

JUNE 1973/\$1

AIR FORCE

