ft 9 $\frac{3}{4}$ in (10.60 m)
Length overall	40 ft 2 $\frac{1}{4}$ in (12.25 m)
Height overall	14 ft 0 $\frac{1}{2}$ in (4.27 m)
Tailplane span	13 ft 6 $\frac{1}{4}$ in (4.12 m)
Wheel track	9 ft 8 $\frac{1}{2}$ in (2.97 m)
Wheelbase	15 ft 6 in (4.725 m)

WEIGHTS:

Basic weight empty	6,390 lb (2,898 kg)
Max T-O and landing weight	10,880 lb (4,935 kg)

PERFORMANCE (estimated, at max T-O weight):

Max level speed at 20,000 ft (6,100 m)	400 knots (460 mph; 740 km/h)
Max range at 30,000 ft (9,150 m)	1,640 nm (1,888 miles; 3,705 km)
Max endurance	4 hr 10 min

AJI

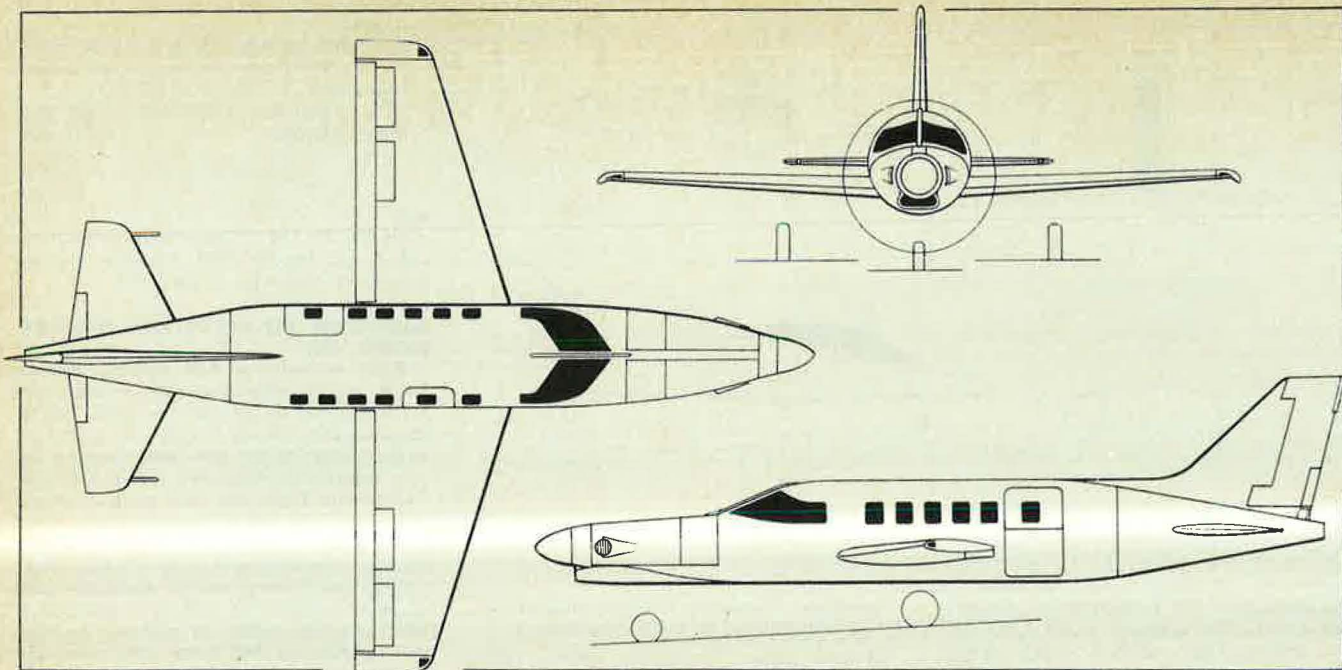
AMERICAN JET INDUSTRIES INC; Head Office and Works: 7701 Woodley Avenue, Van Nuys, California 91406, USA

AMERICAN JET INDUSTRIES HUSTLER MODEL 400

Plans to build a new general aviation STOL aircraft were announced by American Jet Industries on 24 October 1975. STOL characteristics for the aircraft—to be known as the Hustler Model 400—stem from the use of a supercritical wing with full-span Fowler trailing-edge flaps, and with spoilers instead of ailerons for lateral control. Power plant is unusual, comprising a turboprop engine installed conventionally in the fuselage nose, with a small turbojet standby engine mounted in the aft fuselage. The turbojet is intended to offer additional safety, by enabling the Hustler to maintain 148 knots (170 mph; 274 km/h) IAS at an altitude of 15,000 ft (4,570 m) with the propeller of the nose engine feathered, and is available in emergency at take-off, being started automatically by a torque-sensing device on the turboprop engine. In situations when it is realised that additional power might be needed at short notice, the pilot will have the option of taking off with the turbojet engine idling. Additionally, this engine can be used to boost the aircraft's maximum cruising speed by some 10%, but range would suffer considerably because of the higher rate of fuel consumption. This latter factor is in opposition to the basic design concept, of which the primary aim was to produce a fast and economical business/utility aircraft. To this end the cabin is pressurised, to permit cruising altitudes of up to 35,000 ft (10,670 m), and major efforts have been made to develop a well streamlined, low-drag airframe with a power plant that will be economical in operation.

Full-scale mockup of the Hustler, which is expected to be the world's fastest turboprop light aircraft





American Jet Industries Hustler Model 400 seven-seat turboprop business/utility aircraft with standby turbojet. The form of the turbojet intake could not be confirmed when this drawing was prepared (Pilot Press)

The initial detail design provided small air intake scoops for the turbojet engine on each side of the lower aft fuselage. Subsequent design analysis showed the desirability of resiting the air intake at the base of the fin, to ensure that water and debris thrown up by the landing gear will not be ingested into the turbojet engine.

American Jet Industries has built a full-scale mockup of the Hustler, of which design was started in August 1974. Construction of the prototype began in January 1975, and this aircraft is expected to make its first flight in July 1976. It will be joined in the flight test/certification programme by a pre-production Hustler, on which work is scheduled to start this month. Certification to FAR Pt 23 is expected by December 1976. Provisional orders have been received for 15 production aircraft, of which manufacture is planned to begin in July.

Specialised versions are being studied, including a two-seat basic trainer and a high-altitude photographic survey aircraft with a wing area nearly double that of the basic Hustler, permitting operation at heights up to 50,000 ft (15,240 m).

TYPE: Seven-seat business/utility aircraft.

WINGS: Cantilever monoplane, mounted slightly below mid-wing position. Super-critical wing section GAW 2 (modified). Thickness/chord ratio 12.5%. Dihedral 2°. Incidence 0°. Sweepback on leading-edge 15°. Light alloy structure of spars, ribs, stringers, and chemically-milled skins, flush riveted, with cambered tips. No ailerons. Lateral control by two spoilers of light alloy construction on upper surface of each wing, forward of flaps. Single-slotted light alloy Fowler trailing-edge flaps over full span except for tip. Electrical de-icing system for wing leading-edges.

FUSELAGE: Semi-monocoque fail-safe light alloy structure of circular cross-section.

TAIL UNIT: Cantilever light alloy structure, with swept vertical surfaces and aerodynamically-balanced all-moving tailplane. Anti-servo and trim tabs in tailplane; trim tab in rudder. Electrical de-icing system for leading-edges of fin and tailplane.

LANDING GEAR: Electrically-retractable tricycle type. Main units retract inward, nose unit aft. Oleo-pneumatic shock-struts. Single Goodyear wheel and tyre on each unit. Main wheels and tyres size 22 x 9.00, pressure 45 lb/sq in (3.16 kg/cm²); nose-wheel tyre size 17.50 x 6.00, pressure 35 lb/sq in (2.46 kg/cm²). Goodyear toe-operated hydraulic brakes.

POWER PLANT: One 850 shp (derated from 1,089 chp) Pratt & Whitney (Canada) PT6A-41 turboprop engine, driving a Hartzell four-blade metal constant-speed reversible pitch propeller with Beta control; and standby power plant comprising one Teledyne CAE 372-2 turbojet engine rated at 640 lb (290 kg) st. Integral fuel tanks in wings, with total capacity of 210 US gallons (795 litres). Wingtip tanks, each with capacity of 40 US gallons (150.5 litres), optional. Max fuel capacity 290 US gallons (1,096 litres). Refuelling points on upper surface of each wing. Oil capacity 2.5 US gallons (9.5 litres).

ACCOMMODATION: Seven seats, for pilot and six passengers, or crew of two with five passengers. Two seats side by side in cockpit, separated from cabin by radio rack on starboard side and small galley on port side. Two aft-facing and two forward-facing seats side by side in cabin, with a third combined seat/toilet, with screen, on the starboard side opposite door. Baggage space at rear of cabin. Two-part door on port side, aft of wing, with airstairs in lower section. Hinged emergency exit on starboard side of cabin, between aft- and forward-facing seats. Accommodation heated, ventilated, air-conditioned, and pressurised.

SYSTEMS: AiResearch air cycle heating and cooling, with pressurisation at a max differential of 7.4 lb/sq in (0.52 kg/cm²). Hydraulic system for brakes only. Electrical system at 24V DC supplied by starter/generator. Nickel-cadmium storage battery. Oxygen system for emergency use only.

ELECTRONICS AND EQUIPMENT: A range of standard avionics for communications and navigation is available. Blind-flying in-

strumentation standard. Weather radar antenna (optional) can be mounted in nose of port wingtip tank.

DIMENSIONS, EXTERNAL:

Wing span	28 ft 0 in (8.53 m)
Wing span over tip-tanks	29 ft 0 in (8.84 m)
Wing chord at root	6 ft 8 in (2.03 m)
Wing chord at tip	3 ft 4 in (1.02 m)
Length overall	34 ft 9 3/4 in (10.61 m)
Height overall	9 ft 10 in (3.00 m)
Tailplane span	12 ft 0 in (3.66 m)
Wheel track	12 ft 0 3/4 in (3.68 m)
Wheelbase	12 ft 0 3/4 in (3.68 m)
Propeller diameter	6 ft 8 in (2.03 m)
Propeller ground clearance	1 ft 0 1/2 in (0.32 m)

Passenger door:

Height	3 ft 10 in (1.17 m)
Width	2 ft 4 in (0.71 m)

Emergency exit:

Height	2 ft 10 in (0.86 m)
Width	2 ft 4 in (0.71 m)

DIMENSIONS, INTERNAL:

Cabin, aft of firewall:

Length	17 ft 0 in (5.18 m)
Max width	4 ft 4 in (1.32 m)
Max height	4 ft 2 in (1.27 m)

AREAS:

Wings, gross	146.6 sq ft (13.62 m ²)
Trailing-edge flaps (total)	29.56 sq ft (2.75 m ²)
Spoilers (total)	9.78 sq ft (0.91 m ²)
Vertical tail surfaces (total), incl tab	32.5 sq ft (3.02 m ²)
Tailplane, incl tabs	41.39 sq ft (3.85 m ²)

WEIGHTS AND LOADINGS:

Weight empty	3,500 lb (1,588 kg)
Max T-O weight	6,000 lb (2,722 kg)
Max zero-fuel weight	5,500 lb (2,495 kg)
Max landing weight	5,700 lb (2,586 kg)
Max wing loading	40.92 lb/sq ft (199.8 kg/m ²)
Max power loading	7.06 lb/shp (3.20 kg/shp)

PERFORMANCE (estimated, forward engine only, except when indicated, at max T-O weight, ISA):

Max never-exceed speed
 304 knots (350 mph; 563 km/h) EAS
 Max level speed and max cruising speed
 at 20,000 ft (6,100 m)
 347 knots (400 mph; 644 km/h) TAS
 Econ cruising speed at 35,000 ft (10,670 m)
 254 knots (292 mph; 470 km/h) TAS
 Stalling speed, flaps down
 59 knots (68 mph; 109 km/h)
 Max rate of climb at S/L
 3,500 ft (1,067 m)/min
 Service ceiling, forward engine only
 35,000 ft (10,670 m)
 Service ceiling, aft engine only
 15,000 ft (4,570 m)
 T-O run
 500 ft (152 m)
 T-O to 50 ft (15 m)
 900 ft (274 m)
 Accelerate/stop distance
 1,200 ft (366 m)
 Landing from 50 ft (15 m), with Beta
 control
 1,000 ft (305 m)
 Landing run
 550 ft (168 m)
 Range with max fuel, no reserve
 2,084 nm (2,400 miles; 3,862 km)
 Range with max payload, no reserve
 1,911 nm (2,200 miles; 3,541 km)

**AMERICAN JET INDUSTRIES
 HUSTLER T-58**

This projected military trainer retains the basic wings, tail unit, and other components of the Hustler Model 400, married to a slimmer fuselage seating pupil and instructor in tandem. The instructor's seat is raised, giving a forward view over the head of the pupil. Power plant is a 904 ehp Garrett-AiResearch TPE 331-30-303 turboprop engine, with no provision for the standby jet engine of the Hustler Model 400. Fuel capacity is 200 US gallons (757 litres).

DIMENSIONS, EXTERNAL:

Wing span 27 ft 7 in (8.41 m)
 Length overall 31 ft 3 in (9.53 m)
 Height overall 9 ft 8 in (2.94 m)
 Tailplane span 10 ft 0 in (3.05 m)
 Wheel track 11 ft 8 in (3.55 m)
 Wheelbase 9 ft 7 in (2.92 m)

AREA:

Wings, gross 135 sq ft (12.54 m²)

WEIGHTS:

Weight empty 2,400 lb (1,089 kg)
 Max T-O weight 4,500 lb (2,040 kg)

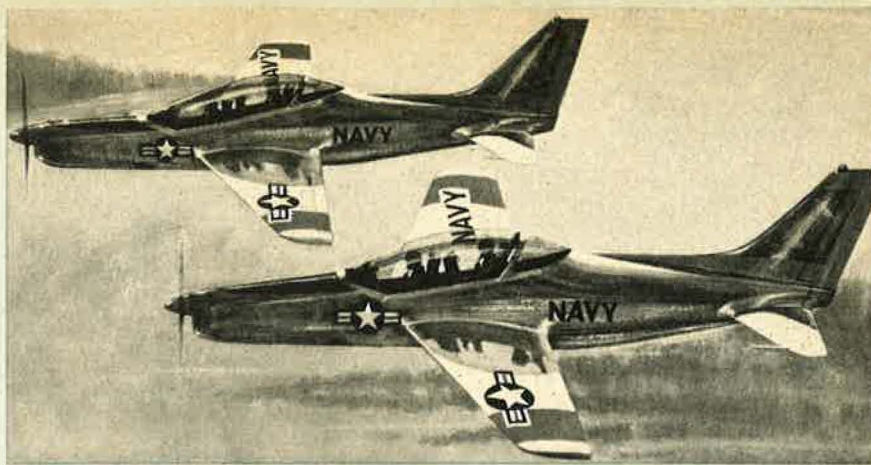
PERFORMANCE (estimated, at max T-O weight):

Max cruising speed
 347 knots (400 mph; 644 km/h)
 Landing speed
 60 knots (69 mph; 111 km/h)
 Max range, no reserve
 2,084 nm (2,400 miles; 3,862 km)

**LOCKHEED
 LOCKHEED-GEORGIA COMPANY;**
 Head Office and Works: 86 South Cobb
 Drive, Marietta, Georgia 30063, USA

Experience in operating Lockheed C-141A StarLifter transports in South East Asia and the Middle East has shown that lack of internal space restricts payloads to an average of about 46,000 lb (20,865 kg), which is some 20,000 lb (9,070 kg) less than the max structure limited payload. About 275 of the total of 290 C-141As that were built remain in service; each had averaged 14,857 flying hours by September 1974, against an estimated fatigue life of at least 40,000-45,000 hours. To ensure better use of the aircraft's capability during the remainder of their lifetime, Lockheed has proposed a comparatively simple modification programme that would permit the carriage of a palletised payload of 59,800 lb (27,125 kg) without any increase in the current max T-O weight.

To evaluate the proposed modification, the USAF has awarded Lockheed-Georgia a



Artist's impression of AJI Hustler T-58 naval trainers, projected developments of the Hustler Model 400 business/utility aircraft

\$40 million contract for the conversion of one production C-141A (USAF serial 66-6186) to "stretched" C-141B standard. After a series of flight tests to establish baseline performance data, modification of the aircraft is expected to begin this Summer, with first flight scheduled for April 1977. A decision whether or not to proceed to a full C-141 conversion programme is unlikely before the Autumn of that year.

LOCKHEED C-141B STARLIFTER

Conversion of the standard production C-141A StarLifter to "stretched" C-141B standard involves three main modifications plus one possible additional change. The required extra space inside the cabin is provided by inserting a plug 13 ft 4 in (4.06 m) long into the fuselage immediately forward of the wing and a plug 10 ft 0 in (3.05 m) long into the fuselage immediately aft of the wing. This is calculated to increase the floor area by 233 sq ft (21.65 m²) and volume by more than 2,100 cu ft (59.5 m³). To reduce aerodynamic drag resulting from this fuselage "stretch", the wing root leading-edge and trailing-edge fillets have been redesigned; and the aircraft is to be given flight refuelling capability for the first time, by installation of a universal aerial refuelling receptacle slipway installation (UARSI) as fitted to other aircraft such as the A-10. This will be positioned above the fuselage

aft of the flight deck, as shown in the accompanying three-view drawing. In addition, the vortex generators now fitted to the C-141A wing may be deleted on the C-141B if flight testing shows this to be advantageous.

Nominal results of the conversion are expected to include an increase of 10-15 knots (11.5-17.25 mph; 18.5-27.75 km/h) in cruising speed, to allow a normal operating speed of Mach 0.775 at an altitude of 38,000 ft (11,600 m) against the current Mach 0.75 at 37,000 ft (11,275 m).

DIMENSIONS, EXTERNAL:

Wing span 159 ft 11 in (48.74 m)
 Length overall 168 ft 4 in (51.31 m)
 Height overall 39 ft 3 in (11.96 m)
 Wheel track 17 ft 6 in (5.33 m)
 Wheelbase 66 ft 4 in (20.22 m)

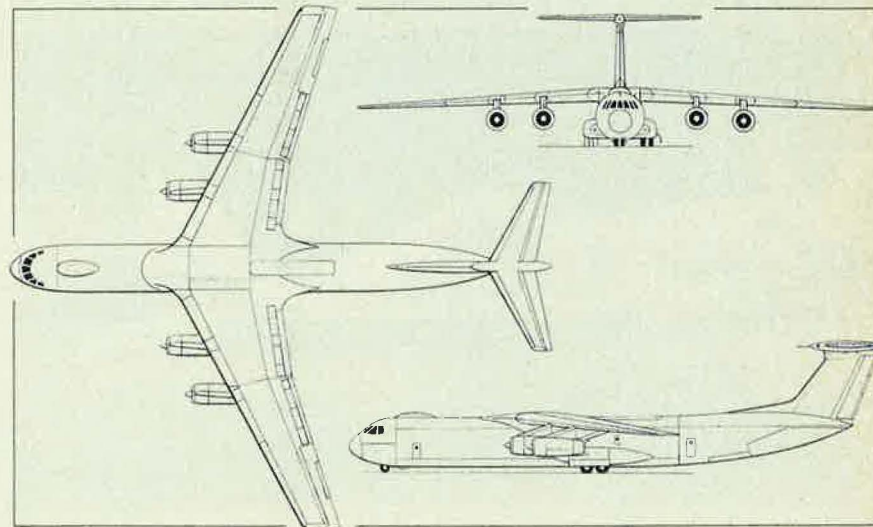
DIMENSIONS, INTERNAL:

Cabin: Floor length 93 ft 4 in (28.45 m)
 Max width 10 ft 3 in (3.12 m)
 Max height 9 ft 1 in (2.77 m)
 Volume approx 10,830 cu ft (306.7 m³)

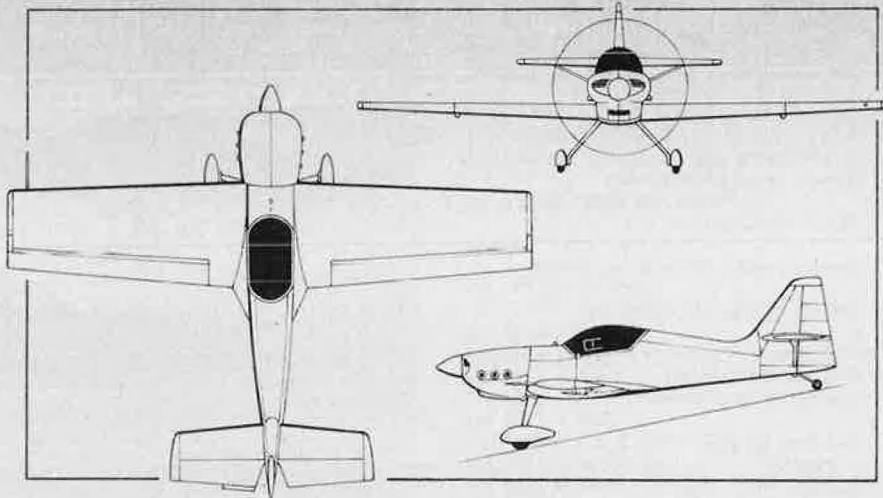
WEIGHTS:

Operating weight empty 149,904 lb (67,995 kg)
 Normal payload (13 pallets) 59,800 lb (27,125 kg)
 Max payload (2.5g) 68,821 lb (31,215 kg)
 Max payload (2.25g) 89,096 lb (40,410 kg)

Lockheed C-141B StarLifter, the "stretched" version of this standard USAF strategic transport (Pilot Press)



Max ramp weight (2.25g)
325,000 lb (147,415 kg)
Max ramp weight (2.5g)
344,900 lb (156,444 kg)
Max landing weight
257,500 lb (116,800 kg)
PERFORMANCE (estimated):
Max never-exceed speed
Mach 0.875 or 410 knots
(472 mph; 760 km/h) CAS
Normal cruising speed at 38,000 ft
(11,600 m) Mach 0.775 or 445 knots
(512 mph; 824 km/h)
Range with 13 pallets
3,754 nm (4,320 miles; 6,950 km)
Range with max payload (2.25g)
2,303 nm (2,650 miles; 4,265 km)
Range with max payload (2.5g)
2,598 nm (2,990 miles; 4,810 km)



Zlin Z 50 L single-seat aerobatic and touring aircraft (Michael A. Badrocke)

ZLIN
MORAVAN NARODNI PODNIK (Zlin Aircraft Moravan National Corporation);
Address: Otrokovice, Czechoslovakia

ZLIN Z 50 L

The Z 50 L is a fully-aerobatic single-seat light aircraft, a prototype of which was flown for the first time on 18 July 1975.

TYPE: Single-seat aerobatic and touring aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 0018 at root, NACA 0012 at tip. All-metal structure, with single main spar, rear auxiliary spar, and aluminium-clad duralumin skin. All-metal mass-balanced ailerons, actuated by pushrods, occupy most of each trailing-edge, and have 20° travel (±1°) up and down. Ground-adjustable tab. No flaps.

FUSELAGE: All-metal semi-monocoque stressed-skin structure.

TAIL UNIT: Conventional metal structure. Braced tailplane and fin duralumin-covered, balanced elevators and rudder fabric-covered. Mechanically-adjustable tab in port elevator, ground-adjustable tab on rudder. Elevators actuated by pushrods, rudder by cables. Elevator travel 30° (±1°) up and down, rudder 30° (±2°) to left and right.

LANDING GEAR: Non-retractable tailwheel type. Cantilever leaf spring legs on all units. Main-wheel brakes fitted. Fully-castering tailwheel, which can be locked automatically during taxiing, take-off, and landing. Streamlined main-wheel fairings optional.

POWER PLANT: One 260 hp Lycoming AEIO-

540-D4B5 six-cylinder horizontally-opposed aircooled engine, driving a Hoffmann HO-V123K/200AH three-blade constant-speed variable-pitch wooden propeller with spinner. Single main fuel tank in fuselage, aft of firewall, capacity 13.2 Imp gallons (60 litres). Auxiliary 11 Imp gallon (50 litre) tank can be attached to each wing-tip for ferry flights only. Fuel and oil systems designed for full aerobatic manoeuvres, including inverted flight.

ACCOMMODATION: Single seat under fully-transparent sideways-opening bubble canopy, which can be jettisoned in an emergency. Seat and backrest are adjustable, and permit the use of a back-type parachute. Cockpit ventilated by sliding panel in canopy.

SYSTEM: Electrical single-conductor system only, utilising an alternator and a storage battery. External power socket for engine starting.

DIMENSIONS, EXTERNAL:

Wing span 28 ft 1¾ in (8.58 m)
Wing span over tip-tanks
29 ft 7½ in (9.03 m)
Wing mean aerodynamic chord
4 ft 10½ in (1.4853 m)
Length overall (tail up)
21 ft 4½ in (6.512 m)
Height over tail (static)
6 ft 1¼ in (1.86 m)
Elevator span 10 ft 8¼ in (3.26 m)

Wheel track:
aircraft empty 5 ft 7 in (1.70 m)
at max T-O weight 6 ft 6¾ in (2.00 m)
max during taxiing 8 ft 2½ in (2.50 m)
Propeller diameter 6 ft 6¾ in (2.00 m)

AREAS:

Wings, gross 134.55 sq ft (12.50 m²)
Ailerons (total) 30.14 sq ft (2.80 m²)
Fin 6.35 sq ft (0.59 m²)
Rudder, incl tab 7.64 sq ft (0.71 m²)
Tailplane 17.87 sq ft (1.66 m²)
Elevators (total, incl tab) 11.63 sq ft (1.08 m²)

WEIGHTS (A: Aerobatic; B: Ferry configuration):

Weight empty:
A 1,124 lb (510 kg)
B 1,212 lb (550 kg)
Max T-O weight:
A 1,433 lb (650 kg)
B 1,653 lb (750 kg)

PERFORMANCE (at max Aerobatic T-O weight except where indicated):

Max never-exceed speed 181.5 knots (209 mph; 337 km/h)
Max level speed 154 knots (177 mph; 285 km/h)
Cruising speed 138 knots (158 mph; 255 km/h)
Stalling speed 49-54 knots (56-62.5 mph; 90-100 km/h)
Max rate of climb at S/L 2,953 ft (900 m)/min
T-O to 50 ft (15 m) 656 ft (200 m)
Landing from 50 ft (15 m) 984 ft (300 m)

Range:

A 135 nm (155 miles; 250 km)
B 405 nm (466 miles; 750 km)

Endurance:

A 1 hr
B 3 hr

g limits:

A +9; -6

Prototype of the Zlin Z 50 L (260 hp Lycoming AEIO-540-D4B5 engine)



VALMET

VALMET OY TAMPERE WORKS; Office and Works: Box 387, 33101 Tampere 10, Finland

VALMET LEKO-70

In late 1970 an Aeronautical Research and Design Group was established in Finland, its first major task being to study a Finnish Air Force requirement for a basic training aircraft to replace the Saab 91 Safir. After considering various alternatives

it was decided to produce an entirely Finnish design to fulfil this need, and a development contract was placed with Valmet by the Finnish Air Force on 23 March 1973. The aircraft is known as the Leko-70, the name being an abbreviation of "Lentokone", the Finnish word for "aeroplane". Valmet's Tampere and Kuorevesi Works are both involved in the programme, the latter plant undertaking component manufacture and final assembly.

The Leko-70 made its first flight, lasting 1 hr 5 min, at Kuorevesi on 1 July 1975, and initial test flights have been described as "very encouraging". A second prototype is being used for static and fatigue testing; a full-size cockpit mockup and components for a third aircraft have also been completed.

The flight test programme is divided into a preliminary phase, after which a decision will be made on its suitability for Finnish Air Force service, and on its development potential; and a second, certification, phase. If the Leko-70 is accepted, it is estimated that at least 30 will be required by the Finnish Air Force.

The Leko-70 is designed for aerobatic flying as a two-seater. In civil use, in Normal or Utility category, it is capable of seating two or three persons, depending upon the amount of baggage carried.

TYPE: Two-seat training or two/three-seat touring light aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63:A615 (modified). Dihedral 6° from roots. Single-spar structure, of constant chord except for forward-swept wing-root leading-edges, attached to fuselage by steel fittings. Riveted aluminium alloy skin. Electrically-operated slotted flaps, and slotted ailerons, on trailing-edges. Ailerons actuated by stainless steel control cables. Flaps and ailerons have fluted skins. Ailerons on prototype have adjustable geared tabs.

FUSELAGE: Conventional aluminium alloy semi-monocoque structure of frames and longerons, with riveted skin. Welded steel tube engine mount and stainless steel firewall. Cockpit floor panels of bonded sandwich.

TAIL UNIT: Cantilever aluminium alloy structure, with fluted and riveted skin. Slight sweepback on vertical surfaces; shallow dorsal fin from rear of canopy to base of fin. Elevators and rudder are aerodynamically and mass balanced, and are actuated by stainless steel control cables. Geared trim and balance tabs in elevators, and geared trim tab in rudder.

LANDING GEAR: Non-retractable tricycle type. Cantilever sprung main legs. Telescopic nosewheel strut. Disc brakes. Provision for ski gear.

POWER PLANT: One 200 hp Lycoming IO-360-A1B6 four-cylinder horizontally-opposed aircooled engine, driving a two-blade constant-speed propeller; or the 200 hp AEIO-360-A1B6 fuel-injection version of this engine, in which case a Christen-801 inverted-flight oil system is also fitted. Two bonded sandwich fuel tanks, one in each wing root ahead of main spar; total normal capacity 33 Imp gallons (150 litres), max capacity 41.8 Imp gallons (190 litres).

ACCOMMODATION: Side-by-side seats for instructor and pupil in trainer version, with integral longitudinal central console which serves also to reinforce fuselage floor. Windscreen and one-piece rearward-sliding fully-transparent canopy, with steel tube turnover frame. Provision for third seat at rear, which can be removed to make room for additional baggage. Cockpit heated, and ventilated, but not pressurised.



Prototype of the Valmet Leko-70 training and touring light aircraft

SYSTEM: 28V DC electrical system.

ELECTRONICS AND EQUIPMENT: Dual controls standard, but instructor's or pupil's control column can be removed if desired. Two VHF, one ADF, and VOR/ILS standard.

DIMENSIONS, EXTERNAL:

Wing span	30 ft 6¼ in (9.30 m)
Wing chord (constant over most of span)	5 ft 0¼ in (1.53 m)
Wing aspect ratio	6
Length overall	23 ft 11½ in (7.30 m)
Tailplane span	11 ft 9¾ in (3.60 m)
Wheel track	7 ft 6½ in (2.30 m)
Wheelbase	5 ft 3 in (1.60 m)

AREAS:

Wings, gross	150.70 sq ft (14.00 m ²)
Ailerons (total)	15.07 sq ft (1.40 m ²)
Trailing-edge flaps (total)	23.68 sq ft (2.20 m ²)
Fin	9.69 sq ft (0.90 m ²)
Rudder, incl tab	6.46 sq ft (0.60 m ²)
Tailplane	20.45 sq ft (1.90 m ²)
Elevators, incl tabs	10.76 sq ft (1.00 m ²)

WEIGHTS:

Weight empty, equipped, without fuel	1,587 lb (720 kg)
Max T-O weight	2,645 lb (1,200 kg)

PERFORMANCE (estimated, at max T-O weight*):

Max level speed at S/L	129.5 knots (149 mph; 240 km/h)
Stalling speed, flaps up	57 knots (66 mph; 105 km/h)
Max rate of climb at S/L	1,180 ft (360 m)/min

* Confirmed performance figures to be released on completion of flight testing.

SIAI-Marchetti SM.1019E1 two-seat STOL light military aircraft in Italian Army Light Aviation service



SIAI-MARCHETTI

SIAI-MARCHETTI SOCIETA PER AZIONI; Management and Works: Via Indipendenza 2, 21018 Sesto Calende (Varese), Italy

SIAI-MARCHETTI SM.1019E1

The SM.1019 light STOL aircraft is suitable for observation, light ground attack, or utility duties. Its design was started in January 1969, and construction of a prototype began two months later. This aircraft (I-STOL) flew for the first time on 24 May 1969, with an Allison 250-B15G engine, and was granted Normal and Utility category certification by the RAI on 25 October 1969.

A second prototype (I-SJAR), which flew for the first time on 18 February 1971, was designated SM.1019A. It had an improved fuel system, two doors, and two instrument panels, and has received RAI civil certification in the Normal and Utility categories.

Production began in 1974 of an initial series of 100 military SM.1019E1s for the Aviazione Leggera dell'Esercito (ALE, or Italian Army Light Aviation). Deliveries began in the Summer of 1975, and are scheduled to be completed by the end of 1976.

The following description applies generally to all models of the SM.1019, except where a specific version is indicated:

TYPE: Two-seat STOL light aircraft.

WINGS: High-wing monoplane, braced by single strut on each side. Wing section NACA 2412. Dihedral 2° 8'. Incidence 1° 30'. Washout 3°. Conventional all-metal structure, with detachable tapered outer



SIAI-Marchetti SM.1019EI two-seat STOL light military aircraft

panels. Metal Frise-type ailerons and electrically-actuated trailing-edge slotted flaps. Trim tab in starboard aileron. Tie-down point at each wingtip.

FUSELAGE: Conventional all-metal semi-monocoque stressed-skin structure.

TAIL UNIT: Conventional cantilever all-metal structure, with horizontal surfaces mounted on top of fuselage. Dorsal fin. Fixed-incidence tailplane. Elevators and rudder horn-balanced. Manually-operated mechanically-actuated trim tab in starboard elevator; servo tab in port elevator. Ground-adjustable trim tab on rudder.

LANDING GEAR: Non-retractable tailwheel type, with cantilever leaf-type spring steel main-wheel legs. Goodyear 511960 main wheels, with low-pressure tyres, size 7.00-6, pressure 30 lb/sq in (2.11 kg/cm²); Scott 3200A tailwheel, with size 8-3.00 tyre, pressure 35 lb/sq in (2.46 kg/cm²). Good-year independent hydraulic single-disc brakes on main wheels, controllable from either seat. Parking brake. Combined wheel/ski gear, with hydraulic retraction and extension of skis, is optional.

POWER PLANT: One 400 shp (416 ehp) Allison 250-B17 turboprop engine, driving a Hartzell HC-B3TF-7/T10173-11R three-blade constant-speed reversible-pitch metal propeller. Fuel in two tanks in each wing, each of 17.5 Imp gallons (21 US gallons; 80 litres) capacity; total capacity 70 Imp gallons (84 US gallons; 320 litres). Refuelling point for each tank on top of wings. Provision for auxiliary underwing tanks. Oil capacity 1.75 Imp gallons (2.1 US gallons; 8 litres).

ACCOMMODATION: Pilot and co-pilot or observer/systems operator seated in tandem in fully-enclosed and extensively-glazed cabin. Two forward-hinged doors on starboard side. Cabin heated, by engine bleed air, and ventilated.

SYSTEMS: 28V DC electrical power provided by 30V 150A Lear Siegler P/N230320020 engine-driven starter/generator and 24V 25Ah nickel-cadmium battery. External ground power receptacle. Windscreen defrosting and engine compressor inlet heating standard. Oxygen system optional.

ELECTRONICS AND EQUIPMENT: Dual controls standard. Choice of VHF/UHF/HF communication systems. VLF/Omega navigation. ADF; IFF; high-performance intercom and compass system. Provision for specialised equipment (VHF/FM, radar warning, Tacan, and HLS) to customer's requirements. Twin taxiing and landing lights in port outer wing leading-edge. Anti-collision light on top of rudder.

ARMAMENT AND OPERATIONAL EQUIPMENT (SM.1019EI): Two hardpoints beneath each wing for 2.75 in rocket launchers, gun pods, missiles, bombs, auxiliary fuel tanks, or a reconnaissance pod. Electronic, photographic, and navigation equipment for use as day or night reconnaissance aircraft.

DIMENSIONS, EXTERNAL:

Wing span 36 ft 0 in (10.972 m)
Wing chord at root 5 ft 4¹/₄ in (1.63 m)
Wing chord at tip 3 ft 7 in (1.09 m)
Wing aspect ratio 7.44
Length overall (tail up)

27 ft 11¹/₂ in (8.52 m)
Height overall (tail down)

9 ft 4¹/₂ in (2.86 m)

Tailplane span 11 ft 2³/₄ in (3.42 m)

Wheel track 7 ft 6¹/₄ in (2.29 m)

Wheelbase 20 ft 5¹/₄ in (6.23 m)

Propeller diameter 7 ft 6 in (2.29 m)

Propeller ground clearance 9 in (0.23 m)

Cabin doors, each:

Height 3 ft 5³/₄ in (1.06 m)

Width 1 ft 11¹/₂ in (0.60 m)

Baggage door:

Height 1 ft 6¹/₂ in (0.47 m)

Width 1 ft 9 in (0.53 m)

Height to sill 2 ft 0¹/₄ in (0.62 m)

DIMENSIONS, INTERNAL:

Cabin: Max length 6 ft 6³/₄ in (2.00 m)

Max width 2 ft 0³/₄ in (0.63 m)

Max height 4 ft 1¹/₄ in (1.25 m)

Volume 38.8 cu ft (1.10 m³)

Baggage compartment volume

3.5 cu ft (0.1 m³)

AREAS:

Wings, gross 173.95 sq ft (16.16 m²)

Ailerons (total) 18.30 sq ft (1.70 m²)

Trailing-edge flaps (total)

21.10 sq ft (1.96 m²)

Fin 10.30 sq ft (0.957 m²)

Rudder 13.94 sq ft (1.295 m²)

Tailplane 20.41 sq ft (1.896 m²)

Elevators (total) 17.05 sq ft (1.584 m²)

WEIGHTS AND LOADINGS (without external stores):

Weight empty, equipped 1,521 lb (690 kg)

Basic empty weight 1,609 lb (730 kg)

T-O weight:

SM.1019A (Utility category), SM.1019EI (training) 2,866 lb (1,300 kg)

Max T-O weight:

SM.1019A (Normal category), SM.1019EI (helicopter escort, reconnaissance)

3,196 lb (1,450 kg)

Wing loading at 2,866 lb (1,300 kg) A/UW

16.5 lb/sq ft (80.4 kg/m²)

Max wing loading

18.4 lb/sq ft (89.7 kg/m²)

Power loading at 2,866 lb (1,300 kg)

A/UW 7.2 lb/shp (3.25 kg/shp)

Max power loading

8.0 lb/shp (3.62 kg/shp)

PERFORMANCE (A: Utility, A/UW of 2,866 lb; 1,300 kg. B: helicopter escort, A/UW of 3,196 lb; 1,450 kg. C: reconnaissance, A/UW of 3,196 lb; 1,450 kg, except where indicated):

Max never-exceed speed

169 knots (194 mph; 313 km/h)

Max cruising speed at S/L:

A 160 knots (184 mph; 296 km/h)

B, C 152 knots (175 mph; 281 km/h)

Max cruising speed at 8,200 ft (2,500 m):

A 162 knots (186 mph; 300 km/h)

B, C 154 knots (177 mph; 285 km/h)

Cruising speed (75% power) at 8,200 ft (2,500 m):

A 152 knots (175 mph; 281 km/h)

B, C 145 knots (167 mph; 268 km/h)

Stalling speed, flaps up:

A 53 knots (61 mph; 98 km/h)

B, C 58 knots (66.5 mph; 107 km/h)

Stalling speed, flaps down:

A 38 knots (43.5 mph; 70 km/h)

B, C 46 knots (53 mph; 85 km/h)

Max rate of climb at S/L:

A 1,810 ft (551 m)/min

B, C 1,640 ft (499 m)/min

Operational ceiling:

A, B, C 25,000 ft (7,620 m)

T-O run at S/L:

A 368 ft (112 m)

B, C 716 ft (218 m)

T-O to 50 ft (15 m) at S/L:

A 722 ft (220 m)

B, C 1,185 ft (361 m)

Landing from 50 ft (15 m) at S/L:

A 722 ft (220 m)

B, C 922 ft (281 m)

Landing run at S/L:

A 300 ft (91.5 m)

B, C 443 ft (135 m)

Typical operational radius:

B, with two rocket launchers, at A/UW

of 3,086 lb (1,400 kg)

60 nm (69 miles; 111 km)

Max range at S/L:

A 499 nm (575 miles; 925 km)

B 421 nm (485 miles; 780 km)

C 610 nm (702 miles; 1,130 km)

Max range at 9,845 ft (3,000 m):

A 588 nm (677 miles; 1,090 km)

B 505 nm (581 miles; 935 km)

C 723 nm (832 miles; 1,340 km)

Max range with two external tanks, A/UW

of 3,086 lb (1,400 kg):

C, at 2,000 ft (610 m)

623 nm (717 miles; 1,154 km)

C, at 9,000 ft (2,745 m)

730 nm (840 miles; 1,352 km)

Max endurance at S/L:

A 5 hr 45 min

B 5 hr 0 min

C 7 hr 20 min

Max endurance at 9,845 ft (3,000 m):

A 6 hr 40 min

B 6 hr 5 min

C, with auxiliary fuel tanks

8 hr 45 min

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This first in a series of articles on foreign air forces describes the organization, equipping, deployment, training, R&D programs, and funding problems of one of history's best known and most respected air forces . . .

The Royal Air Force

BY JOHN W. R. TAYLOR

EDITOR, JANE'S ALL THE WORLD'S AIRCRAFT

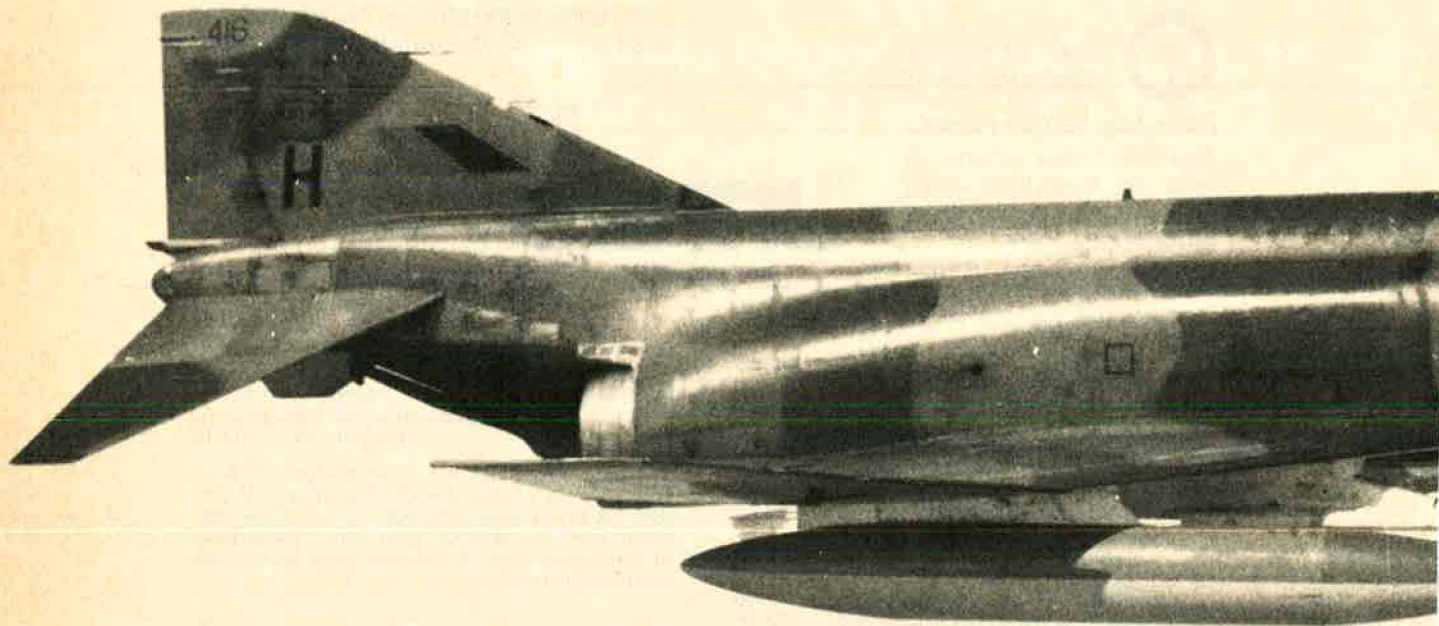
The only real security upon which sound military principles will rely is that you should be master of your own air.

—Winston Churchill

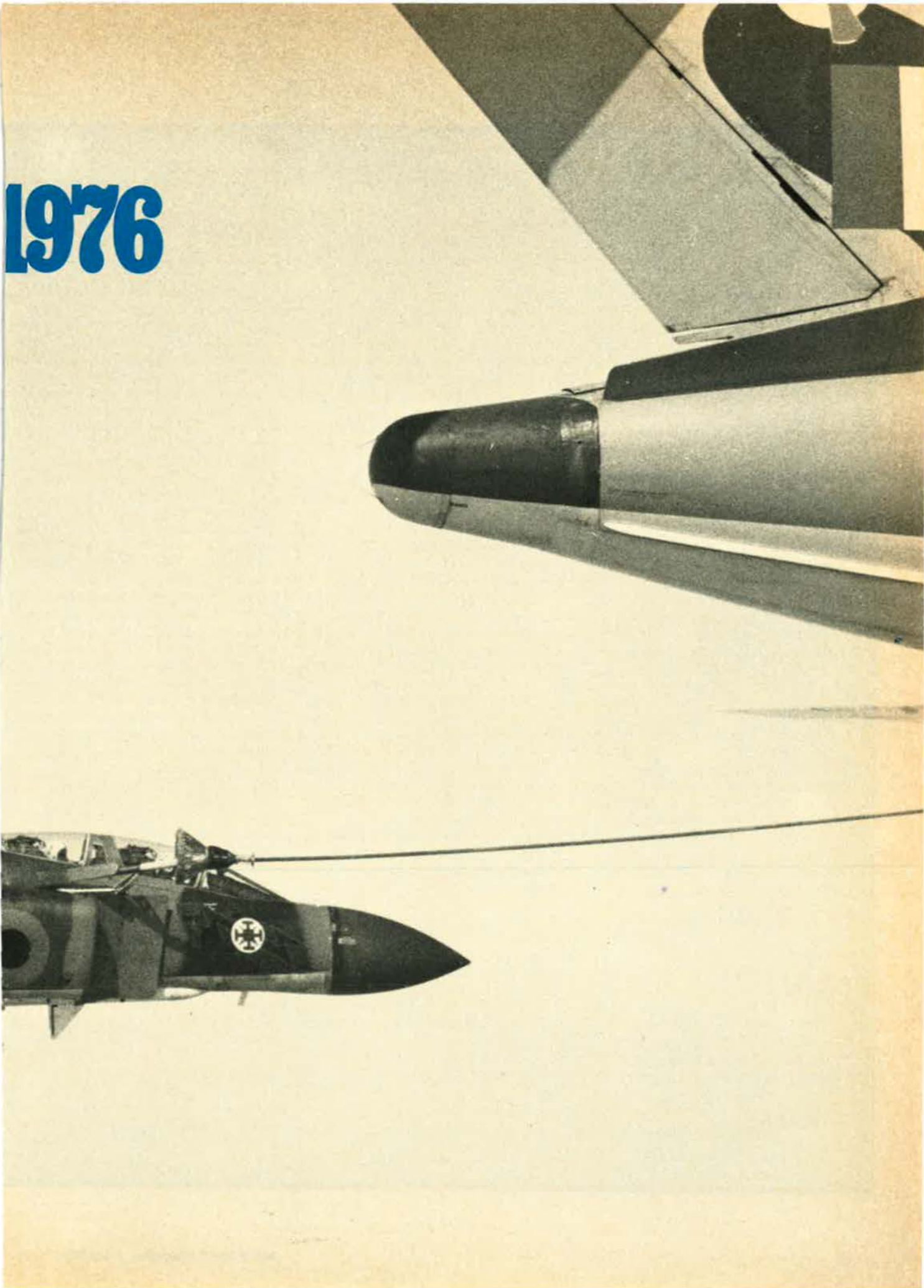
THERE is a youthful arrogance about the name of the Royal Air Force that belies this Service's fifty-eight years. Note that it is not the Royal British Air Force, just *the* Royal Air Force, as if its creators were first to conceive the idea of an independent air arm. The RAF traces its origins back to 1878, when military ballooning experiments began officially at Woolwich Arsenal, London. A more significant starting point was April 13, 1912, when the Royal Flying Corps was constituted, with Military and Naval Wings, a Reserve, a Royal Aircraft Factory at Farnborough, and a Central Flying School at which all pilots were to be trained.

Two years later, the Royal Navy decided to go its separate way, by forming the Royal Naval Air Service; but on April 1, 1918, the RFC and RNAS were merged to form the Royal Air Force. Today, the Navy and Army again have their own air arms, equipped mainly with helicopters. Since September 1, 1972, the RAF has had all its home-based operational squadrons concentrated in **Strike Command**, which inherited surviving commitments of the original Fighter, Bomber, Coastal, Transport, and Signals Commands. Other home commands are **Training Command**, created on June 1, 1968, by merging the former Flying Training and Technical Training Com-

(Text continues on p. 54)



1976



Major Types of RAF Aircraft

Hawker Siddeley Vulcan B Mk 2:

Medium bomber; crew 5. In service since 1960; assigned primarily to low-level penetration and strike role with nuclear or conventional (21 x 1,000 lb) bombs. Six squadrons with 1 Group, Strike Command (STC), of which four are NATO-assigned. Also one squadron of Vulcan SR Mk 2 strategic reconnaissance aircraft in 1 Group, NATO-earmarked.

Power Plant: Four Rolls-Royce Olympus 301 turbojets; each 20,000 lb st. Span 111 ft. Length 99 ft 11 in. Gross weight more than 180,000 lb.

Max cruising speed over 625 mph at 50,000 ft. Combat radius 1,725–2,875 miles. No guns.

Hawker Siddeley Buccaneer S Mk 2:

Low-level strike/attack aircraft; crew 2. Operational with RAF since 1970. Two squadrons with 1 Group STC; one earmarked to SACLANT for maritime duties, other assigned to SACEUR. Two NATO-assigned squadrons with RAF Germany.

Power Plant: Two Rolls-Royce Spey 101 turbofans; each 11,100 lb st. Span 44 ft. Length 63 ft 5 in. Gross weight 62,000 lb. Max speed 645 mph at 200 ft. Typical strike range 2,300 miles. No guns; up to 16,000 lb of internal and external stores.

SEPECAT Jaguar GR Mk 1: Tactical support aircraft; pilot only. Operational since 1974. Two squadrons with 38 Group STC, NATO-earmarked for UK Mobile Force. Two NATO-assigned squadrons with RAF Germany (third forming). Four more squadrons planned.

Power Plant: Two Rolls-Royce/Turboméca Adour 102 afterburning turbofans; each 7,305 lb st.

Span 28 ft 6 in. Length 50 ft 11 in. Gross weight 34,000 lb. Max speed Mach 1.5 at 36,000 ft. Attack radius 357–818 miles. Two 30-mm Aden guns; 10,000 lb of external stores.

McDonnell Douglas Phantom FGR Mk 2: Air defense and armed recon-

naissance fighter; crew 2. In RAF service since 1969. Four NATO-assigned air defense squadrons with 11 Group STC; one fighter reconnaissance squadron with 38 Group STC, NATO-earmarked for UK Mobile Force; one NATO-assigned squadron with RAF Germany in reconnaissance role. Also one squadron of Phantom FG Mk 1s with 11 Group, NATO-earmarked for air defense of naval forces.

Power Plant: Two Rolls-Royce Spey 202 afterburning turbofans; each 20,515 lb st.

Span 38 ft 5 in. Length 57 ft 7 in. Gross weight 58,000 lb. Max speed Mach 2.2 at 36,000 ft. Up to 11,000 lb of external stores.

BAC Lightning F Mk 6: Air defense fighter; pilot only. Operational since 1966. Most Lightning squadrons of 11 Group STC have been re-equipped with Phantoms, but two will remain operational. Two squadrons of up-rated Lightning F Mk 2As are NATO-assigned with RAF Germany, but due to be replaced with Phantoms.

Power Plant: Two Rolls-Royce Avon 301 afterburning turbojets; each 16,360 lb st.

Span 34 ft 10 in. Length 55 ft 3 in. Gross weight approx 50,000 lb. Max speed Mach 2 at 36,000 ft. Two 30-mm Aden guns; two Red Top air-to-air missiles.

Hawker Siddeley Harrier GR Mk 3:

V/STOL close-support and reconnaissance aircraft; pilot only. Entered service 1969. One squadron with 38 Group STC is NATO-assigned for ACE Mobile Force; a detachment flew to Belize for garrison support in Fall 1975. Three squadrons are NATO-assigned with RAF Germany.

Power Plant: One Rolls-Royce Pegasus 103 vectored-thrust turbofan; 21,500 lb st.

Span 25 ft 3 in. Length 45 ft 6 in. Gross weight more than 25,000 lb.

Max speed Mach 0.95 at low altitude. Up to 5,000 lb of external stores, including two 30-mm Aden gun packs.

Hawker Siddeley Nimrod MR Mk 1:

Long-range maritime patrol aircraft; crew 12. Entered service 1969. Four squadrons equip 18 Group STC and are NATO-earmarked to SACLANT/CINCHAN. One squadron in Malta, with more than half of its aircraft NATO-earmarked. All aircraft being uprated to Mk 2 with advanced systems. Three Nimrod R Mk 1 elint/calibration aircraft also in service.

Power Plant: Four Rolls-Royce Spey 250 turbofans; each 12,140 lb st. Span 114 ft 10 in. Length 126 ft 9 in. Max gross weight 192,000 lb. Max speed 575 mph. Typical endurance 12 hours. No guns; up to 13,500 lb of disposable stores.

English Electric Canberra PR Mk 9:

High-altitude photographic-reconnaissance aircraft; crew 2. Operational since 1960. A single Canberra PR Mk 9 squadron serves with 1 Group STC and is NATO-earmarked. One squadron of earlier PR Mk 7s is based in Malta. Other versions continue in RAF service as trainers, target tugs, calibration aircraft, and for special duties.

Power Plant: Two Rolls-Royce Avon 206 turbojets; each 11,250 lb st.

Span 67 ft 10 in. Length 66 ft 8 in. Gross weight 55,000 lb. Max speed (PR Mk 7) 580 mph at 40,000 ft. No weapons.

Handley Page Victor K Mk 2: Flight refueling tanker; crew 5. Entered service 1974. Victor K Mk 2s have begun replacing K Mk 1/1A tankers in three RAF squadrons of 1 Group STC. All are three-point tankers, able to trail one underbelly and two underwing hoses, and were converted from former strategic bombers.

Power Plant: Four Rolls-Royce Conway 201 bypass turbojets; each 20,600 lb st.

Span 120 ft. Length 114 ft 11 in. Gross weight over 170,000 lb. Max speed over 600 mph at 40,000 ft. No weapons.

Avro Shackleton AEW Mk 2: Airborne early warning aircraft; crew 10. Entered service 1972. One squadron of these converted maritime reconnaissance aircraft serves with 11 Group STC, to improve low-level radar cover around the UK and provide early warning support for maritime surface forces.

Power Plant: Four Rolls-Royce Griffon 57A piston-engines; each 2,455 hp. Span 119 ft 10 in. Length 92 ft 6 in. Gross weight 98,000 lb. Max speed 260 mph. Patrol endurance 10 hours. No weapons.

Lockheed Hercules C Mk 1 (C-130K): Medium tactical/strategic transport; crew 5 and 92 troops, 74 litters, or 45,000 lb freight. Entered RAF service 1967. Four squadrons of Hercules serve with 38 Group STC, with single squadrons of turboprop Short Belfast and turbofan VC10 strategic transports.

Power Plant: Four Allison T56-A-15 turboprops; each 4,508 ehp.

Span 132 ft 7 in. Length 97 ft 9 in. Gross weight 175,000 lb. Max cruising speed 386 mph. Range with max payload 2,500 miles. No weapons.

Westland/Aérospatiale Puma HC Mk 1: Assault helicopter; crew 2 and 16 troops, 6 litters, or 5,500 lb under-slung cargo. Entered RAF service 1971. Two squadrons of Pumas fly with 38 Group STC, NATO-earmarked for the UK Mobile Force.

Power Plant: Two Turboméca Turmo III C4 turboshafts; each 1,320 shp. Rotor dia 49 ft 2½ in. Fuselage length 48 ft 1½ in. Gross weight 14,110 lb. Max speed 174 mph at sea level. Max range 390 miles. No weapons.

Westland Wessex HC Mk 2: Tactical transport helicopter; crew 2 or 3 and 15 troops, 7 litters, or 3,600 lb of

cargo. One squadron of Wessex HC Mk 2s serves alongside the Pumas of 38 Group, some with UK Mobile Force, others with ACE Mobile Force. Two further squadrons are operational with RAF Germany and in Hong Kong.

Power Plant: Two Rolls-Royce Gnome 112/113 turboshafts; total 1,550 shp. Rotor dia 56 ft. Fuselage length 48 ft 4½ in. Gross weight 13,500 lb. Max speed 132 mph at sea level. Max range 478 miles. Provision for carrying machine-guns, rocket launchers, and SS.11 air-to-surface missiles.

Planned Re-equipment: Major enhancement of the RAF's combat capability will follow delivery, from 1978, of a total of 385 Panavia MRCA multirole combat aircraft, developed in partnership by the UK, German, and Italian aircraft industries. They will first replace nine squadrons of Vulcans and Buccaneers in overland strike and reconnaissance roles. Other Buccaneers will be replaced in the maritime strike role. If the planned air defense version of the MRCA is acquired to replace Phantoms in

the 1980s, about two-thirds of the RAF's front-line strength will consist of this one basic aircraft type. The MRCA is a two-seat, variable-geometry aircraft, powered by two RB.199-34R turbofans, each rated at 14,500 lb with afterburning. Max speed exceeds Mach 2. Six prototypes have flown to date.

Fifteen Westland Sea King twin-turbine helicopters have been ordered for coastal search and rescue, to replace Whirlwinds from 1977. Each will carry three litters and twelve other passengers over a 270 mile radius of action.

Delivery of 175 Hawker Siddeley Hawk trainers is expected to begin this Fall. Powered by a nonafterburning Adour turbofan, this tandem two-seater has a design max speed of Mach 0.9 and will replace Jet Provosts, Gnats, and Hunters for basic and advanced training, including weapon training with guns, bombs, and rockets.

Still to be selected is an AWACS aircraft to replace the Shackleton AEW Mk 2. Under consideration are the Boeing E-3A and a new variant of the Nimrod.



Hawker Siddeley Vulcan Mk 2 medium bomber can deliver nuclear or conventional ordnance.



Air Chief Marshal Sir Andrew Humphrey is Chief of the Air Staff and a member of the Air Force Board that administers the RAF.

mands, and **Support Command**, which took over on September 1, 1973, responsibilities allocated formerly to **Maintenance Command** and **No. 90 (Signals) Group**. It would be reasonable to expect a further amalgamation of **Training and Support Commands** eventually.

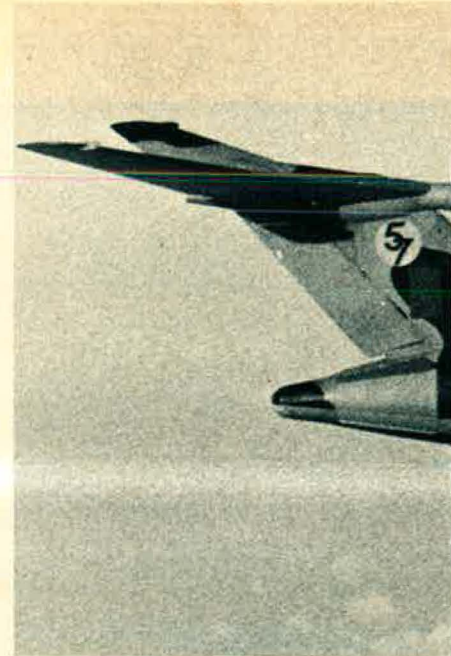
Operations, Experience, and Effectiveness

From its formation in 1918, the Royal Air Force has placed great emphasis on offensive operations. These depend, as never before, on survivability, which is why a large proportion of its present strike/attack aircraft remain based in the UK. Those on the continent of Europe include V/STOL Harriers, able to operate from small fields in front-line areas, and easy to conceal between flights. The capability of the attack force will be increased enormously when the Mach 2, variable-geometry MRCA enters service, with performance adequate for deep penetration of hostile territory on offensive and reconnaissance missions. Meanwhile, the effectiveness of Jaguars and Harriers is being increased by the fitment of laser rangefinder and marked target seeker devices; and the anti-radiation and TV-guided versions of the Martel air-to-surface missile are providing Buccaneers with a standoff capability. If developments necessitated escalation to nuclear operations, the RAF's strike forces would play an important part in the delivery

of tactical nuclear weapons against a wide variety of targets.

Within NATO's EASTLANT and Channel areas, RAF Nimrods, supported by radar reconnaissance aircraft, keep a constant watch on Soviet fleet movements. In war, the Nimrods' antisubmarine potential would be matched by the ability of RAF strike/attack aircraft, dedicated to SACLANT, to strike at hostile missile-armed surface ships that were beyond the range of naval weapons.

The RAF's air defense responsibility extends over the United Kingdom Air Defence Region (UKADR), one of four such regions under the direction of SACEUR. It covers the western flanks of NATO's Northern and Central Regions, and includes the UK itself, UK home waters, the North Sea, and an area of the eastern Atlantic measuring 1,000 miles from north to south. In this area, Phantoms and Lightnings frequently intercept and shadow Soviet reconnaissance aircraft. Others provide cover



for naval forces, from shore bases, with **Combat Air Patrols** of fighter aircraft supported by tankers. Two

ORGANIZATION

UK defense policy is controlled by the **Defence and Overseas Policy Committee**, presided over by the Prime Minister and made up of the Secretary of State for Defence, the Foreign and Commonwealth Secretary, the Home Secretary, and other government ministers as required. Defense decisions reached by this Committee are subject to endorsement by the Cabinet. The Secretary of State for Defence is then responsible for putting them into effect.

Power of command and administrative control are exercised by the **Defence Council**, the members of which are the Secretary of State for Defence; the Minister of State for Defence; the three Service Under-Secretaries of State; the Chiefs of Defence, Naval, General, and Air Staffs; the Chief of Personnel and Logistics; the Chief Scientific Adviser; the Chief Executive of the Procurement Executive; and the Permanent Under-Secretary of State.

The Royal Air Force is administered by the **Air Force Board** of the Defence Council, consisting of:

Secretary of State for Defence: The Rt. Hon. Roy Mason, MP (Chairman)

Minister of State for Defence: William Rodgers, MP (Vice-Chairman)

Parliamentary Under-Secretary of State for Defence for the Royal Air Force: Brynmor John, MP (Vice-Chairman)

Chief of the Air Staff: Air Chief Marshal Sir Andrew Humphrey, GCB, OBE, DFC, AFC, ADC

Air Member for Personnel: Air Chief Marshal Sir Neil Cameron, KCB, CBE, DSO, DFC

Air Member for Supply and Organisation: Air Chief Marshal Sir Anthony Heward, KCB, OBE, DFC, AFC

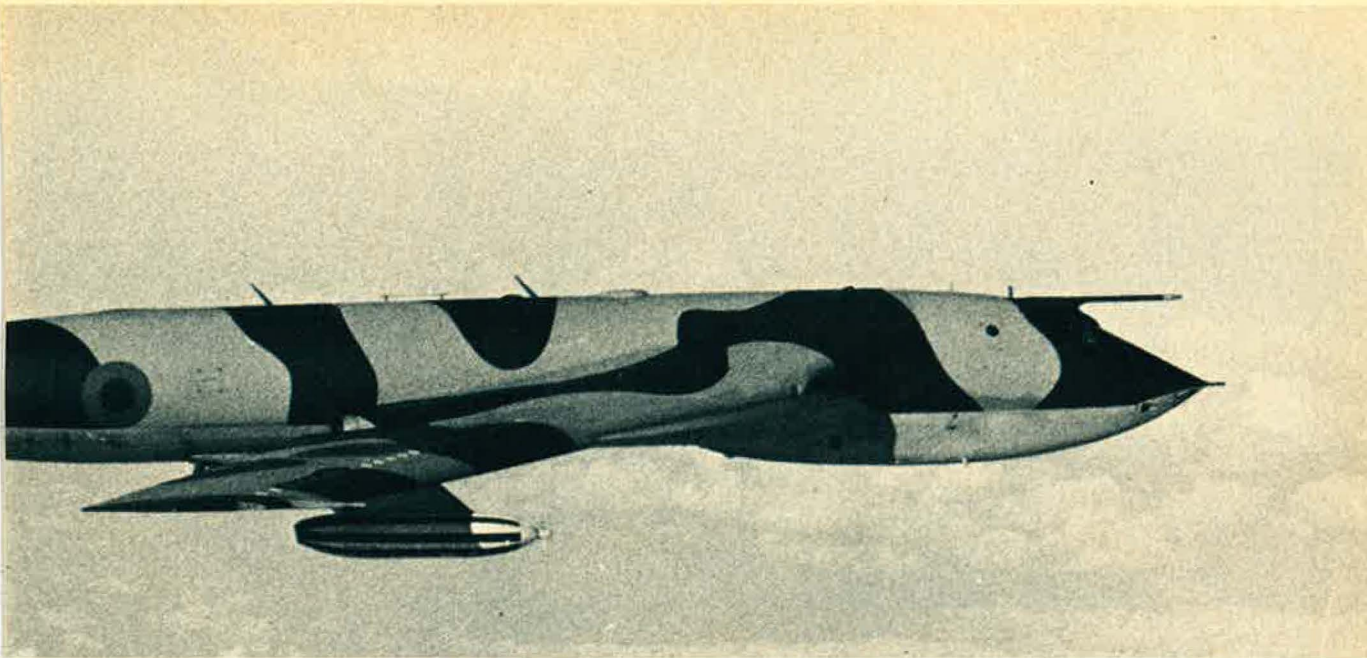
Controller of Aircraft: Air Chief Marshal Sir Douglas Lowe, KCB, DFC, AFC

Vice-Chief of the Air Staff: Air Marshal Sir Ruthven Wade, KCB, DFC

Chief Scientist (Royal Air Force): W. J. Charnley, CB

Deputy Under-Secretary of State (Air): P. J. Hudson

Second Permanent Under-Secretary of State (Administration): J. M. Wilson, CB



Handley Page Victor K1 tanker is a converted former strategic bomber capable of trailing one underbelly and two underwing refueling hoses.

fighter squadrons based in Germany help to police the airspace over that nation and to exercise UK rights of access to Berlin along the air corridors. In both Germany and the UK, the interceptors are supplemented by squadrons of Bloodhound and Rapier surface-to-air missiles.

Overseas commitments continue to be reduced drastically, in accordance with the UK Government's decision to concentrate almost the whole of its defense interests in NATO. This recognizes the UK's unique geographical position at the junction of three major NATO Commands. For Allied Command Europe, it provides a secure rear base for land and air operations on the continent of Europe. For Atlantic and Channel Commands, it is a forward base for reinforcement and resupply, dominating the eastern approaches to the Atlantic Ocean.

Deployment

To meet current operational commitments, the RAF has about fifty-seven front-line squadrons of aircraft and seven squadrons of surface-to-air missiles, organized into two primary regional Commands—Strike Command and RAF Germany—with other small forces deployed in an area extending from Gibraltar to Hong Kong. All operational aircraft in RAF Germany, most of those in Strike Command, and units currently in Malta are assigned to, or ear-

marked for, NATO. More effective control and more flexible employment of UK-based Strike Command resources, to meet changing operational situations, result from the appointment of the Air Officer Commanding-in-Chief Strike Command as a Major Subordinate Commander, CINC UKAIR, under Supreme Allied Commander Europe (SACEUR).

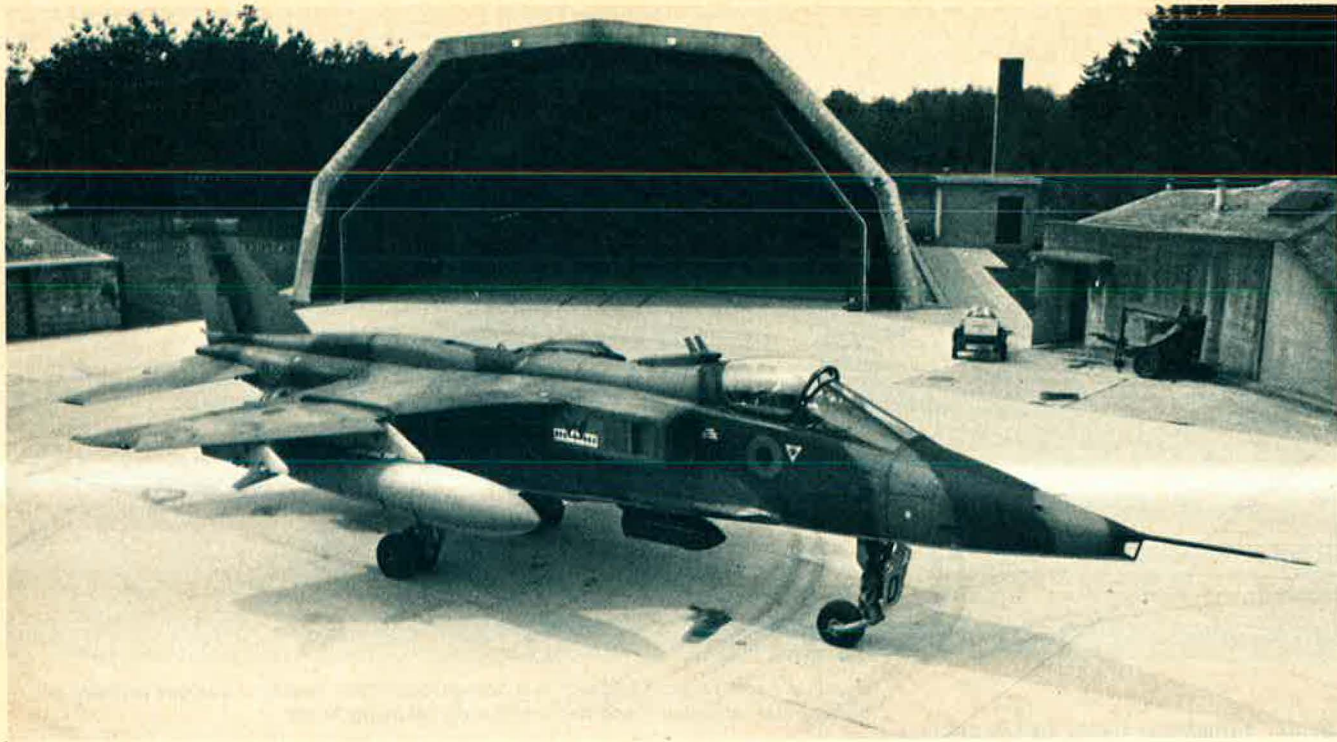
The current RAF command structure is as follows:

Strike Command. AOCinC: Air Chief Marshal Sir Denis Smallwood, KCB, CBE, DSO, DFC. HQ: RAF High Wycombe, Buckinghamshire.

No. 1 Group. Controls Vulcan medium bomber force, and provides Buccaneers for maritime strike/attack, Vulcan and Can-



The RAF Regiment, along with the RAF Police, provides base security and other ground support services. An RAF sentry is shown guarding a Harrier during maneuvers in Scotland.



Mach 1.5 Jaguar GR Mk 1 ground-support aircraft is armed with two 30-mm Aden guns and can carry up to 10,000 pounds of external stores. Operating range is up to about 800 miles. The aircraft is shown outside a hardened shelter.

berras for strategic and tactical reconnaissance, and Victor tankers for flight refueling.

No. 11 Group. Responsible for all-weather air defense of the UK and within its assigned NATO area, in association with air defense radar, and control and reporting systems. Equipped with Phantom and Lightning interceptors, a squadron of airborne early warning Shackletons, and Bloodhound and Rapier surface-to-air missiles.

No. 18 Group. Responsible for the safety of sea communications in the Atlantic, North Sea, and home waters, in association with the Royal Navy and other NATO forces. Equipped with Nimrod long-range maritime reconnaissance aircraft. It also operates the RAF contribution to the UK SAR force, using Whirlwind and Wessex helicopters.

No. 38 Group. Responsible for providing air support for land operations. Equipped with Phantom,

Harrier, and Jaguar attack/reconnaissance aircraft; Phantoms for tactical reconnaissance; Belfast, Hercules, and VC10 transports; and Wessex and Puma helicopters for short-range tactical airlift.

Training Command. AOCinC: Air Marshal Sir Neville Stack, KCB, CVO, CBE, AFC. HQ: RAF Brampton, Huntingdon PE18 8QL. **RAF Cranwell,** Lincolnshire. Responsible for all graduate and post-graduate training for aircrew and

ground duties. RAF College of Air Warfare is at RAF Cranwell, which is also responsible for sixteen University Air Squadrons serving forty-six universities and other degree-awarding institutions that provide graduate entrants to the RAF. There is an Officer Cadet Training Unit at Henlow, an Apprentice School at Halton, a Radar School at Locking, and an Administration and Catering School at Hereford.

Central Flying School, RAF Little Rissington, Gloucestershire. Comprises fixed-wing and helicop-

RAF Regiment troops deploy from a Puma helicopter during training exercise. The Westland/Aérospatiale Puma assault helicopter can carry up to sixteen troops or six litters.



John W. R. Taylor, Editor of Jane's All the World's Aircraft and a contributing editor of this magazine, is considered the world's leading expert on aircraft and aerospace weapon systems. Mr. Taylor's association with the RAF spans many years. He was responsible for the standard three-volume history of the Royal Air Force, wrote the current RAF recruiting booklet, and is a member of the Air Public Relations Association Committee at the British Ministry of Defence.

ter elements that train all flying instructors for the RAF, Royal Navy, and Army Air Corps, as well as for other air forces. The rotary-wing element, based at RAF Tern Hill, also houses the RAF Helicopter Flying Training School. Examining Wing of the

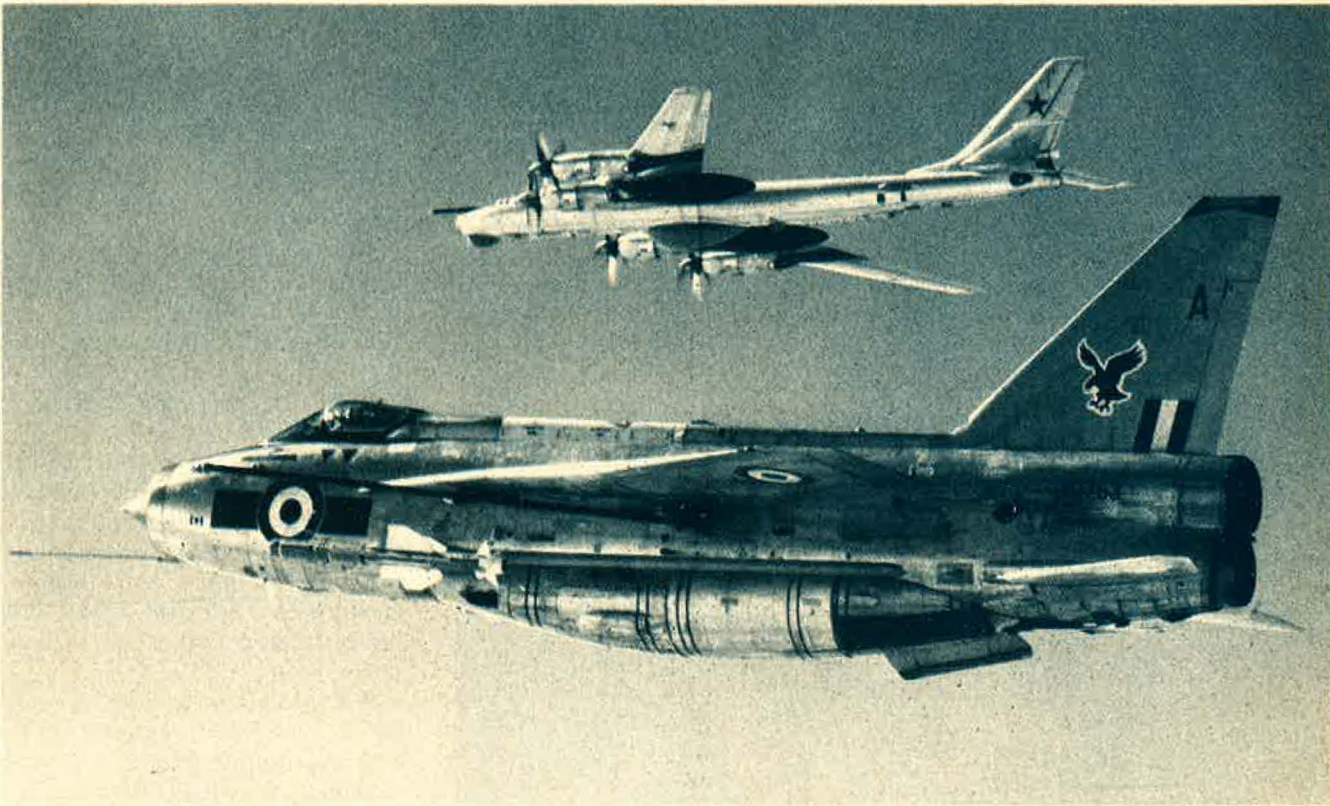
well, and helicopter training to RAF Shawbury, Shropshire.

University Air Squadrons have re-equipped with Bulldog piston-engined primary trainers, which are also replacing Chipmunks for introducing those pupil pilots who have not served in a UAS to the elementary arts of flying. Jet Provosts are used for the second, basic, stage of pilot training. The "fast jet" stream of those judged suitable for air defense and ground-attack duties then progresses to Gnats. Those selected for rotary-wing service continue their instruction on the Gazelle and Whirlwind. The RAF also provides elementary flying training for Royal Navy helicopter pilots. Following cutback of the RAF transport force, multi-engine flying training was suspended. When it

KBE, CB. HQ: RAF Andover, Hampshire.

Support Command provides other Commands and units, and other Services, with an agreed level of support services at minimum cost. Six primary services involve communications; electrical engineering; aircraft engineering; storage and supply; medical, through RAF hospitals and other medical units; and administration. Most facilities are on the western side of England, with one in Wales. Two major computer systems, at Hendon and Swanton Morley, are concerned with supply and engineering defects, respectively.

Royal Air Force Germany. CinC: Air Marshal Sir Michael Beetham, KCB, CBE, DFC, AFC. HQ: RAF Rheindahlen, BFPO 40.



An RAF Lightning air defense fighter intercepts a Soviet Bear long-range reconnaissance aircraft high above the North Sea during "Northern Merger" exercise in September 1974. Soviet recce forces regularly snoop on NATO exercises.

CFS is responsible for quality control of flying training throughout the RAF. Also based at CFS is the Royal Air Force Aerobatic Team, the "Red Arrows." It is intended to transfer all fixed-wing training from Little Rissington to Cran-

is resumed, training may be done under civil contract. Meanwhile, turboprop Jetstreams ordered as Varsity trainer replacements are being held in store.

Support Command. AOCinC: Air Marshal Sir Reginald Harland,

CinC RAF Germany is also Commander Second Allied Tactical Air Force (2d ATAF), of which RAF units constitute a major part. They provide conventional and nuclear strike/attack, reconnaissance, and air defense forces for the close support of NATO land operations in the central sector. Equipment comprises Harriers, Jaguars, Light-

nings, Phantoms (being replaced by Jaguars), and Buccaneer low-level strike aircraft.

Other overseas units. As a result of the UK Government's 1975 Defence Review, the Near East Air Force will shortly cease to exist; its squadrons have been disbanded or redeployed to the UK and allocated to NATO tasks. Remaining overseas units, extending from Gibraltar to Hong Kong, are:

Gibraltar. Air Commander Gibraltar: Air Commodore C. Fountain, MBIM. Air base facilities, used by Hunter fighters and other aircraft, are being retained.

Malta. Air Commander Malta: Air Commodore A. G. Steele, CBE, AFC. Nimrod maritime reconnaissance squadron will disband by 1979. Canberra reconnaissance squadron will return to UK.

Cyprus. RAF commitments in eastern Mediterranean are met by detachment to Cyprus of aircraft from UK. Control is exercised by HQ, British Forces Cyprus at Episkopi.

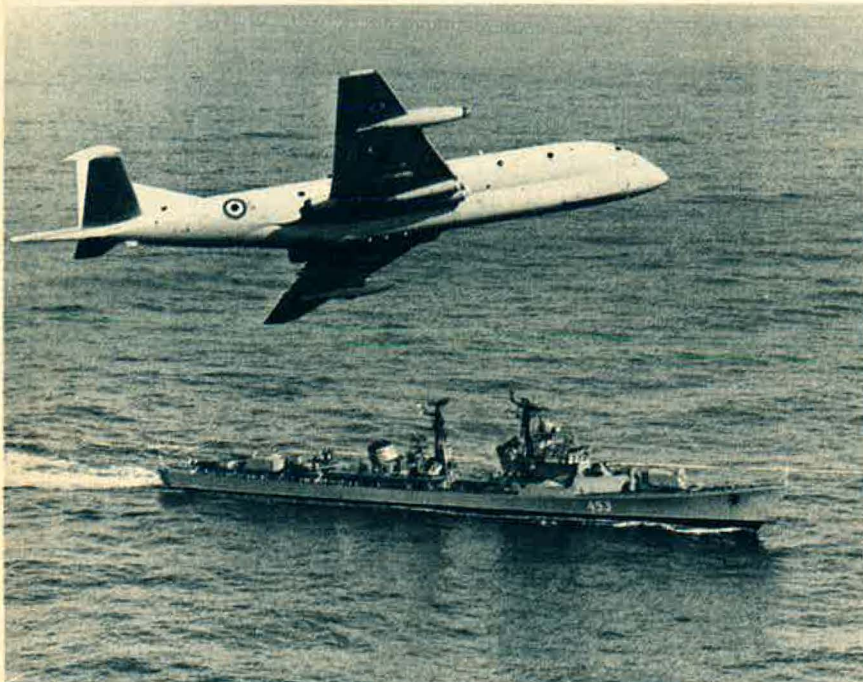
Oman. RAF Masirah is retained as an RAF staging post, and there are British elements in Oman. These include personnel loaned from the three Services who are assisting the Sultan of



RAF's equivalent of USAF's Thunderbirds is the "Red Arrows" precision flying team, here shown in a 1973 photo.

Oman's armed forces in the war against rebels in Dhofar.

Hong Kong. Commander RAF Hong Kong: Air Commodore B. G. Frow, DSO, DFC. HQ:



An RAF Nimrod maritime patrol aircraft keeps close watch over a Soviet Kotlin-class guided missile destroyer in the Orkneys area.

RAF Kai Tak. Responsible to Commander British Forces Hong Kong. RAF equipment comprises one squadron of Wessex helicopters to support garrison.

RAF Strength, Personnel, and Training

When cutbacks imposed by the 1975 Defence Review have been completed, the RAF will operate from a total of seventy-nine stations, of which thirty-seven are classified as flying bases. About six of these are occupied by USAF.

Statistics given to Parliament by the UK Secretary of State for Defence, in the Summer of 1975, revealed that the RAF had a total of 1,718 fixed-wing aircraft and 198 helicopters in inventory at that time.

RAF personnel totaled 95,600 in April 1975, made up of 17,200 male officers, 73,400 servicemen, and 5,000 women of the Women's Royal Air Force and Princess Mary's Royal Air Force Nursing Service. Forecast total for April of this year is 91,300. Totals exclude 400 men of non-UK citizenship.

Recruiting

All recruits are volunteers, there being no national conscription system. Officer recruits include four categories of entrant from civilian life:

- Officers designate selected for training at Henlow.
- University cadets—suitably qualified entrants who attend university under Service sponsorship to read for a degree before taking up full-time officer's duties. Some receive a commission on entry; others serve for an initial period as officers designate.
- Direct graduate entrants—holders of a university degree or equivalent qualification granted a commission on entry to the Service.
- Entrants under other systems—mainly qualified and experienced men and women considered suitable for immediate commissioning, including doctors, dentists, lawyers, chaplains, and education officers.

In general, the RAF is encountering few recruitment problems. Among officers, difficulty has been experienced in attracting career applicants for such specialized areas as the legal and food service branches, and for

few engineering sciences, notably electronics engineers. Less popular ground trades for servicemen include the RAF Police and RAF Regiment.

Budget, Research, and Development

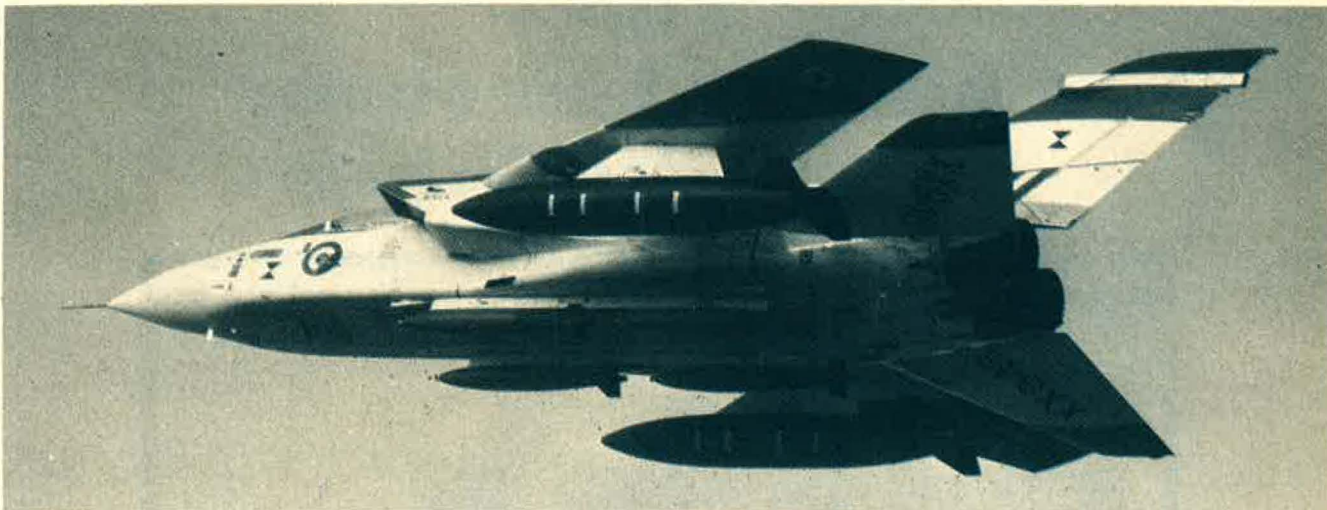
Planned British defense expenditure in 1974 was estimated at 5.8 percent of its gross national product (GNP) on NATO definition, compared with 3.8 percent for France and 4.1 percent for West Germany (or 4.9 percent including Berlin aid). In December 1974, the UK Government announced its decision to reduce defense expenditure progressively to 4.5 percent of the GNP over the following ten years, representing

a total saving of some £4,700 million over the whole period. For the RAF, this entailed a reduction in the fixed-wing element of the transport fleet from 115 to fifty-seven aircraft, reduction of the Nimrod maritime patrol force by one-quarter, a similar reduction in the planned helicopter tactical transport force, slowing the planned delivery rate of MRCA aircraft by up to one-third (without reducing the number of aircraft on order), and a reduction of up to 4,000 in manpower, including 800 officers. Manpower cuts were to be achieved wherever practicable by normal attrition and adjustment of recruiting, with full facilities for resettlement advice and help for those

returning prematurely to civilian life. There was to be no change in the planned numbers of front-line combat aircraft committed to NATO in the UK and in West Germany.

Total defense budget estimates for 1975-76 amounted to £4,548 million, with the RAF proportion unlikely to vary greatly from the thirty-one percent of 1974-75.

At the beginning of last century, Admiral Lord Nelson, Britain's great naval hero, said of his fleet, "We are small, but thank God we are of the right sort." Air Chief Marshal Sir Andrew Humphrey could well say the same about his command in 1976. ■



Future mainstay of RAF is the Panavia MRCA multirole combat aircraft developed and produced jointly by the UK, Germany, and Italy. The RAF is to obtain 385 MRCAs. Six MRCA prototypes have flown so far. Powered by two RB.199-34R engines, the MRCA has a top speed above Mach 2.

"YOU ARE HERMANN GOERING"

My first meeting with Winston Churchill was unforgettable.

I had gone to Chequers with Air Marshal Arthur Harris, RAF Bomber Commander, to a briefing for Mr. Harry Hopkins and General McNarney, who were taking off later that evening for a flight to Moscow.

After dinner, the Prime Minister went around the table calling the Army, Navy, and Air Force leaders present by the names of their opposite numbers on Hitler's staff. When he came to me he said, "You are Hermann Goering." He then proceeded to berate me in typical Hitler fashion, concluding, "Your miserable Luftwaffe was not even able to defeat the pitiful little package of RAF Spitfires in the Battle of Britain to clear the way for my cross-channel invasion."

Then the P.M. pulled down an imaginary lock of hair, curled it over his expansive forehead in Hitler style, beat his chest, and said, "I am Der Führer! Now what do we do?"

Hitler's pantomime staff devoted several hours advising what the Führer should do to win the war.

The P.M. then said, "Well, Gentlemen, if I have been correctly advised, we now know what the devils will do, the better to circumvent them."

—An excerpt from retired Air Force Lt. Gen. Ira C. Eaker's remarks at a British Embassy dinner commemorating the hundredth anniversary of the birth of Sir Winston Churchill, December 7, 1974.

Of all the maverick units that have enlivened the history of air combat, one of the least-known was created in 1943 as part of Claire Chennault's Fourteenth Air Force. Binational, bilingual, and eventually bisected by China's internal power struggle, it was . . .

The Chinese-American Composite Wing



*Col. T. Alan Bennett (left),
Commander of the Chinese-
American Composite Wing,
with Majs. C. H. Yuan
and W. L. Turner.*

BY LT. COL. KENNETH KAY, USAF (RET.)

EVERY airpower buff knows about the Lafayette Escadrille and the Eagle Squadron and the AVG, maverick units in which Americans in two world wars flew for foreign nations. All three have been repeatedly glamorized and publicized by books and films and magazine pieces. To say that is intended in no way to deny them the glory they richly earned.

But, except for a handful of aging warriors who served in it thirty-odd years ago, hardly anyone has ever heard of the Chinese-American Composite Wing (CACW) of Claire Chennault's ragged Fourteenth Air Force in the China Theater of World War II. And that's a great pity, because it was as maverick an outfit as ever existed, a totally unique binational mixed fighter and bomber wing in which Americans and Chinese flew together against the Japanese.

There had been a Chinese Air Force at the start of the Sino-Japanese War in 1937, mainly American trained and equipped, but it had been virtually wiped out in the first days of fighting, leaving only a few obsolete airplanes and half-trained pilots. Thereafter, China lay defenseless against Japanese airpower except for one small volunteer Russian air group that fought on for some two years before ceasing to exist.

Then came Chennault's storied American mercenaries, the Flying Tigers of the AVG whose shark-mouthed P-40 Warhawks created legends in the few months following the Japanese attack on Pearl Harbor. But combat attrition and the fall of Burma that cut off its logistical base finished the AVG, too, and by summer 1942 only a tattered remnant remained that Chennault (by then recalled to active duty from disability retirement as an AAF brigadier general while continuing to be Chiang Kai-shek's air adviser) used as a nucleus for his US China Air Task Force that in turn became the US Fourteenth Air Force.

The Fourteenth was about as starved as the AVG had been, relying wholly for fuel, ammo, and spares on ATC cargo planes flying the Himalayan Hump. Despite the shortages, the Fourteenth achieved a spectacular kill ratio against the

Japanese, due in no small measure to the brilliant air-to-air tactics the leather-faced Chennault drilled into his pilots. But successful as the Fourteenth was, it was powerless to halt Japan's ground advance across China, and no one knew it better than Chiang Kai-shek. The Fourteenth needed to be augmented by a new, revitalized Chinese Air Force, he believed, and in the spring of 1943 he sent Chennault to Washington to plead his case for one.

The timing was right. China loomed large in American strategic thinking at that stage of the war. Many planners believed that the final assault on the Japanese home islands, considered a prerequisite to final victory, would have to be launched from the Chinese mainland. Keeping China in the war until that time was mandatory, and a combat-worthy Chinese Air Force, helping the Fourteenth contain Japan's China-based air, would be an invaluable asset. Generals Hap Arnold and George C. Marshall listened to Chennault's presentation of Chiang Kai-shek's proposals and bought them. The CACW was born.

A Wing Is Born

It was a hurried birth and a messy one. American air units deploying overseas in wartime usually got their gear and trained together first. That's what T/O&Es were for. But the CACW began as an idea and a list of names typed on Special Orders. All across the United States every kind of MOS to man bobtailed P-40 and B-25 squadrons and their administrative higher headquarters got orders and proceeded to the Miami POE in a state of bewildered elation.

Miami was congested with all kinds of personnel sweating out embarkation, some stuck there for weeks. But the CACW people were processed and pushed through. Maybe a week and a half after getting their orders, they were being set down on a former RAF base in the sandy Sind Desert a few miles inland from Karachi. There, they found themselves shaking hands with a host of smiling, bowing, equally perplexed Chinese Air Force officers and men.

In the USAF's Alfred E. Simpson Historical Research Center at Max-

well AFB, Ala., the official history of the Chinese-American Composite Wing, yellowing on a shelf as time passes, relates that the CACW was activated at Malir Field, Karachi, India (now Pakistan), by paragraph 2, General Order 32, Headquarters XIV US Air Force, dated 31 July 1943. Its mission: "To train Chinese Air Force personnel in all phases of combat operations including maintenance and administration."

Reading those words now, all these years later, brings a smile of reminiscent regret to anyone who, like the author, was there at the time, part of the great enterprise. How vainglorious, even bumptious, those words sound. In the light of history, it is easy to see how foredoomed to failure that mission was because of linguistic, logistical, and above all political difficulties. But in the blazing Indian desert heat of summer 1943, there were no doubts at all. We were filled with the confidence of youth and the valor of ignorance.

And the Chinese we had been sent to help were so likable. That was never to change, right to the end of the war. The Chinese are naturally courteous, ingratiating people and the average American likes them instinctively, which may account for the historic friendship that had existed between our two countries.

Except for two or three Old China Hands who were our intelligence officers, few Americans in the CACW knew anything about China or the Chinese people. Warner Oland as "Charlie Chan" in the movies, a waiter in a chop suey restaurant, that was about it. But these were real people, these slender, eager young men in mustard-yellow uniforms we were to go to war with. They spoke little English, but it was far more than the Chinese any of us knew, and they learned faster than we did. Above all, they were infinitely patient, gracious, willing. If they complained about anything we didn't know it.

And there were legitimate grounds for complaint. The P-40s and B-25s waiting for us on the flight line at Malir were war-weary veterans of Libya and sometimes they flew and sometimes they didn't. Except for

the personal tool boxes our mechanics had hauled as hand baggage from the States, we had nothing to work with. The Tenth Air Force people at Karachi were friendly, but they had a war to fight at the end of a global supply line, too, and couldn't help much. Our basic equipment was somewhere on the high seas, everybody assured us, and would arrive some day. Meantime, we went on with what there was. We bore-sighted guns with a Hindu-made carpenter's level; improvised tow targets; armed Russian bombs with Chinese fuzes; hammered back together airplanes that fell apart landing.

Silly things happened and tragic ones: Chinese gunners misunderstood what their American pilots said on the intercom and needlessly bailed out of their B-25s for long walks home across the desert; two Chinese pilots who had trained at Luke Field stalled out their P-40s and spun in; a deputation of camel drivers complained that the Chinese had deliberately strafed their caravan and "three of those camels had been pregnant to boot." And if you didn't watch them like a hawk, the Chinese armorers would pour so much gun oil on the caliber .50s that they'd gum up at altitude and stop firing.

But generally the training went well, and no two peoples of contrasting cultures and different tongues ever worked better together. Reporters for American news magazines filed stories describing how our American officers and noncoms lectured their Chinese opposite numbers on tactics and techniques through Chinese interpreters, and photographers took glossy prints of American and Chinese pilots swaggering in from the flight line, 'chutes slung over their shoulders, side by side like debonair brothers.

Ready for Combat

The brotherliness was no press agency either. By October, when the first increment of the CACW—two fighter squadrons and their group headquarters, one bomb squadron and its group headquarters—was ready to take its brand-new airplanes across the Hump and into the war, it was combat-ready. The

aircrews could fly and shoot and bomb, and the ground crews knew their stuff, too. There was total cooperation and harmony. The mechanics and armorers and radio technicians and all the rest had worked out a bastard English-Chinese *lingua franca* that provided effective communication in the shops and along the flight line.

The Chinese officers gave banquets for the American officers. The GIs gave their poorly paid Chinese alter egos various treats. To an amazing extent the weeks of desert training had made the CACW a kind of bilingual military family. The Americans were the teachers and the bosses, but nobody pushed authority or pulled rank, and sensibilities were protected. It was a comradely bunch of men who went to war together.

The arrival of the first increment of the CACW at Kweilin in South China with twenty-four P-40s and twelve B-25s virtually doubled the tactical strength of the Fourteenth Air Force. There was still practically no maintenance equipment available. But spirit was high. The pilots were eager to fight. The ground crews had learned to make do and improvise. The airplanes at least, with their handsome blue and white star of Kuomintang markings on wings and fuselages, were there and ready to go. There were drums of aviation gasoline in the limestone caves of the conical South China mountains and rows of hundred-pound GP bombs and belts of machine gun ammo the Chinese had been hoarding so long it was green with corrosion. We polished it by hand and strained the gasoline through shamies. We sandpapered the P-40 wings to get an extra five mph in a dive, and waited for orders.

The first big strike came Thanksgiving Day when the 1st Bomb Squadron, in coordination with and under the operational control of the Fourteenth Air Force's 68th Composite Wing, struck Shinchiku Air-drome on Formosa, where for many months the Japanese had believed themselves to be virtually invulnerable. It was a smashing success, as such things were measured in China. Forty-two Japanese aircraft were de-

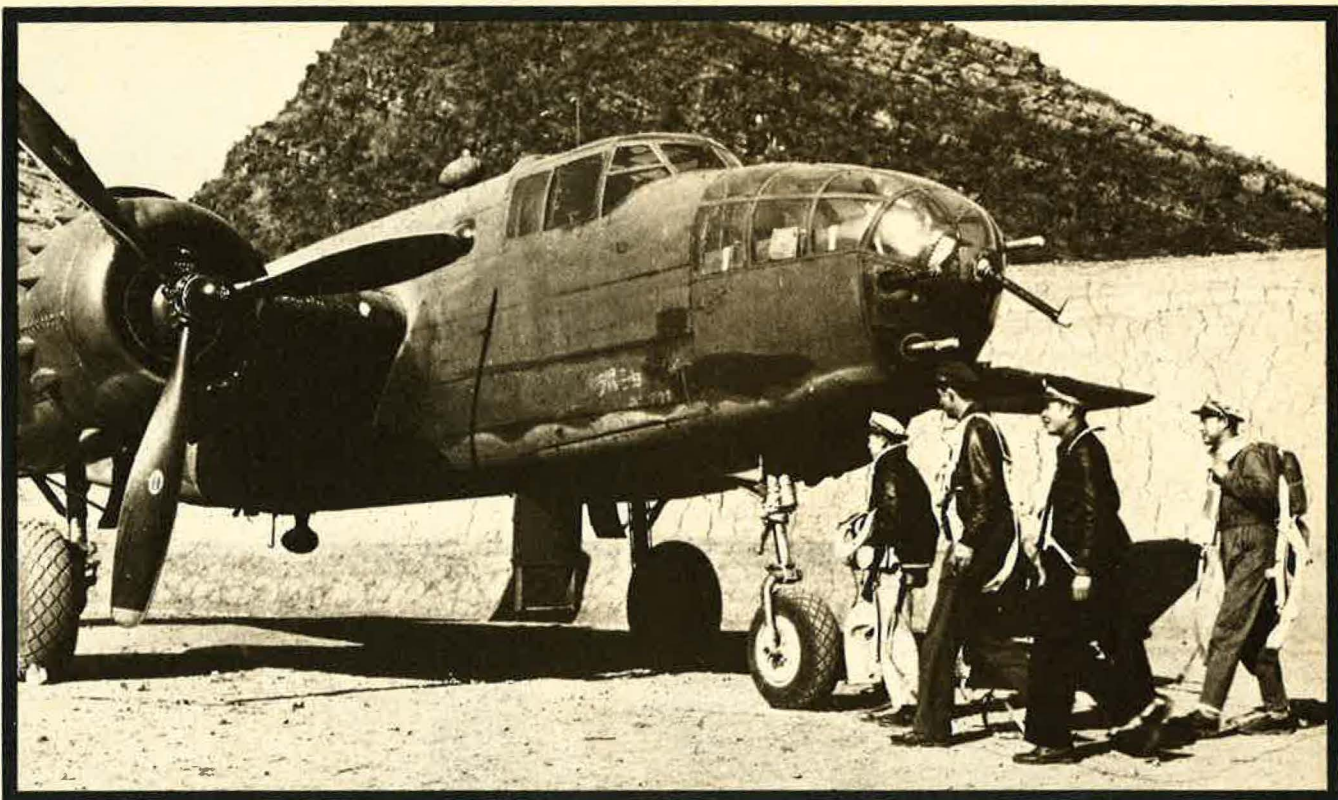
stroyed on the ground, along with supplies and buildings, without the loss of a single CACW airplane. It was a time of jubilation. The premise on which the Wing was founded—to train and lead Chinese airmen so effectively that within a year they could operate with no further American participation—looked as if it could not fail.

So it continued to be as the autumn gave way to winter. The fighters and bombers of the CACW swept the Formosa Straits and the South China Sea, sinking Japanese shipping. The commander of the bomb squadron singlehandedly sank an estimated 28,000 tons. Small though it was, the bobtailed CACW was helping the weary Fourteenth inflict painful wounds on the Japanese giant.

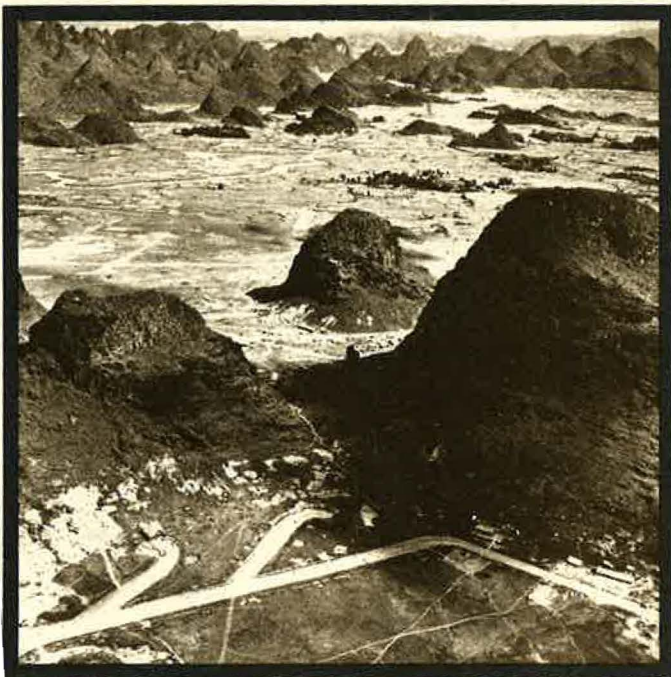
The long-promised unit equipment from the States never arrived, but nobody minded much, as long as there was gasoline and ammo. Japanese bombers hit us at night, but we salvaged parts from our airplanes that their daisy-cutters had smashed (which eased the problem of spares) and kept going.

The second increment came in from India to round out the 3d Fighter Group and 1st Bomb Group, and the CACW had become a force of some potency. Through the winter and into the spring of 1944, its fighters and bombers struck repeatedly at Japanese installations in Hankow, Kiukiang, Wuhan, Hong Kong, Canton, anywhere they could reach within their limited range. The operations began to grow costly in terms of airplanes and pilots. It was understandable. In the stress of combat, Chinese wingmen sometimes misunderstood their American flight leaders' instructions and peeled off for home, leaving them undefended. It was understandable, but it was

The author, Lt. Col. Kenneth Kay, was a four-times winner of Air Force short-story contests while on active duty. Retired since 1966, he now teaches writing at the University of South Florida, Tampa. He has been a contributor to this magazine and to many other national publications. The Chengtu Strain, a novel he co-authored with Marshall Goldberg, will be published this month by Pinnacle Books.



Members of a CACW B-25 crew head for their plane. From left, Lt. K. W. Fang, Capt. W. P. Carson, Capt. C. Y. Lin, and Lt. M. H. Chow.



Capt. C. C. Wilder (above center) briefs CACW crews prior to a mission. Many missions were flown from Kweilin (left), where surrounding buttes provided protection from enemy air attacks.

American-trained Chinese mechanics work on a CACW aircraft at Kweilin.



Col. Eugene L. Strickland watches as Lt. T. Y. Chang goes through P-40 cockpit check while a Chinese mechanic looks on.

Cols. Bob Pugh (left) and Bob Breitweiser of the CACW flank Maj. Gen. Claire Chennault, Fourteenth Air Force Commander.



not easy to forgive when the flight leaders were killed. Which began to happen with increasing frequency.

Disturbing Events

On the ground, though, harmony continued to prevail. There were four messes operated by the Chinese service organization that supported the CACW, one for American officers, one for American EM, two similar ones for the Chinese, but along the flight line things were still easy and fraternal. But odd and vaguely disturbing events began to occur.

Now and then the Chinese group commanders in their polite, urbane way, protested mildly against targets they considered too well defended. They were overruled and yielded gracefully, but in some mysterious fashion all the gasoline would suddenly vanish and the Chinese base commander, charged with logistical support, would have no idea why he had run out. Bad records, he might say apologetically, but it cut no ice. The airplanes sat.

As the official Wing history puts it in frequent laconic phrase: "The squadron ran out of gas and all activities ceased." The Americans would grumble, the Chinese would lay on lavish banquets with many toasts in rice wine to brotherhood, and later on when the Americans would agree to strikes against less dangerous targets the airplane fuel would magically reappear.

By June 1944, when most of the CACW units had been moved north to help block the Japanese drive up the Yellow River, it began to dawn on the Americans that their Chinese comrades might be subject to restraints they knew nothing of. Chinese top cover for American dive-bombing missions failed to appear and there was never an explanation. Chinese pilots who had proved their courage beyond doubt began to turn back rather than risk fighting. No one could understand what was happening. Ultimately the liaison officer of the Chinese Air Force 4th Group conceded to a CACW intelligence officer that "Our basic principle is to avoid in the use of our aircraft contact with the enemy."

The effect of this on the Americans was consternation. They had

come to China to fight a war and win it. You didn't do that by ducking fights. They argued and pleaded and stormed, but it was useless. The Chinese smiled, invited them to banquets, lost the gasoline again. So it went until after the summer campaign of 1944 that finally brought the Japanese ground advance to a halt, but at the cost of the majority of American-manned aircraft in the theater. In any event, China was beginning to lose its prominence in strategic planning. American successes in the Pacific were slowly building a bridge of islands toward the heart of the Japanese empire, and capture of the Marianas provided staging bases for B-29 operations far superior to those around Chengtu in western China. More and more Americans in China began to feel that the war was moving on, leaving them forgotten and neglected.

Resignation and Disenchantment

Nobody ever came right out and said so, but information trickling down from Kunming and Chungking to units in the field made it ever clearer that the Chinese component of the CACW could be counted on for less and less. There was not much acrimony over this; it was more a matter of resignation and disenchantment. The original Americans in the Wing, those who were still alive and hadn't rotated home, still had their warm friendships with the original Chinese, but as if by tacit understanding no Chinese flew any longer in formation with the Americans and more and more the maintenance crews split along national lines and worked independently of one another. Instead of Americans being withdrawn from the CACW as was originally planned, new personnel arrived from the States; pilots, ground crewmen, and nobody said anything to them about international brotherhood.

Our airplanes, including the new long-range P-51s that were far more vulnerable to ground fire than the sturdy short-legged old P-40s, still wore the Chinese markings. And the flags that flew over our gravel runway, mud-revetment bases hacked out by thousands of toiling coolies

were those of Nationalist China, but for all pragmatic purposes the CACW, except for its Chinese element, was just another Fourteenth Air Force wing. Americans flew together on missions; the Chinese the same, most often at lightly defended targets.

As the war wore on and wore down, the CACW continued to maintain its charade. But even the most politically naïve American GI could perceive that the official Chinese position was to remain as aloof as possible while America defeated Japan. The real war, the war for China, would be fought after the Americans had finished off Nippon and gone home. And every rifle, every round, every bomb and airplane and gallon of fuel that could be preserved against that day of reckoning with the Communists biding their time up in Yenan should be preserved.

And so, when Hiroshima and Nagasaki gave Japan the excuse she had been praying for to strike her colors and the Americans finally left China, they left behind every item of military hardware they had brought. How well, or poorly, the Chinese Nationalists used those items is a matter now of historical judgment.

But the CACW did leave a legacy. Perhaps more than one. The Nationalist Chinese fighter pilots who in 1958 from their Taiwan bases scored such stunning victories over the Communist MiGs were perhaps inheritors of the training their elder brothers got fifteen years earlier from CACW fighter aces like Bill Turner and Bill Reed and Keith Lindell.

And now that the 800,000,000 cheerful and patient sons of Han are being permitted by their Peking masters to rejoin the world community, at least slightly, the natural friendliness between the average Chinese and the average American, that thirty years ago kept the Chinese-American Composite Wing with its impossible dream from degenerating into disaster, may turn out to be mankind's ultimate salvation. History is an uncertain teacher, but in the long run it must prevail. Who is to say that the futility of the CACW was really futile after all? ■

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Airman's Bookshelf

Soviet View of War

Soviet Military Strategy, Third Edition (1968), by V. D. Sokolovskiy *et al.* Edited, with an analysis and commentary, by Harriet Fast Scott. Crane, Rusak, New York, N. Y., 1975. 494 pages with appendices and index. \$17.50.

One of the weaker areas of Soviet studies in the Western scholarly and research communities has been that dealing with the Soviet military and security establishment. The number of specialists (outside official government agencies) engaged in the publication of sober and scholarly analyses of this area is indeed small, especially when compared with their colleagues studying Soviet politics, history, and literature. Of this small band of specialists, Harriet Fast Scott stands out as one who has increasingly drawn attention to the importance of the Soviet military and the need for more rigorous studies of Soviet politico-military affairs.

Probably the single most important contribution Mrs. Scott has made in this direction is her translation of the Third Edition of Marshal Sokolovskiy's *Soviet Military Strategy*, one of the most definitive Soviet statements of, in their words, the "essence, causes and conditions of the origin of war in the modern era." The significance of the Third Edition goes beyond being one of the most descriptive works on Soviet military thought; it also represents the official Party view of politics and war, a unique blending of Clausewitz and Lenin.

While the translation of this work is no small accomplishment, it is likewise no small chore for the Western reader to master the idiom of Soviet military writing, couched

as it is in the heavy dialectic of Marxism-Leninism. With this in mind, Mrs. Scott went to great lengths to make this work meaningful to the specialist and general reader alike. Her introduction itself could serve as a short monograph on Soviet military affairs, for it addresses such critical items as the distinction between military doctrine and military strategy, the primary role of the Party in the formulation of military doctrine, the Soviet defense-intellectual establishment, the Party view of war, and the development of Soviet military thought in the nuclear era.

Each chapter is then preceded by explanatory and analytical comments on the chapter's substance and the nature and meaning of the changes between the First, Second, and Third Editions of the work. Finally, each chapter also bears a series of double and triple line markings which draw the reader's attention to the actual textual changes made in the Second and Third Editions. The net result is a major piece of Western analysis and three editions of a critical Soviet statement, all combined under one cover.

Sokolovskiy and Scott have put into clearer relief current Soviet military policies, developments, and deployments. It is an excellent first step and Mrs. Scott has shown what can and must be done if we are to grasp the meaning of Soviet military power.

—Reviewed by Dr. John J. Dziak, Defense Intelligence School.

Drifting with Détente

World Power Assessment: A Calculus of Strategic Drift, by Ray S. Cline. The Center for Strategic and International

Studies, Georgetown University, Washington, D. C., 1975. 173 pages with appendices and index. \$4.95 (paperback).

Ray S. Cline is worried, if not gravely concerned. Now Executive Director of Studies at Georgetown University's Center for Strategic and International Studies, Mr. Cline has also been the CIA's Deputy Director for Intelligence and then Director of Intelligence and Research for the State Department.

He emphasizes that Soviet policy remains based on fundamental hostility to the non-Communist world. The current Soviet leadership is the same that succeeded Stalin and is only now approaching retirement. Détente, notes Cline, is "a strategy by which the USSR expects ultimately to gain total strategic superiority over the United States." On the other hand, in the wake of Vietnam, Watergate, and—Cline might have added—revelations of sordid behavior by the CIA and FBI, the United States is drifting. He correctly emphasizes the almost unprecedented confusion in American strategic thinking and national purpose.

Mr. Cline refutes both "Soviet ideologues and U.S. 'revisionist' historians" who have described the United States as playing an imperial role in world affairs. Though Cline doesn't mention it, paradoxically the distinguished American historian who has written the basic book on the Imperial Presidency (Arthur Schlesinger, Jr.) also happens to be one of the most prolific and convincing antirevisionist academics in this country.

But no matter. Cline's major point here is that the imperial thesis is incorrect because generally the United States entered reluctantly into world responsibility and since 1970 has cut back its international commitments on an unprecedented scale. America's dominant role of the last three decades resulted primarily from its "unscarred position" at the close of World War II.

The major thrust of this book is that over the last thirteen years the Soviet Union has gained approximate parity in strategic weapons with the United States. Cline dates this drive from the Cuban missile crisis of 1962, when the Soviets determined that they would never again confront the United States

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until they had achieved strategic parity.

Ray Cline is convinced the US has been taken in by détente, a concept that does not mean the same thing to the USSR as it does to the United States. Nixon-Kissinger made the mistake of adopting a deliberate policy of endorsing "peaceful coexistence." The cold war allegedly was finished and a generation of peace supposedly ushered in. In the United States, euphoria evolved and the "thread of U.S. strategic thinking was lost."

The climate of détente lingers on and America continues to drift. Dr. Kissinger still cites the benefits of détente, notes Cline, "no matter how limited, by saying there is no alternative except nuclear war." But there is an alternative. It is the kind of political and economic conflict seen by the USSR as the essence of peaceful coexistence. This is the kind of option the United States would stand a good chance of winning.

A major portion of Cline's book comprises rankings of nations based on a political-economic-military formula that he calls "politectionics." He has described the shifts in world power groupings by arranging nations within regions or politectionic zones according to various elements of power. In this way, he attempts to determine the balance of influence and force among nations.

I found Cline's "politectionics" charts and ratings interesting and perhaps they might be useful as a primer for students of international affairs. Generally, they do not reflect new insights into geopolitics or military alignments.

The best part of this book is its analysis of the reasons for the loss of America's power and influence. These are only partially reflected in numbers and charts. The crucial elements in determining power, Cline stresses, are national purpose and will. The United States remains basically a strong nation. Its greatest resources are the

strength and resilience of its people.

I interpret Cline's message to be that, though our technology remains vibrant, the US has suffered an unprecedented loss of leadership at the highest levels of government. The results have been confusion and drift in national policy.

The good news is that it is not too late to recover.

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

New Books in Brief

Audie Murphy: American Soldier, by Harold B. Simpson. Born into poverty, orphaned at sixteen, and educated only through the fifth grade, Audie Murphy became a war hero, movie star, songwriter, and poet. In a short span of five months during World War II, he earned this country's three highest decorations for valor, making him the most decorated soldier in American history. In 1971, he died in a plane crash at the age of forty-six. Here is his remarkable story told in full for the first time. Hill Junior College Press, Hillsboro, Tex., 1975. 466 pages. \$12.50.

Close-Up 13: Aichi M6A1 Seiran, Japan's Submarine-Launched Panama Canal Bomber, by Robert C. Mikesh. Toward the close of World War II, Japan planned to attack the strategically important Panama Canal. The scheme involved a special, one-mission attack plane, "Seiran," that folded to fit inside "underwater aircraft carriers." Launched from huge submarines, Seiran crews would bomb targets and crash-land alongside the subs. It might have come off. The Japanese had the means, the skill, and the determination. They lacked the time. The author, who is Assistant Curator for Aircraft at the Smithsonian's National Air and Space Museum, has written several articles for AIR FORCE Magazine. Photos, drawings, specification tables. Monogram Aviation Publications, Boylston, Mass., 1975. 32 pages. \$3.95.

Destination Berchtesgaden, by John Frayn Turner and Robert Jackson. Little attention has been paid to the exploits of General Patch's US Seventh Army in its drive across Europe during the closing months of World War II. Its rapid advance through southern

Germany and Austria prevented the establishment of Hitler's "National Redoubt." That alone, the authors say, probably shortened the war by several months. Success and failure at the tactical level are described in detail but with little attention to the part played by Allied air forces. Maps, photos, index. Charles Scribner's Sons, New York, N. Y., 1975. 192 pages. \$7.95.

Interview with Honor, by James F. Risher, Jr. They called it "the interview," but it was hardly that. Arranged and coordinated to the last detail, it involved an exchange of gunfire, not of words. "The interview," or duel, was the great score settler for all sorts of disputes. Here is a fast-moving, well-documented study of the duel as practiced in America with special emphasis on the classic confrontation between Aaron Burr and Alexander Hamilton in 1804. The author is a retired Air Force officer. Dorrance & Co., Philadelphia, Pa., 1975. 277 pages. \$7.95.

Japanese Policy and Nuclear Arms, by Jay B. Sorenson. A timely discussion of the myriad problems in any Japanese decision concerning nuclear arms. The author believes Japan could develop a credible and reasonably invulnerable deterrent if it chose to do so. The ramifications of a pronuclear decision in terms of Japan's domestic and world politics and the balance of power in East Asia are explored. One conclusion is that the United States should not encourage Japan to go nuclear. American-Asian Educational Exchange, New York, N. Y., 1975. 60 pages. \$1.00.

U.S. Fighters, by Lloyd S. Jones. This book includes descriptions of every American fighter aircraft from the Curtiss P-1 Hawk of the late 1920s to those being readied for service in the 1980s, complete with photos and three-view drawings. The book also covers the exotic experimental—and in many cases unbuilt—fighters whose designs have remained little known. Details of the 125 aircraft demonstrate the evolution of the US fighter and provide a storehouse of factual reference material. By the author of *U.S. Bombers*. Aero Publishers, Fallbrook, Calif., 1975. 352 pages. \$14.95.

—Reviewed by Robin L. Whittle



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AIR FORCE
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The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Tight Budgets Signal Changes

A newly created "action group" composed of up to sixty USAF members ranging from NCOs to two-star officers is searching for new ways of doing business at all bases—and saving money and people in the process.

Headquarters wants members with innovative ideas to fire them in promptly. That many changes are near becomes clearer each month. USAF set up the Base Level Action Group late last year following receipt of the dismal funding picture reflected in future budget projections.

These forecasts, on the one hand, point to new cuts in military, Reserve, and civilian manpower; re-

newed efforts to limit pay raises; packing more of what pay raises are approved into BAQ and less into basic pay, thus increasing the government's return on surrendered quarters allowances; further assaults on commissary and non-appropriated fund active outlays; slashes in travel money; and other economies.

Last month's "Bulletin Board" outlined USAF plans to save millions in reduced travel spending. Headquarters has followed up with implementing messages.

On the other hand, the new austerity drive must of necessity change the way base activities operate from day to day. That's where the new action group comes in. Assistant Vice C/S Lt. Gen. M. L.

Boswell charted its course in a letter to Hq. USAF staff agencies. The objective, he said, is to "determine ways to improve upon present organization, procedures, functions, and policies, and at the same time to realize savings in money, material, and people."

No long-standing procedure, program, or facility is exempt, a group spokesman said. For example, a base facility such as a theater might be closed if it were determined that a commercial theater was nearby and could conveniently handle the base trade. If it is found that an existing base project actually is used by only a few people, it could become a casualty.

The new group, in short, is looking at all areas of base activity that can be streamlined and bring economies. "With the constraints of the FY '77 and future budgets, we cannot operate as we have in the past," the spokesman said.

Maj. Gen. Robert C. Thompson, the Hq. USAF Director of Engineering and Services, heads the Base Level Action Group. His aides come from all major commands and other USAF agencies, some on a short-time basis.

General Boswell told Air Staff offices that "the success of this important undertaking requires marshaling the best thinking across the Air Force." Individual members with ideas the group might pursue should send them in—"in any format"—to the AF/BLAG, Bldg. 626, Bolling AFB, Washington, D. C. 20332.

No time limit has been set on the group's existence. "When the job is completed, we'll disband," an authority said.

Store, U-Haul Funds Okayed

In the final version of the FY '76 military appropriations bill, House-Senate conferees restored funds for operating commissary stores approved allowances for members who move their own household goods, and said each service can decide its own policy regarding tour extensions in the Far East. Earlier, the House had voted to automatically extend unaccompanied tours for members with non-command-sponsored dependents.

The conferees in the big spending bill also cut military education programs and altered key sections

William I. Greener, a retired Air Force lieutenant colonel and former Information Officer, has been named Assistant Secretary of Defense (Public Affairs). He succeeds Joseph Laitin, recently appointed FAA's Assistant Administrator for Information Services. Previously, Mr. Greener, an AFAer, served as Deputy Press Secretary to the President, a post he had held since April 1975.



of the CHAMPUS medical project (see separate reports elsewhere.)

The commissary funding battle had lasted a full year. Its renewal, under new moves by the Administration to withdraw financial support of the stores, appears certain.

The services have been testing "U-haul" plans for some time (see "Speaking of People," December '75 issue). The congressional endorsement will allow members to receive a lump sum before moving, which will cover all expenses and still provide a bonus. USAF officials said they hoped to start the program at most Stateside bases around February.

Air Force personnel funds were reduced about \$150 million below the President's budget, but the actual strength cuts USAF faces were not spelled out in the conference report. However, the Air Force is expected to drop from its present 600,000 active-duty members to about 585,000 next summer. The conferees directed a reduction of 2,450 USAF civilian employees.

The appropriations bill was delayed in December, but was expected to become law, complete with the sections cited here, in late January.

Quality of the Air Force

USAF traditionally has topped the other services in recruiting selectivity, personnel retention, diplomas and degrees acquired, and other factors measuring troop quality and attitudes. With one disturbing exception, new data provided AIR FORCE Magazine show additional improvement. Examples:

- The percentage of airmen with high school diplomas (or equivalent) rose from 90.8 percent in FY 75 to 96.7 percent the first four

months of FY '76. And the percentage of new Category III airmen dropped from 55.6 percent to 53.1 during the same period.

- Retention rates for line officers (at the seven years' service point) rose from forty-three percent in FY '74 to fifty percent in FY '75.

- At the end of last September, 8,438 airmen held Bachelor-level degrees or higher, topping the figures of previous months when overall airmen strength was greater. More than 63,500 airmen are working on their degrees. Among line officers as of last July, only 5.6 percent lacked at least a Bachelor-level degree; a year earlier the

The DOPMA Picture

The fact that the pending DOPMA measure does not assure O-4s continued service to retirement has caused some worry among officers. While Air Force hopes by using DOPMA's "continuation" section, that all majors may be allowed to stay aboard until they qualify for twenty-year retirement, Defense authorities take a more cautious view. They told AIR FORCE Magazine that budgetary conditions could trigger tougher action under the continuation section, which would result in forced O-4 separations.

The new severance pay formula,



All in the family: Stationed together at Osan AB, Korea, from left, are SSgt. Robert M. Dorcy; his wife, SSgt. Suzanne C. Dorcy; and Suzanne's brother, SSgt. Albert A. Casavant. Robert's brother, Sgt. Timothy J. Dorcy, is at Kunsan AB, Korea.

deficit was 7.2 percent. Also, as of last July, 1,155 line officers held Doctorates and 22,074 owned Masters, compared with 1,117 and 20,373, respectively, a year earlier when the total officer force was 6,000 members larger.

Authorities said the overall qualification of today's Air Force member is "perhaps the highest in history." However, they cited a new problem that could affect force quality in the future. Many potential recruits "are unskilled and [of] lower quality and are minimally acceptable. . . . Evidence of this is that our passing rates for aptitude testing have decreased from sixty to fifty percent."

of course, would ease some of the sting. It provides ten percent of a year's basic pay times years of service, with a \$30,000 ceiling.

Meantime, Pentagon officials (who have poured years and thousands of manhours into the DOPMA project) were disappointed over the failure of Congress to enact the legislation in 1975. The best estimate is that the House will okay the package fairly early this year, with the Senate reluctantly going along.

The major reason for DOPMA's sluggish progress: it does not provide controls on the number of star/flag officers the services may have. Senators particularly are up-

CORRECTION

An item in the October '75 "Bulletin Board," headed "Overweight Members Warned," cited a "TIG Brief" article urging overweight USAF people to trim down. Inadvertently, the article was attributed to Lt. Gen. Donald G. Nunn, USAF Inspector General. It was, in fact, written by the Inspector General of the Air University, and had appeared in the 29 August 1975 "TIG Brief."

The Bulletin Board

set over the absence of such curbs. The House Armed Services Committee also favors star controls, but is willing to overlook their absence for the time being. It plans to take up the matter separately, after DOPMA becomes law.

Defense says DOPMA is complex enough, without bringing generals and admirals under its provisions. As for controlling the number of generals, the Senate "already has such authority under the confirmation process," a prominent Defense source declared.



Welcoming a newcomer, Quyen Nguyen, are Maj. Gen. Charles I. Bennett, USAF (Ret.), right, President of AFA's Jacksonville, Fla., Chapter; Past Chapter President Robert W. Sowerby, second from right, Commander of the American Legion's 5,000-member Tri-County Council; and George Riccio, left. The occasion: a Vietnamese Welcome Party held recently at American Legion Post #137 in Jacksonville. Seventy-two-year-old Quyen Nguyen, second from left, lost ten of twelve children and a son-in-law to the Viet Cong. Nguyen and his wife, a son and widowed daughter, and a granddaughter are all sponsored by the Riccio family. General Bennett, also a Vietnamese sponsor, served as coordinator for the affair, which was attended by Vietnamese and sponsors.

Union Eyes Reserves, Guardsmen

The Association of Civilian Technicians, whose 10,000 members are entirely Reserve and National Guard technicians, recently disclosed plans to launch "early in 1976" a campaign to organize members of the Reserve Forces country-wide. ACT's President, Vincent J. Paterno, said many of its members will pass out literature and enrollment cards at units, armories, etc. There will also be advertising, he told AIR FORCE Magazine.

Pentagon officials, meantime, bristled at the idea of a Reserve-Guard union. A spokesman said that while there is no regulation against Reservists joining such an organization, "commanders are not authorized to recognize or to bargain" with them. Clearly the battle lines have been drawn.

Paterno said he first organized Guard technicians in 1960. He claims the recent suggestion that drill pay be cut in half is a good example of why Reservists must be organized. A Pentagon spokesman pooh-poohed the idea, saying drill pay isn't in jeopardy. And Congress in all probability would block any serious attempt that might be made to cut drill pay.

Earlier, the American Federation of Government Employees said it planned to organize active-duty

members later this year (see "Speaking of People," September '75 issue).

Elsewhere on the Reserve-Guard scene:

The Administration's bill to allow the President to call 50,000 Reservists and Guardsmen to active duty for up to ninety days without an emergency has won Senate Armed Services Committee approval. Full Senate endorsement is seen soon, but House opposition may be strong. It's the Administration's top-priority Reserve-Guard legislation.

The Office of Management and Budget late last year rejected Defense's bid for (1) broader medical benefits for Reservists, and (2) authority to let certain retired enlisted specialists work with key units, such as C-5 "associate" outfits, and keep their retired pay.

A Defense source said OMB rejected both measures because of their price tags. Also sidetracked for the same reason is the services' long-sought plan to provide Reservists tuition aid. The official said he hoped the measures could be revived at some later date.

Still bogged down in the executive branch is the Reserve Officer Personnel Modernization Act (ROPMA). It has been billed as a "companion piece" to DOPMA, the program overhauling active-duty officer policies (see preceding item). Also stuck in the White House is Defense's legislative bid to let Reservists retire as early as age fifty on a reduced annuity.

Kudos

For the first time in nine years, the prestigious Cheney Award has been awarded for heroism displayed outside Southeast Asia. Recently announced winners for the year 1974 are TSgt. Gerald C. Arruda, now of George AFB, Calif., and SSgt. Billy J. Peterson, Shaw AFB, S. C. They were at Shaw July 17, 1974, when an RF-4C crashed. They played a major role in saving the crew from serious injury or worse and saving the aircraft. Cheney winners from 1966 through 1973 all were cited for heroism in SEA actions.

Alternate Education Plans Advanced

Hit by new cuts in education funds, the Air Force is mapping alternate plans to provide necessary schooling for officers and airmen though probably on a reduced basis.

Congress, in the conference report on the FY '76 military appropriations bill, has authorized USA to continue graduate officer education, but it cut out \$1,750,000 of service had earmarked for the AF program. No students need be removed from school, but the continuing cuts mean fewer entries each year. This pattern, authorities to

Manpower Malaise Hits the AFROTC

Active-duty members aren't the only ones caught up in the turmoil created by eight years of steady cuts in USAF manpower. Recent graduates and senior cadets of the AFROTC also are hurtling. Problem No. 1: production of new officers—based on contracts made three to five years earlier—exceeds those the Air Force, under cuts imposed by the Administration and Congress, can reasonably accommodate. Another problem: requirements for new pilots have plunged.

So, despite considerable recent trimming of new production, AFROTC graduates can't be absorbed within a reasonable period of time. Indeed, many of those earmarked for pilot school were told late last year to expect call-up delays of up to two years. Not surprisingly, there is considerable unhappiness among these people. Some are caught in a financial squeeze.

Headquarters officials at year's end were hoping to shorten some of the extended delays, though the basic problem of overproduction seems certain to be around for awhile.

The Air Force earlier reduced AFROTC production and dropped several units. More "disestablishments" are near. The second major commissioning program, Officer Training School, is a mere shadow of its former self; only 724 new lieutenants, nearly all for nonrated, technical posts, will be produced this fiscal year. As recently as FY '73, OTS turned out 3,700 officers.

The third officer source, the Air Force Academy, has not been trimmed, nor will it be. This means about 900 graduates from this source annually. Air Force policy has always been to enter as many Academy graduates as possible—about two-thirds of each class—into pilot training. This, in turn, reduces the number of pilot training spaces available to officers from other commissioning sources.

The "long-lead-time" AFROTC as recently as FY '73 turned out 4,500 officers annually. Early in this decade, Defense's "five-year plan" projected USAF as having, by the current fiscal year, about 122,000 active-duty officers. AFROTC planning was set accordingly.

The only trouble was that the Pentagon's plan was miles off target. The officer force now totals about 100,000 officers, not 122,000. So, besides overproduction of upcoming officers, USAF found itself with large active-duty officer surpluses. RIFs and early outs followed.

Within the AFROTC, new enrollments were curtailed. In a related move, Air Force last fiscal year called 300 graduates to just ninety days of active duty for training and talked 300 cadets into leaving the AFROTC program entirely. This year, with official nudging, 550 cadets left the program, 300 elected the ninety-day training option, and 500 would-be pilots agreed to switch to navigator or nonrated slots.

Overall, the Air Force has cut total AFROTC cadet strength (as of last October 30) to 17,300. Two years earlier, the figure was 20,350. A decade ago it was close to 100,000.

AFROTC units are down to 162 (plus two satellite sites), with seven more slated to fold by September 1976. Twenty-nine other units, now on "probation" for low production, are expected to disappear within the next year or two. Meanwhile, many other schools want USAF to establish units on their campuses. The service isn't buying.

The Air Force, in a related retrenchment move, has cut 6,500 AFROTC scholarships to 5,500, and Hq. USAF officials expect Defense to invoke further reductions, perhaps to 4,000. A cut of that size probably would limit new scholarships next fall to about one-half the usual number, authorities said. However, they added that AFROTC scholarships are expected to be awarded to men selected soon for fall entry in the Airman Scholarship Commissioning Program (ASCP). Former men currently enrolled will retain their scholarships. Earlier, USAF planned on 2,800 new AFROTC officers in FY '76 and 2,500 in FY '77. But these figures may be

pared back, Hq. USAF authorities also told AIR FORCE Magazine. Absorbing all of them appears an impossibility.

At the end of last November, the AFROTC graduate backlog exceeded 2,000, including 1,535 pilot candidates with lengthy call-up delays. Pilot candidates who graduated in May-June 1974, for example, are just now entering flying training. The Air Force told the nearly 500 pilot-earmarked graduates of June 1975 not to expect entry until April-June 1977.

For graduates who can't find short-term jobs, or who lack funds for graduate-level schooling during the delay, such waits are an eternity.

At press time, Hq. USAF personnel authorities were attempting to work out a speedier call-up schedule for graduates in the pilot school category. The best possibility: switch some of them to nonrated status where the backlog is much less severe. AFROTC graduates headed for navigator school have been entering training in less than a year, but this category is now developing a sizable backlog, officials said.

Headquarters, meantime, has tried to ease the sting of delayed calls. Base clubs, golf courses, other athletic facilities, aero clubs, and other activities have been opened to the waiting lieutenants. But not commissaries and exchanges.

They also receive some promotion credit; e.g., a person whose entry is delayed for eighteen months makes first lieutenant after eighteen months of active duty, rather than twenty-four months as for those not delayed.

Delayed officers receive pay credit for their nonactive-duty time. Thus, under current scales, a second lieutenant delayed two years receives \$693 basic pay monthly, compared with \$666 for persons entering active duty with less commissioned time.

Headquarters also works closely with nonrated graduates to help them get their choice of assignment. And graduates bound for pilot training who can prove that a delayed call-up would create severe hardship are called up earlier. The Hardship Review Board, however, is reportedly very tough and approves few applications.

The Air Force periodically sends AFROTC units detailed information about the delay situation, size of backlog, call-up schedules, etc. Pamphlets were dispatched last July and October, and another with the latest information was to be distributed last month. Nevertheless, some graduates have complained that they have not been kept informed.

Back on the campus, many students with strong academic and leadership credentials who would like to enter the AFROTC program are not getting in. Competition for the dwindling number of scholarships (tuition, books, fees, plus \$100 a month) is particularly fierce.

Authorities explained that 15,000 students applied for the 700 scholarships awarded freshmen last fall. The winners ranked in the top five percent of their high school classes and averaged more than 1,300 points on their college boards (combined verbal and math scores on the Scholastic Aptitude Test). This dwarfs the 900-plus SAT point average scored by college-bound high school graduates countrywide.

In rapid fashion the service can close the OTS spigot and slice active-duty personnel in response to budgetary reductions. Not so ROTC; cadets are signed up several years in advance of normal active-duty entry. Plans and promises made in FY '71-'73 are difficult, if not impossible, to carry out when subsequent higher-level decisions slash the force far below the most careful estimates.

USAF planners need a reasonable period of relative stability, so that new officer estimates, made now for future years, will hold up. Unfortunately, their chances of attaining this stability are not promising.

To the recent AFROTC graduates and those soon to graduate, the Air Force urges patience. But for many of the extremely alert, savvy, highly charged, and ready-to-roll youths involved, that's a near impossibility. ■

The Bulletin Board

AIR FORCE Magazine, "will increasingly reduce Air Force's ability to meet growing graduate degree shortages in scientific, engineering, and other technical fields by means of fully funded programs."

As a partial offset, officials unveiled a new project called Stabilized Tour Education Program. Under STEP, certain officers may obtain stabilized assignments at selected bases where "graduate degree programs in shortage fields can be completed on an off-duty basis using tuition aid or VA assistance."

USAF personnel officials, meantime, had urged Congress to revive the Airman Education Commissioning Program. The service wanted to enter 350 more airmen in college through next September; the airmen, with help from their GI Bill entitlement, would pay their own tuition and fees.

But the lawmakers barred any new AECP entries as long as Air Force maintains an officer surplus and continues to RIF officers on board.

In searching for alternative airmen commissioning opportunities, Headquarters officials said they are leaning to "some form of an expanded Bootstrap TDY program, coupled perhaps with prior tour stabilizations at bases where they could participate in required programs off duty. . . ."

In a related development, the Air Force cited a dramatic increase in off-duty course enrollments under the GI Bill. Total enrollments rose from 76,724 in FY '73 to 145,501 in FY '75. The latter figure included the following enrollments: 40,803 airmen in the Predischarge Education Program (PREP); 6,070 officers and 28,786 airmen in undergraduate courses; 50,571 officers and 5,631 airmen in graduate-level courses; and 1,075 officers and 12,565 airmen in technical-occupational courses.

VA tuition benefits rose a year ago, but USAF officials attribute the sharp increase in GI Bill participants to the expansion of courses



Lt. Gen. James C. Keck, SAC Vice Commander in Chief, with two Air Force Academy candidates during a tour of SAC Headquarters. Both graduates of Bellevue High School, Neb., are Bill Ryder, center, and John Kilty. General Keck's son, Tom, graduated from the Academy in 1969.

provided at bases by colleges, in cooperation with base education staffs.

What happens to off-duty study opportunities if Congress ends GI Bill entitlements for new service members, as the Administration requests? The PREP program would end immediately, officials told AIR FORCE Magazine. Graduate-level participation (about eighty percent of it is currently under the GI Bill) would become critical in three years unless the tuition assistance program were beefed up.

"We could lose a substantial proportion of our . . . on-base master degree coverage," officials added. Undergraduate courses would also drop unless additional tuition aid were forthcoming; USAF, of course, plans to make a big pitch for such funds if the GI entitlements for new troops end.

How soon they might end is uncertain. The House has voted to stop entitlements to persons entering service after December 31, 1975. But the university community, facing large financial losses, if entitlements are cut off, is pressuring the Senate to block passage.

Civilian Employee Roundup

The President's Panel on Federal Compensation, headed by Vice

President Nelson A. Rockefeller, in late December released its long-awaited report on federal pay systems. Employees and employee unions immediately pounced on it, claiming that most of the recommendations would reduce federal pay.

Supporters acknowledged they will have a tough time getting Congress to accept the major points. These include recommendations to (1) scrap the time-in-grade automatic raises for many civil servants and substitute more limited boosts based solely on merit; (2) gear pay scales of clerical workers to prevailing nonfederal rates in local areas; and (3) give substantial, but unspecified, raises to supergraders. Their pay for years was frozen at \$36,000 and is now frozen at \$37,800.

In other civilian employee developments:

- The Air Force said that during FY '75, it granted "quality salary increases to 1,675 of its GS-6s and below, 1,087 to GS-7s through -11 and 513 to GS-12s and above. Cash awards went to 7,810 employees during the same period, including one which brought first-year "target benefits" of \$3,048,000.

- Congress sent the White House legislation that provides allotment of payments from Civil Service

nuities. It also approved a bill restoring annual leave lost by an employee because of an unjustified personnel action.

• Air Force announced it would lay off up to 2,945 employees at Logistics Command bases by June 30. Kelly AFB, Tex., with 1,000-1,250 affected, is hardest hit.

Kin Medicare Changes

Two tough new proposals regarding CHAMPUS medical care were about to be eased slightly recently, but new threats to dependent care are waiting in the wings.

In late December, House-Senate conferees agreed to increase the distance limit for obtaining a non-availability certificate (needed for care under CHAMPUS) to forty miles. The House earlier set a fifty-mile limit. Thus, dependents securing the certificates can continue going to civilian facilities under CHAMPUS. However, for those who can't and who live nearly forty miles from the service hospital, it makes for a long, tough round trip.

The conferees also eased the threatened prohibition against CHAMPUS payment for services of pastoral, family, child, and marriage counselors as proposed by the House. Such payments, Congress finally decided, are all right if the military certifies that the services are not available at the base the member is assigned to, or when the dependent lives within the new forty-mile limit and the facility cannot provide the services.

The latest threat is an Administration plan to charge dependents, in a sliding-scale formula based on the sponsor's rank, for inpatient care at military hospitals. The plan calls for daily fees of from \$4 for low-ranking enlisted dependents to \$19 for kin of full colonels and more for generals' dependents. The present fee is at \$3.70 per day, regardless of the sponsor's grade. As previously reported in these pages, fees may begin soon for dependent outpatient visits at service facilities.

Port Bursts

ringing nearer the day when military personnel can (or will) have state income taxes automatically deducted from their pay is a report from the General Ac-

counting Office. It says that both service members and the states would benefit from what it calls the "pay-as-you-go privilege." Many members would hardly call it a privilege.

Alabama, in a major bid to attract military retirees on a permanent basis, recently approved legislation exempting the first \$4,750 annually of military retired pay from the state income tax. The new statute will save each of the 24,000 retired military families now living in Alabama "several hundred dollars in taxes," the state claims. Gov. George Wallace, in signing the measure, said it should be "an inducement" for military people to retire in the state. He then talked about the warm climate, job opportunities, etc.

The Senate wanted to cut to 250 the number of aides generals and admirals can have assigned. But House-Senate conferees let the present 396 ceiling stand. For awhile at least.

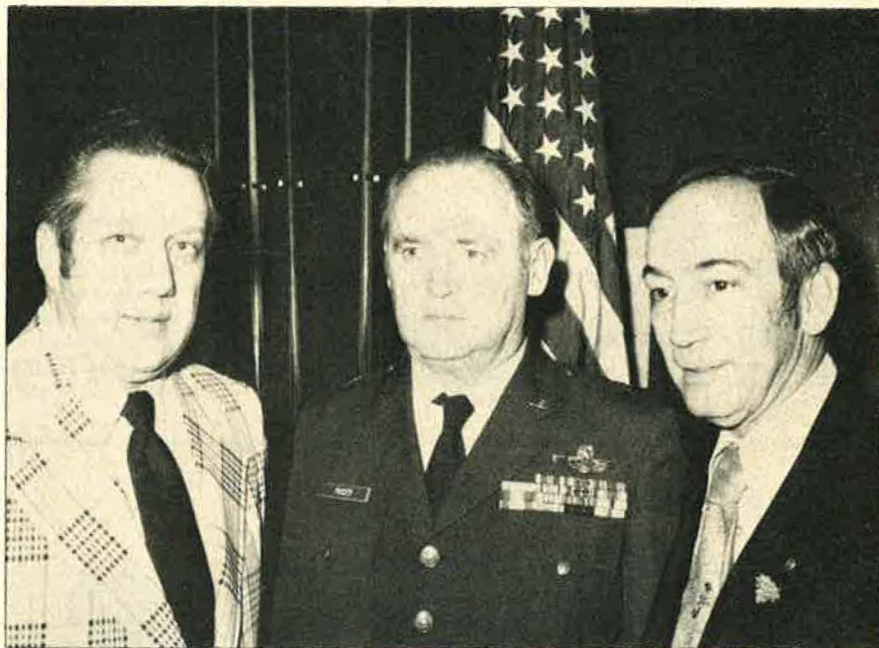
Military newspapers have carried Chaplain's columns on and off for years, though sometimes they've gone unread. Now, Air Force has a

new approach to make them more acceptable—a column titled "Dear Abbot." It aims to get at "contemporary issues in a real-world manner." If the three-month test just under way is successful, it will become a regular feature in base papers.

Administration plans to dismantle the Selective Service machinery have run into stiff opposition. Sen. Strom Thurmond (D-S. C.) for one says the agency must be maintained to put out rapid draft calls in an emergency.

Senior Staff Changes

CHANGES: Col. (B/G selectee) Jay T. Edwards III, from Asst. DCS/Mat. Mgmt., Hq. AFLC, Wright-Patterson AFB, Ohio, to DCS/Mat. Mgmt., Hq. AFLC, Wright-Patterson AFB, Ohio, replacing M/G Gerald J. Post . . . B/G John W. Ord, from Cmdr., USAF Medical Center, Scott AFB, Ill., to Director of Med. Insp., AFISC, Norton AFB, Calif. . . . M/G Gerald J. Post, from DCS/Mat. Mgmt., Hq. AFLC, Wright-Patterson AFB, Ohio, to C/S, Hq. AFLC, Wright-Patterson AFB, Ohio. ■



At November's Annual Veterans Day Banquet in Emmaus, Pa., were, from left, Pennsylvania AFA President LaMar R. Schwartz; Brig. Gen. Richard A. Posey, guest speaker and a member of AFA's Olmsted, Pa., Chapter who is Adjutant General, Air, Pennsylvania ANG; and Joseph Zellers, State Representative from Pennsylvania's 134th District and master of ceremonies. The annual dinner dance is sponsored jointly by the American Legion, Veterans of Foreign Wars, and Catholic War Veterans. Representative Zellers offered a resolution, passed by the Pennsylvania House and awaiting Senate confirmation, to turn the former Valley Forge Army Hospital into a Veterans Nursing Home.

In last month's issue we introduced the members of AFA's Executive Committee, Finance Committee, Constitution Committee, Convention Site Committee, Organizational Advisory Council, and Total Force Advisory Council. Featured here this month are representatives of AFA's other advisory bodies. The Air Force Association salutes the members of all these committees and councils for their voluntary service to AFA that exemplifies the highest traditions of membership activity . . .

AFA's Committees, Councils, and Advisers

Enlisted Council (Executive Committee)



Noerr



Joyce



Carson



Colwell



Eyer



Harball



Harlan



McBrearty



Moore



Ryan



Schmidt



Schuetz



Stranges



Barnes

The Enlisted Council is one of AFA's oldest and most productive groups. It was first organized in 1961 and was expanded in 1974 to include a representative from each Air Force Major Command and Separate Operating Agency. In 1975, its name was changed from its prior designation of Airmen Council. Those airmen featured here form the Executive Committee of the larger group. The Enlisted Council acts to advise the AFA President on all matters of interest to the enlisted men and women of the Air Force, and includes both active-duty and Reserve-component representation. Members are: CMSgt. David C. Noerr, Chairman, Norton AFB, Calif.; CMSgt. Charles A. Joyce, Deputy Chairman, Plattsburgh AFB, N. Y.; TSgt. James M. Carson, Jr., Mountain Home AFB, Idaho; CMSgt. O. B. Colwell, Robins AFB, Ga.;

Sgt. Randy Eyer, PACAF; MSgt. Paul Harball, ARPC, Denver, Colo.; A1C Julia Harlan, Hq. AFOSI, Washington, D. C.; SMSgt. Joseph McBrearty, Tyndall AFB, Fla.; Sgt. Ellen C. Moore, Maxwell AFB, Ala.; TSgt. Donald M. Ryan, Randolph AFB, Tex.; SMSgt. John E. Schmidt, USAF Southern Command; MSgt. Joseph P. Schuetz, Bolling AFB, D. C.; SMSgt. John F. Stranges, Randolph AFB, Tex.; and Chief Master Sergeant of the Air Force Thomas N. Barnes, Adviser, Washington, D. C.

Scientific Advisory Council



Schenk



West



Haire



Harris



Stearn



Wilkins

This is AFA's newest advisory council, formed 1975. The basic mission of the Council, as set forth in the Board Resolution which established it, is to monitor AFA supportive action in the Defense Research, Test, and Engineering area; to serve

as a conduit for pertinent AFA views to the public, the media, the Congress, the Department of Defense, and the Air Force; and to advise the President, National Officers, and the Board of Directors on matters related to the above. Members are: Peter J. Schenk, Chairman, McLean, Va.; A. A. West, Vice Chairman, Newport News, Va.; John H. Haire, Huntsville, Ala.; Martin H. Harris, Winter Park, Fla.; Edward A. Stearn, San Bernardino, Calif.; and Sherman W. Wilkins, Bellevue, Wash.

Junior Officer Advisory Council (Executive Committee)



The Junior Officer Advisory Council was first formed in 1967 and was expanded in 1972 to include at least one representative from each Air Force Major Command and Separate Operating Agency. The officers pictured here constitute the Executive Committee of the expanded council. This council advises the AFA President on matters of interest to this particular constituency, and gives younger officers a channel within AFA to surface matters of special interest to this group. Members are: Capt. Monroe S. **Sams**, Chairman, Scott AFB, Ill.; Capt. Joann C. **Neish**, Deputy Chairman, Hq. USAF, Washington, D. C.; Capt. Lee F. **Aldridge**, Andrews AFB, Md.; Capt. Mary Ann **Cochran**, Washington, D. C.; Capt. Frederic **Collins**, PACAF; Capt. C. J. **Downey**, Hq. USAF, Washington, D. C.; Capt. Dennis G. **Haines**, Ent AFB, Colo.; Capt. James A. **Miller**, Hq. USAF, Washington, D. C.; Capt. Gary A. **Nelson**, Randolph AFB, Tex.; Capt. Ronald **Sconyers**, Lowry AFB, Colo.; 1st Lt. Conrad L. **Slate**, Virginia Air National Guard, Sandston, Va.; Capt. Robert P. **Smith**, Offutt AFB, Neb.; Capt. Alan L. **Strzemieczny**, Reese AFB, Tex.; Capt. Shaun M. **Sullivan**, Langley AFB, Va.; and Maj. Gen. Bennie L. **Davis**, Adviser, Dir., Personnel Plans, Hq. USAF, Washington, D. C.

Membership Committee



One of the longest standing AFA committees, this group advises the AFA President on ways and means of promoting membership. Members are: Gen. Lucius D. **Clay**, Jr., USAF (Ret.), Chairman, Alexandria, Va.; George D. **Hardy**, Vice Chairman, Hyattsville, Md.; Cecil G. **Brendle**, Montgomery, Ala.; Dan **Callahan**, Warner Robins, Ga.; Daniel F. **Callahan**, Nashville, Tenn.; James C. **Hall**, Denver, Colo.; Thomas **Hanlon**, Cheektowaga, N. Y.; Jeanne M. **Holm**, Alexandria, Va.; Marjorie O. **Hunt**, Mount Clemens, Mich.; Richard D. **Kisling**, Oxon Hill, Md.; D. N. **Masone**, Ft. Walton Beach, Fla.; Margaret E. **McEnerney**, Stratford, Conn.; Francis E. **Nowicki**, Wayne, Pa.; Earle E. **Patty**, Redondo Beach, Calif.; Roger K. **Rhodarmer**, Columbia, S. C.; A. A. **West**, Newport News, Va.; and Joe **Wilson**, Scott AFB, Ill.

What They're Saying...

(From time to time, AIR FORCE Magazine will publish in this space newsworthy excerpts from speeches pertinent to defense affairs.)

Insecure US Communications

Mr. Thomas C. Reed, then Director of Telecommunications and Command and Control Systems, OSD, and now Secretary of the Air Force (see also p. 32 of this issue), speaking before the Comstock Club at Sacramento, Calif., on November 17, 1975:

In Southeast Asia, the North Vietnamese and Viet Cong found exploitation of US voice communications so profitable they deployed 4,000-5,000 men in radio reconnaissance intercept units in South Vietnam alone. Capture of these personnel and their records showed extensive real-time use of intercepted information to forewarn their commanders and inflict casualties on US and ARVN troops.

As early as 1966, a Viet Cong defector told interrogators "practically all ambushes, mining, or attacks on helicopters were made possible by intercepted information."

As just one example, in November 1968, a captured VC colonel told interrogators that his intercept unit routinely listened to American commanders' voice communications. They used the intercepted information to avoid or destroy their opposition. He gave as an example an incident in March of that year when he overheard details of the movement of three US Army companies. With this information he was able to set a successful ambush.

What would it cost to avoid that tragedy?

The Washington Star newspaper recently ran an investigative series on the Food Stamp program. They reported that they uncovered an incredible degree of fraud. If only half of this year's fraud on food stamps as estimated by the Star were recovered and spent on the procurement of new, tactical communications security equipment, we could secure all the critical combat radios in our armed forces at once.

We've already developed the equipment. We've learned from the tragedies of Southeast Asia. We've developed micro-electronic devices, using the technology you see everywhere in pocket calculators. We're ready to go. All we need to do is buy the equipment and issue it to the troops.

But it's not as simple as that. A Congress, at times apparently irresponsible and determined to fuel the fires of inflation with unmanageable social programs, has made drastic cuts in the defense budget which directly affect our ability to solve these problems.

AFLC's Foreign Clients

Gen. F. M. Rogers, Commander of the Air Force Logistics Command, speaking before the AFA Seattle, Wash., Chapter, on December 4, 1975:

Military sales programs are and increasingly will be extremely important to United States national security as well as to our economy. Not only is this a fertile field of opportunity for American business and industry, but this is one vital avenue by which the United States can as-

sist both other highly industrialized allies and the third world countries in developing their economies, modernizing their air forces, and strengthening their respective governmental organizations. Also, we have a significant duty to make a contribution to our own country and to an effective and lasting balance of worldwide military power, reflecting perhaps a harmonious accommodation of those elements which Peter Drucker described as "economics at loggerheads with politics."

In my own command in fiscal 1974, orders for aircraft, weapons, missiles, equipment, construction, repair and maintenance services, supply operations, training, and the like to foreign countries amounted to about two billions of dollars. But in the Defense Department at large, the figure is over nine billions of dollars, which continues from our data through 1975 and, without escalation, should be with us for some years to come.

I now manage over 1,500 individual foreign military sales contracts, and under our international cooperative logistics program, I am servicing nineteen countries, resupplying them with spares and spare parts from stock levels worth 500 millions of dollars. \$250 million of this is our inventory on hand, and we ship out to these countries about \$100 million worth of stock each year.

By the end of calendar year 1976, I expect to have FMS dealings with about thirty-five foreign countries including support for several with F-15, F-16, and AWACS purchases. I am also exporting logistics systems and logistics concepts. On the one hand, we are busy designing entire logistic support complexes in the cases of Iran and Saudi Arabia and on the other hand we are considering alternative logistic support concepts applicable in the post industrial economies of the Europe participating nations who are purchasing the F-16 weapons system from us. We may find ourselves with Air Force overseas depots or again, something we have not had since the late 1950s, and these depots would support not only the repair of weapon systems we can expect NATO partners to acquire, but possibly some of our aircraft. The pattern established by my F-4 re-

tenance operation in Spain and on Taiwan may well prove acceptable at the inception.

Although there are obviously enormous economic advantages which foreign military sales present to this country and although we recognize that volume purchases will lower unit production costs to the Air Force and, hence, to the American taxpayer, the increased visibility of American-made aircraft, both military and commercial, and of other systems and subsystems abroad while stimulating purchases will also stimulate competition.

The infusion of American support concepts, alternative logistic benefits, and highly sophisticated American technology into post industrial societies such as Western Europe or Japan will force a response in those developing nations. You know that the rate of research and development expenditure in some of these countries over the past decade has consistently exceeded our own. I would refer especially to West Germany, to France, and to Japan. The makers and vendors of equipments in those countries should be quick to stake out competitive proposals for the systems and subsystems being provided to their national unities both through commercial and military sales.

Here in Seattle, where it is evident that more than 20,000 commercial airplane company jobs are directly supported by Boeing's foreign sales and many indirect jobs also depend on these export sales, it should be recognized that there will inevitably be offset sales agreements to accompany foreign military sales. The JS is already experiencing that, notably in the Swiss and German cases, but it is also in the F-16 case.

I believe that we in the Air Force are facing the facts. We are operating in a national economic arena that is an inextricably integral part of the international economic arena. We are all suffering from the same serious problems which affect this world arena, and we are doing nothing about it.

In the Air Force's viewpoint, efficiency and economy are equally vital factors in determining our ability to keep ahead of the competition. We are to maintain our position in the worldwide balance of military power, we must run the race with

renewed energy, motivated by the desire not just to run faster but to run longer. We have got to do a better job to earn the rewards of the competition and we have to increase productivity, but in terms of quality, of efficiency, and economy.

We in the Logistics Command have realized that we do the technical part of our business relatively better than we do the business part of our business. We are much less adroit in contracting than we are in repair, for instance. We are much less adroit in maintaining contractor competition through the acquisition life of the system than we are, in fact, in acquiring a good new system in the first place, but the times have changed, the driving imperatives are recognized, and we are taking positive action to improve the acquisition and procurement process in terms of cost of ownership and logistics support.

We Can Overcome

Maj. Gen. A. B. Anderson, Jr., Chief of Staff of the Strategic Air Command, speaking before a civic club audience in Ruston, La., on December 18, 1975:

That constitution of ours doesn't say that we'll "provide for the common defence" or "promote the general welfare." Those are words *in-series* in our Constitution, punctuated by commas. It is a dual obligation of our government to provide for our common defense and our general welfare. I don't think we have the choice, except "how much," and this becomes very important, because defense costs are rising . . . and will continue to escalate. And they are not buying us comparable increases in relevant power. We in the Department of Defense must try our best to hold those costs down . . . but after that, we've got to bite the bullet and pay our way, or accept the risks of being second best. . . .

A democracy gets the kind of military force it deserves—and our Congress speaks for our democracy. That's really what the decision is all about. We are going to get what we deserve. If we make the right decisions, hopefully, we will be able to keep the kind of power that our President has repeatedly

said he is dedicated to—and that is a military capability that is "second to none."

The problem of failure of deterrence is war; and war, even at lower levels of intensity, poses great uncertainties in scope and escalatory potential. Modern warfare—with some of the weaponry that could confront us today—is almost too tragic to consider. We've got to be successful in this mission of deterrence, or, if war does erupt, we must confine it and control its scope and intensity. We must not fail in our various levels of deterrence to unrestrained, direct nuclear attack on our country or our vitally important allies.

The history of man's civilization is replete with the stories of peoples and nations who became absorbed in and sated by their prosperity—their accumulation of things.

Let's not repeat the mistakes of these lost civilizations and the destroyed nations of the past who found that their brilliance and their high standards of living didn't offer one bit of protection from uncouth, armed hordes with low standards of dying.

Let's not let our nation and our civilization suffer the corruption of our basic institutions and the erosion of our fundamental values . . . things that destroy from within, and make us incapable and unwilling to stand up against intimidation and coercion from without.

I urge that the counsels of despair and retreat be strongly resisted. Ours is a great nation—made great by two centuries of hard work, ingenuity, sacrifice. Our wealth, our expertise, our ideals, backed by our military strength, are the envy and the hope of the world. No nation before us has ever given so much of itself to so many others. For our pains we have sometimes been bloodied—but never bowed.

I have great confidence in what I perceive to be the innate sensibility, the natural determination, and the inherent good will of the American people. And I firmly believe that we can overcome—and put to rout or shame—those who would work for our decline and fall.

But this is a vision of the long haul—and its fulfillment requires steadfastness of purpose and constancy of effort. ■

AFA State Contacts

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma): **James B. Tipton**, 3032 Hill Hedge Dr., Montgomery, Ala. 36111 (phone 205-263-6944).

ALASKA (Anchorage, Fairbanks): **Edward J. Monaghan**, 2401 Telequana Dr., Anchorage, Alaska 99503 (phone 907-279-3287).

ARIZONA (Phoenix, Tucson): **Robert J. Borgmann**, 2431 E. Lincoln Cir., Phoenix, Ariz. 85016 (phone 602-955-7845).

ARKANSAS (Blytheville, Fort Smith, Little Rock): **Jack Kraras**, 120 Indian Trail, Little Rock, Ark. 72207 (phone 501-225-5575).

CALIFORNIA (Apple Valley, Edwards, Fairfield, Fresno, Hawthorne, Hermosa Beach, Long Beach, Los Angeles, Marysville, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Barbara, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Liston T. Taylor**, 4173 Oakwood Road, Lompoc, Calif. 93436 (phone 805-733-2723).

COLORADO (Aurora, Boulder, Colorado Springs, Denver, Ft. Collins, Grand Junction, Greeley, Littleton, Pueblo): **James C. Hall**, P. O. Box 30185, Lowry AFB Station, Denver, Colo. 80230 (phone 303-366-5363, ext. 459).

CONNECTICUT (East Hartford, Stratford, Torrington): **Margaret E. McEnerney**, 1476 Broadbridge Ave., Stratford, Conn. 06497 (phone 203-377-3517).

DELAWARE (Dover, Wilmington): **George H. Chabbot**, 33 Mikell Dr., Dover, Del. 19901 (phone 302-421-2171).

DISTRICT OF COLUMBIA (Washington, D. C.): **James M. McGarry**, 2418 N. Ottawa St., Arlington, Va. 22205 (phone 703-534-2663).

FLORIDA (Bartow, Broward, Ft. Walton Beach, Gainesville, Jacksonville, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tampa): **Jack Rose**, 5723 Imperial Key, Tampa, Fla. 33615 (phone 813-855-4046).

GEORGIA (Athens, Atlanta, Rome, Savannah, St. Simons Island, Valdosta, Warner Robins): **James D. Thurmond**, 219 Roswell St., Marietta, Ga. 30060 (phone 404-252-9534).

HAWAII (Honolulu): **James Dowling**, 2222 Kalakaua Ave., Honolulu, Hawaii 96815.

IDAHO (Boise, Pocatello, Twin Falls): **Larry L. Leach**, 6318 Bermuda Dr., Boise, Idaho 83705 (phone 208-344-1671).

ILLINOIS (Belleville, Champaign, Chicago, Elmhurst, O'Hare Field): **Charles Oelrich**, 711 East D St., Belleville, Ill. 62221 (phone 618-233-2430).

INDIANA (Logansport, Marion): **C. Forrest Spencer**, 910 W. Melbourne Ave., Logansport, Ind. 46947 (phone 219-753-7066).

IOWA (Des Moines): **Ric Jorgensen**, P. O. Box 4, Des Moines, Iowa 50301 (phone 515-255-7656).

KANSAS (Topeka, Wichita): **Albin H. Schweers**, 7221 Woodward St., Overland Park, Kan. 66204 (phone 816-374-4267).

KENTUCKY (Louisville): **John B. Conaway**, P. O. Box 13064, Louisville, Ky. 40213 (phone 502-895-0412).

LOUISIANA (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Shreveport): **Toumin H. Brown**, 6931 E. Ridge Dr., Shreveport, La. 71106 (phone 318-424-0373).

MAINE (Limestone): **Alban E. Cyr**, P. O. Box 160, Caribou, Me. 04736 (phone 207-492-4171).

MARYLAND (Baltimore): **James W. Poultney**, P. O. Box 31, Garrison, Md. 21055 (phone 301-363-0795).

MASSACHUSETTS (Boston, Falmouth, Florence, Hanscom AFB, Lexington, Taunton, Worcester): **Arthur D. Marcotti**, 215 Laurel St., Melrose, Mass. 02176 (phone 617-665-5057).

MICHIGAN (Detroit, Kalamazoo, Lansing, Marquette, Mount Clemens, Oscoda, Sault Ste. Marie): **Dorothy Whitney**, 3494 Orchard Lake Rd., Orchard Lake, Mich. 48033 (phone 313-682-4550).

MINNESOTA (Duluth, Minneapolis, St. Paul): **Joseph J. Sadowski**, 1922 Malvern St., St. Paul, Minn. 55113 (phone 612-631-2781).

MISSISSIPPI (Biloxi, Columbus, Jackson): **Billy A. McLeod**, P. O. Box 1274, Columbus, Miss. 39701 (phone 601-328-0943).

MISSOURI (Kansas City, Knob Noster, Springfield, St. Louis): **Robert E. Combs**, 2003 W. 91st St., Leawood, Kan. 66206 (phone 913-649-1863).

MONTANA (Great Falls): **Jack K. Moore**, P. O. Box 685, Great Falls, Mont. 59403 (phone 406-761-2555).

NEBRASKA (Lincoln, Omaha): **Lyle O. Remde**, 4911 S. 25th St., Omaha, Neb. 68107 (phone 402-731-4747).

NEVADA (Las Vegas, Reno): **Cesar J. Martinez**, 4214 Grace St., Las Vegas, Nev. 89121 (phone 702-451-3037).

NEW HAMPSHIRE (Manchester, Pease AFB): **R. L. Devoucoux**, 270 McKinley Rd., Portsmouth, N. H. 03801 (phone 603-669-7500).

NEW JERSEY (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Fort Monmouth, Jersey City, McGuire AFB, Newark, Trenton, Wallington, West Orange): **Joseph J. Benedetto**, 2164 Kennedy Blvd., Jersey City, N. J. 07305 (phone 201-420-6154).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **Harry L. Gogan**, 2913 Charleston, N. E., Albuquerque, N. M. 87110 (phone 505-264-2315).

NEW YORK (Albany, Bethpage, Binghamton, Buffalo, Catskill, Chautauqua, Griffiss AFB, Hartsdale, Ithaca, Long Island, New York City, Niagara Falls, Patchogue, Plattsburgh, Riverdale, Rochester, Staten Island, Syracuse): **Kenneth C. Thayer**, R.D. #1, Ava, N. Y. 13303 (phone 315-827-4241).

NORTH CAROLINA (Charlotte, Fayetteville, Goldsboro, Greensboro, Raleigh): **Dozier E. Murray, Jr.**, 1600 Starbrook Dr., Charlotte, N. C. 28210 (phone 704-523-0045).

NORTH DAKOTA (Grand Forks, Minot): **Leo P. Makelky**, 611 16th Ave., S. W., Minot, N. D. 58701 (phone 701-839-5186).

OHIO (Akron, Cincinnati, Cleveland, Columbus, Dayton, Newark, Toledo, Youngstown): **Robert L. Hunter**, 2811 Locust Dr., Springfield, Ohio 45504 (phone 513-323-2023).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **David L. Blankenship**, P. O. Box 51308, Tulsa, Okla. 74151 (phone 918-835-3111, ext. 2207).

OREGON (Corvallis, Eugene, Portland): **Philip G. Saxton**, 15909 N. E. Morris, Portland, Ore. 97230 (phone 503-254-0145).

PENNSYLVANIA (Aliquippa, Allentown, Chester, Erie, Home-

stead, Horsham, King of Prussia, Lewistown, New Cumberland, Philadelphia, Pittsburgh, State College, Washington, Willow Grove, York): **Lamar R. Schwartz**, 390 Broad St., Emmaus, Pa. 18049 (phone 215-967-3387).

RHODE ISLAND (Warwick): **Matthew Puchalski**, 143 SOG RIANG, Warwick, R. I. 02886 (phone 401-737-2100, ext. 27).

SOUTH CAROLINA (Charleston, Columbia, Greenville, Myrtle Beach, Sumter): **Roger K. Rhodardner**, 412 Park Lake Road, Columbia, S. C. 29204 (phone 803-788-0188).

SOUTH DAKOTA (Rapid City): **Ronald Campbell**, Box 8210, Rapid City, S. D. 57701 (phone 605-343-6439).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **James W. Carter**, 314 Williamsburg Rd., Brentwood, Tenn. 37027 (phone 615-373-9339).

TEXAS (Abilene, Austin, Big Spring, Corpus Christi, Dallas, Del Rio, El Paso, Fort Worth, Houston, Laredo, Lubbock, San Angelo, San Antonio, Waco, Wichita Falls): **Vic Kregel**, P. O. Box 9495, San Antonio, Tex. 78204 (phone 214-266-2242).

UTAH (Brigham City, Clearfield, Ogden, Provo, Salt Lake City): **Robert D. Walker**, 283 W. 550 N., Clearfield, Utah 84015 (phone 801-825-0267).

VERMONT (Burlington): **R. F. Wissinger**, P. O. Box 2182, S Burlington, Vt. 05401 (phone 802-863-4494).

VIRGINIA (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **Lester J. Ross**, 177 Corinthia Dr., Denbigh, Va. 23602 (phone 804-877-4372).

WASHINGTON (Port Angel, Seattle, Spokane, Tacoma): **Theodore O. Wright**, P. O. Box 88850, Seattle, Wash. 98108 (phone 206-237-0706).

WEST VIRGINIA (Huntington): **Evelyn E. Richards**, 10 Ber Place, Huntington, W. Va. 25701 (phone 304-529-4901).

WISCONSIN (Madison, Waukegan): **Charles W. Maro**, 7945 S. Verdev Dr., Oak Creek, Wis. 53154 (phone 414-4383).

WYOMING (Cheyenne): **F. R. Scott**, 508 W. 27th St., enne, Wyo. 82001 (phone 634-2121).

April 28-29 at Vandenberg AFB, California

The Air Force Association's
1976 Strategic Symposium
held during SAC's Ninth Annual
Missile Combat Competition

TOMORROW'S STRATEGIC OPTIONS

*The Short Term
Needs – The Long
Term Needs*

Registration Information to be announced next month.
Mark your calendar now to attend this event, a "must"
for AFA Leaders and Defense industry executives.

Speakers will include:

Hon. Robert Ellsworth
Deputy Secretary of Defense

Dr. James Fletcher
Administrator, NASA

General Russell E. Dougherty
Commander in Chief, SAC

General Paul K. Carlton
Commander, Military Airlift
Command

General William J. Evans
Commander, AFSC

Lt. Gen. Ray B. Sitton
Director, J-3 (Operations),
Joint Chiefs of Staff

Lt. Gen. John W. Pauly
Deputy Chief of Staff, Plans
and Operations, USAF

Lt. Gen. Thomas W. Morgan
Commander, SAMSO

Dr. George Heilmeyer
Director, DARPA

Dr. John F. Lehman, Jr.
Deputy Director, Arms Control
and Disarmament Agency

Maj. Gen. Edward Giller, USAF (Ret.)
Director, Weapons Development,
Energy Research and Development
Administration

Plus other principal Department of Defense and Air Force officials.

AFA News

By Don Steele, AFA AFFAIRS EDITOR

Units of the Month

THE CHAPTERS OF THE CALIFORNIA STATE AFA's SOUTHERN AREA COUNCIL cited for consistent and effective support of the Air Force and AFA's mission, most recently exemplified in their joint sponsorship of a field-training trip for AFROTC and AFJROTC Cadets.



AFA National President George M. Douglas was the principal speaker at the Harry S. Truman Chapter's Annual Fall Dinner at Richards-Gebaur AFB, Mo. During the evening, the key and honorary citizenship to the City of Kansas City, Mo., were presented to Mr. Douglas, left, by Frank H. Spink, Jr., who represented Kansas City Mayor Charles B. Wheeler, Jr. Mr. Spink is Fire Director for Kansas City, a major general in the USAF Reserve, and also serves on the Chapter's Executive Council.



The first official membership meeting of California's newly chartered San Mateo County Chapter was held recently in the Villa Chartier Restaurant. Dr. Stefan T. Possony, a senior fellow of the Hoover Institution on War, Revolution, and Peace at Stanford University, was guest speaker. Shown with Dr. Possony, center, are, from left, Thos. F. Stack, a former AFA National President and Board Chairman; Robert C. Vaughan, an AFA National Director; Chapter Vice President Donald Bell; and Chapter President Angie Anderson.



Michael S. Rose, right, an AFJROTC cadet at Burlington High School, received a Certificate of Merit and a \$100 US Savings Bond as a winner in the Laurence G. Hanscom Chapter's annual essay contest. More than fifty contestants entered this year's contest. Col. John T. Buck, left, Hanscom AFB Commander, made the presentation on behalf of the AFA chapter.



Gen. F. M. Rogers, Commander, Air Force Logistics Command, was the guest of honor and speaker at a recent dinner meeting sponsored by AFA's Greater Seattle Chapter at the Boeing Space Center's North Cafeteria in Kent, Wash. Shown with General Rogers, center, are, from left, Washington State AFA President Theodore O. Wright; Sherman W. Wilkins, Vice President for AFA's Northwest Region; T. A. Wilson, Chairman of the Board, Boeing Co.; and Chapter President E. F. Hart.

For the second year, the chapters of the California State AFA's Southern Area Council cosponsored a field training trip for more than 100 junior and senior AFROTC cadets to Edwards AFB's Open House. Shown comparing a model of the X-24B Experimental Research Vehicle with the real thing are, from left, Cadets Bret Chudacoff and Nancy Gray, Canoga Park High School; Los Angeles Chapter President Gene Sidwell; Cadet Cheryl Klabacha, University of California at Los Angeles; Capt. Francis R. Scobee, X-24 pilot; and UCLA Cadet Craig Kodera. Hal Parks, General Jimmy Doolittle Chapter President, coordinated the trip. Participating chapters included: General Jimmy Doolittle, Los Angeles Airpower, San Bernardino Area, Riverside County, General L. E. Thomas, Long Beach, South Bay, Los Angeles, and Antelope Valley. In recognition of this outstanding program, AFA President Douglas names the chapters of the California State AFA's Southern Area Council as AFA's "Units of the Month" for February.



chapter and state photo gallery



During a recent meeting of AFA's Mid-Ohio Chapter, Ohio State AFA President Robert L. Hunter, center, presented an AFA membership award for 1975 to the chapter. The award was accepted by T. D. Griley, left, immediate Past President, and A. R. Neville, Jr., President. During the 1975 operating year, the chapter more than doubled its membership by obtaining 137 new AFA members.



—PHOTO BY RON BARTLETT

Gen. Russell E. Dougherty, Commander in Chief, Strategic Air Command, was the guest of honor and speaker at a recent meeting of the Middle Georgia Chapter in the Robins AFB NCO Club. Shown, from left, are Maj. Gen. William R. Hayes, Commander, Warner Robins Air Logistics Center, Robins AFB; Dr. Dan Callahan, an AFA National Director; General Dougherty; and Chapter President H. C. "Butch" Strawser.



\$1,000 from the proceeds of the San Bernardino Area and Riverside County Chapters' Seventh Annual Air Force Association Charity Golf Tournament was recently contributed to the Jerry L. Pettis Memorial Chapel Fund at the Jerry L. Pettis Veterans Administration Hospital in Loma Linda, Calif. Representative Pettis' widow, Congresswoman Shirley Pettis (R-Calif.), is shown accepting the check from AFA National Director Edward A. Stearn, a member of the tournament's Executive Committee and one of its founders. At left is San Bernardino Area Chapter President C. Jay Golding; right, Riverside County Chapter President James Austin.



California's General Jimmy H. Doolittle Chapter recently sponsored a dinner party honoring its namesake, Lt. Gen. James H. Doolittle, USAF (Ret.), AFA's first National President, on his seventy-ninth birthday. In the photo, General Doolittle cuts his birthday cake with the help of Mrs. Doolittle. At right is motion picture star Cesar Romero, one of the many Hollywood celebrities who, together with Air Force, civic, society, and AFA leaders, attended the party.

AFA News

PHOTO BY WILBORN & ASSOCIATES



Rep. Wm. J. Randall (D-Mo.) officially unveiled the portrait "Harry S. Truman, Citizen-Soldier" during recent ceremonies at the Harry S. Truman Library and Museum in Independence, Mo. The function marked the launching of a nationwide fund-raising project by AFA's Harry S. Truman Chapter on behalf of the Truman Library Gift Fund. Shown with the portrait are, from left, Chapter President Bud Sevier; Larry Mansker, the artist commissioned by the Chapter to do the portrait; actor James Whitmore, who portrayed President Truman in the movie "Give 'Em Hell, Harry"; and Col. Rufus Burrus, who posed for the portrait.



More than 300 members and guests attended the Northern Connecticut Chapter's recent dinner meeting at which Maj. Gen. Robert C. Mathis, F-15 Systems Program Director, was the featured speaker. Shown, from left, are General Mathis; retired Air Force Gen. James Ferguson; Chapter President Alexander Eigner, Jr.; and Connecticut State AFA Vice President Joseph R. Falcone.



AFA's San Diego, Calif., Chapter recently sponsored a black-tie dinner honoring aviation pioneers T. Claude Ryan and the late Maj. Reuben H. Fleet, and saluting the City of San Diego. AFA President George M. Douglas was the featured speaker, and AFA Board Chairman Joe L. Shosid assisted in the presentation of awards. In the photo, Mr. Shosid, left, and Chapter President Cliff Brewer, center, present Mr. Ryan's award. Barry J. Shillito, right, President of Teledyne Ryan Aeronautical, accepts for Mr. Ryan.



The New Jersey State AFA's Hudson and Teterboro-Bendix Chapters recently cosponsored a dinner dance saluting general aviation. The highlight of the evening was the presentation of the Billy Diehl Memorial Award to John Habermann, Director of the Teterboro Flight Academy, for outstanding contributions to general aviation. From left are New Jersey State AFA President Joseph J. Bendetto; Mr. Habermann; Teterboro-Bendix Chapter President Leonard Schiff; Ben Rock, Chief of FAA's Engineering and Manufacturing District Office; Brig. Gen. Francis R. Gerard, New Jersey Air National Guard; and AFA National Director James P. Grazioso.

Lt. Col. Tom Bigger, left, USAFR, President of AFA's H. H. Arnold Chapter of Tullahoma, Tenn., has been honored as the most outstanding Air Force Academy liaison officer in the southern area of the United States. Brig. Gen. William T. Woodyard, right, Dean of the Air Force Academy faculty, presented the award during a recent liaison officer/coordinator conference at the Academy. In the background are Dr. James P. Gilligan, center, Deputy Assistant Secretary of the Air Force for Reserve Affairs, and Gen. George S. Brown, USAF, Chairman of the Joint Chiefs of Staff.

chapter and state photo gallery



Shown at the recent dedication and official opening of Teresa Village, the Air Force Enlisted Men's Widows and Dependents Home in Fort Walton Beach, Fla., are, from left, Lee R. Terrell, a former President of AFA's Eglin Chapter; Thomas Anthony, a Past President of AFA's Northern Virginia Chapter, current President of the newly established Andrews, Md., Chapter and a member of the Air Force Enlisted Men's Widows and Dependents Home Foundation Board of Directors; the Hon. James P. Goode, Deputy Assistant Secretary of the Air Force for Personnel Policy; and CMSgt. D. N. "Nick" Masone, USAF (Ret.), Executive Director of the Air Force Enlisted Men's Widows and Dependents Home Foundation, Inc. The Air Force Association continues to urge its local units and members to contribute to the support of this very worthy project. Contributions may be mailed to the Foundation at 354 Woodrow St., Fort Walton Beach, Fla. 32548.



Texas State AFA Vice President Kenneth H. Bashore, left, visits with Brig. Gen. Robert R. Scott, USAF (Ret.), President of AFA's Cheyenne, Wyo., Chapter and Senior Vice President of Cheyenne's American National Bank, during a tour of Air Force installations in the San Antonio Area by General Scott and other Cheyenne civic leaders.



During the recent change of command ceremonies for the 49th Fighter Interceptor Squadron at Griffis AFB, N. Y., H. J. Hyde, Jr., right, President of AFA's Colin P. Kelly Chapter, presents Lt. Col. H. H. McWhorter, outgoing Commander of the 49th, an honorary membership in the Colin P. Kelly Chapter in recognition of his outstanding support of the chapter.



AFA's Colorado Springs, Colo., Chapter recently contributed \$200 to the Civil Air Patrol's cadet flying training program in the Colorado Springs area. In the photo, Chapter President Henry "Kort" Kortmeyer, left, is shown preparing the check as Capt. Frank Spitzer, CAP Squadron Commander, looks on.



The Hon. Howard T. Markey, Chief Judge, US Court of Customs and Patent Appeals, Washington, D. C., and a former AFA National President and Board Chairman, was the guest speaker at a dinner sponsored recently by AFA's Enid, Okla., Chapter in the Vance AFB Officers' Open Mess. Prior to the dinner, Judge Markey, second from left, visited with Col. James P. Smothermon, left, wing commander at Vance AFB; Chapter President Hugh Thurman, center, and two unidentified members of the chapter.



NOW! Thousands of \$\$\$ More Protection AIR FORCE ASSOCIATION

Bigger Benefits in Personal and Family Coverage . . . Same Low Cost
These Figures Tell the Story!

Choose either the Standard or High-Option Plan

The AFA Standard Plan

Insured's Age	New Benefit	Old Benefit	Extra Accidental Death Benefit*	Monthly Cost Individual Plan
20-24	\$75,000	\$66,000	\$12,500	\$10.00
25-29	70,000	60,000	12,500	10.00
30-34	65,000	50,000	12,500	10.00
35-39	50,000	40,000	12,500	10.00
40-44	35,000	25,000	12,500	10.00
45-49	20,000	15,000	12,500	10.00
50-54	12,500	10,000	12,500	10.00
55-59	10,000	10,000	12,500	10.00
60-64	7,500	7,500	12,500	10.00
65-69	4,000	4,000	12,500	10.00
70-75	2,500	2,500	12,500	10.00

The AFA High-Option Plan

Insured's Age	New Benefit	Old Benefit	Extra Accidental Death Benefit*	Monthly Cost Individual Plan
20-24	\$112,500	\$100,000	\$12,500	\$15.00
25-29	105,000	90,000	12,500	15.00
30-34	97,500	75,000	12,500	15.00
35-39	75,000	60,000	12,500	15.00
40-44	52,500	37,500	12,500	15.00
45-49	30,000	22,500	12,500	15.00
50-54	18,750	15,000	12,500	15.00
55-59	15,000	15,000	12,500	15.00
60-64	11,250	11,250	12,500	15.00
65-69	6,000	6,000	12,500	15.00
70-75	3,750	3,750	12,500	15.00

AVIATION DEATH BENEFIT:

A total sum of \$15,000 under the Standard Plan or \$22,500 under the High-Option Plan is paid for death which is caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage.

Optional Family Coverage

(May be added either to the Standard or High-Option Plans)

Insured's Age	Spouse Benefit New	Spouse Benefit Old	Benefit, Each Child**	Monthly Cost Family Coverage
20-24	\$10,000	\$6,000	\$2,000	\$2.50
25-29	10,000	6,000	2,000	2.50
30-34	10,000	6,000	2,000	2.50
35-39	10,000	6,000	2,000	2.50
40-44	7,500	5,250	2,000	2.50
45-49	5,000	4,050	2,000	2.50
50-54	4,000	3,000	2,000	2.50
55-59	3,000	3,000	2,000	2.50
60-64	2,500	2,250	2,000	2.50
65-69	1,500	1,200	2,000	2.50
70-75	750	750	2,000	2.50

*In the event of an accidental death occurring within 13 weeks of the accident, the AFA plan pays a lump sum benefit of \$12,500 in addition to your plan's regular coverage benefit, except as noted under AVIATION DEATH BENEFIT, below.

**Each child has \$2,000 of coverage between the ages of six months and 21 years. Children under six months are provided with \$250 protection once they are 15 days old and discharged from the hospital.

AFA'S DOUBLE PROTECTOR—now with substantial benefit increases—gives you a choice of two great plans, both with optional family coverage. Choose either one for strong dependable protection, and get these advantages:

FAMILY PLAN. Protect your whole family (no matter how many) for only \$2.50 per month. Insure newborn children as they become eligible just by notifying AFA. No additional cost.

Wide Eligibility. If you're on active duty with the U. S. Armed Forces (regardless of rank, a member of the Ready Reserve or National Guard (under age 60), A Service Academy or college or university ROTC cadet, you're eligible to apply for this coverage. (Because of certain limitations on group insurance coverage, Reserve or Guard personnel who reside in Ohio, Texas, Florida and New Jersey are not eligible for this plan, but may request special applications from AFA for individual policies which provide similar coverage.

No War Clause, hazardous duty restriction or geographical limitation.

Full Choice of Settlement Options, including trusts, are available by mutual agreement between the insured and the Underwriter, United of Omaha.

Disability Waiver of Premium, if you become totally disabled for at least nine months, prior to age 60.

Keep Your Coverage at Group Rates to Age 75, if you wish, even if you leave the military service.

Guaranteed Conversion Provision. At age 75 (or at any time on termination of membership) the amount of insurance shown for your age group at the time of conversion may be converted to a permanent plan of insurance, **regardless of your health at that time.**

Reduction of Cost by Dividends. Net cost of insurance to AFA insured persons has been reduced by payment of dividends in 10 of the last 13 years. However, dividends naturally cannot be guaranteed.

Convenient Premium Payment Plans. Premium payments may be made by monthly government allotment, or direct to AFA in quarterly, semi-annual or annual installments.

EFFECTIVE DATE OF YOUR COVERAGE. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustee of the Air Force Association Group Insurance Trust.

EXCEPTIONS. There are a few logical exceptions to this coverage. They are:

Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane shall not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

PLEASE RETAIN THIS MEDICAL INFORMATION BUREAU PRENOTIFICATION FOR YOUR RECORDS

Information regarding your insurability will be treated as confidential. United Benefit Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another Bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112, Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

to Increase in Premium

MILITARY GROUP LIFE INSURANCE



APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE



Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth _____
Mo. Day Yr.
Height _____
Weight _____
Social Security Number _____

Name and relationship of primary beneficiary _____

Please indicate category of eligibility and branch of service.

- Extended Active Duty
 Ready Reserve or National Guard
 Air Force Academy
 ROTC Cadet _____
Name of college or university
- Air Force
 Other _____
(Branch of service)

Name and relationship of contingent beneficiary _____

This insurance is available only to AFA members

- I enclose \$10 for annual AFA membership dues (includes subscription (\$9) to AIR FORCE Magazine).
 I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN

- Members Only
 \$ 15.00
 \$ 45.00
 \$ 90.00
 \$180.00
- Members and Dependents
 \$ 17.50
 \$ 52.50
 \$105.00
 \$210.00

Mode of Payment

- Monthly government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.
 Quarterly. I enclose amount checked.
 Semiannually. I enclose amount checked.
 Annually. I enclose amount checked.

STANDARD PLAN

- Members Only
 \$ 10.00
 \$ 30.00
 \$ 60.00
 \$120.00
- Members and Dependents
 \$ 12.50
 \$ 37.50
 \$ 75.00
 \$150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth			Height	Weight
		Mo.	Day	Yr.		

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes No

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes No

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes No

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United Benefit Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

Date _____, 19 _____

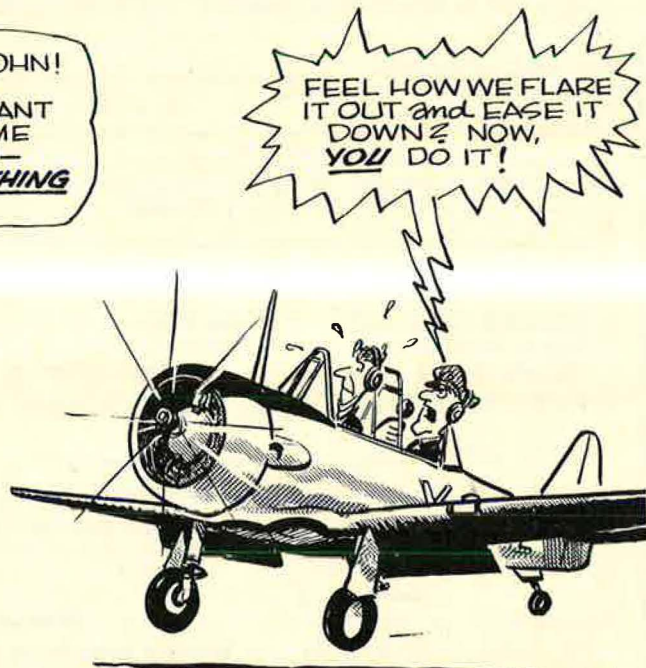
Member's Signature _____



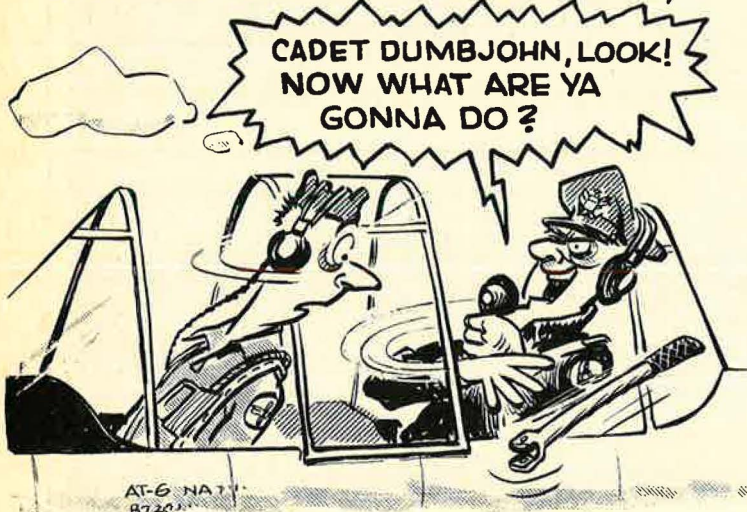
Bob Stevens'

"There I was..."

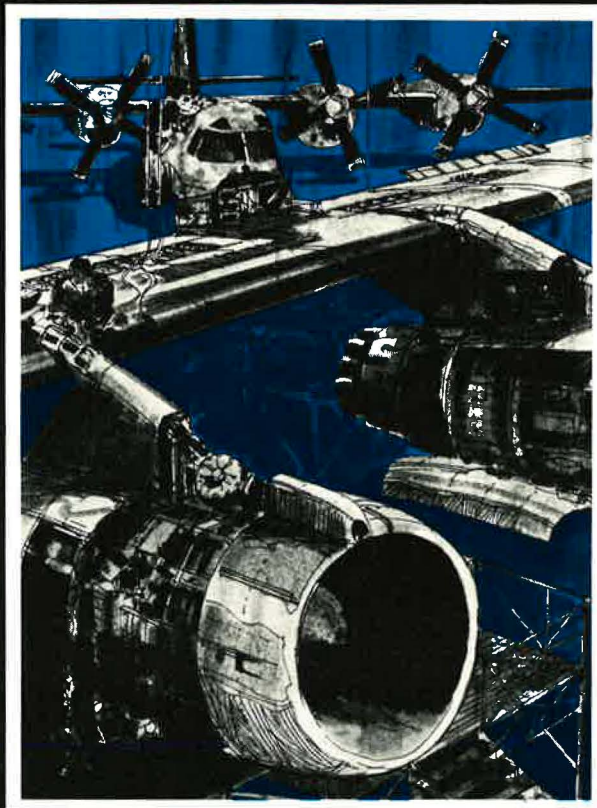
IF YOU THINK ALL THE BEST STORIES ABOUT ANCIENT BIRDMEN COME FROM "OLD, BOLD, PILOTS," THINK AGAIN. THIS ONE WAS TOLD TO ME RECENTLY (ABOARD A C-130 "HERKY") BY A FLEDGLING ...CADET WALT HERN OF THE AF ACADEMY.



(NOTE: THE CONTROL STICK IN THE '6 COULD BE REMOVED BY PULLING A PIN...)



Who provides total service on almost any type of airframe and engine?



Israel Aircraft Industries does.

Our Bedek Aviation division ranks among the world's foremost overhaul and maintenance facilities.

With 800,000 square feet of under-roof shops and hangars, Bedek can turn-around, repair, overhaul, modify, convert, customize and test 30 different types of fixed wing and rotary civil and military aircraft. 14 test cells handle 28 different types of prop, turbo-prop, turbojet and turbofan engines from

50 hp to 55,000 lbs. thrust. 60,000 components, accessories and systems of 6,000 different types are also accommodated by Bedek service every year. We even help governments and independent operators establish their own off-shore facilities. Can any company do more? IAI can. And does.

Our diversified technology produces the Kfir, a new Mach 2.2 plus combat aircraft; Gabriel, the free world's only combat-proven surface-to-surface shipborne missile;



and Dabur, a twin-screw, diesel-powered, 65 foot aluminum patrol boat.

There are also precision-built, high performance mobile military radars and UHF communications systems, anti-aircraft systems, a new light armored reconnaissance vehicle and a fail-safe, fool-proof Electronic Fence Warning System.

Worldwide military and civil applications have been found for our Arava STOL troop and cargo transports, sleek Westwind business jets, electrohydraulic systems, navigational aids and precision instruments.

With 14 divisions, subsidiaries and plants, experienced management, advanced technology and unlimited capability, we place our know-how at your service daily. ISRAEL AIRCRAFT INDUSTRIES, LTD., Ben Gurion International Airport, Israel. Also: New York London Paris.

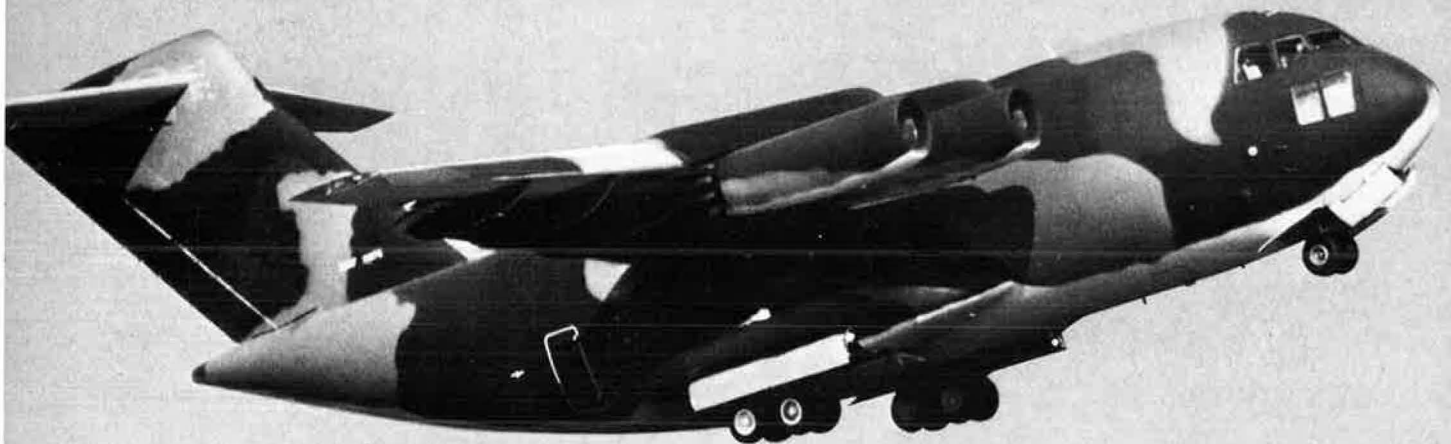
IAI responds

On the wing.

The McDonnell Douglas YC-15 flies on wings that are simple and straight. They are less costly to build and maintain. Their supercritical design helps the YC-15 fly 40% faster than the C-130. They have a greater fuel capacity, low drag, and are lightweight.

This proven wing technology, combined with the blown-flap propulsive lift system and four engines provide dependable performance with low technical risk.

The high lift system allows the YC-15 to carry a 27,000 pound payload into or out of unimproved airstrips only 2,000 feet long. Speeds as low as 85 knots can be attained even at steep rates of descent or climb.



The YC-15
MCDONNELL DOUGLAS 

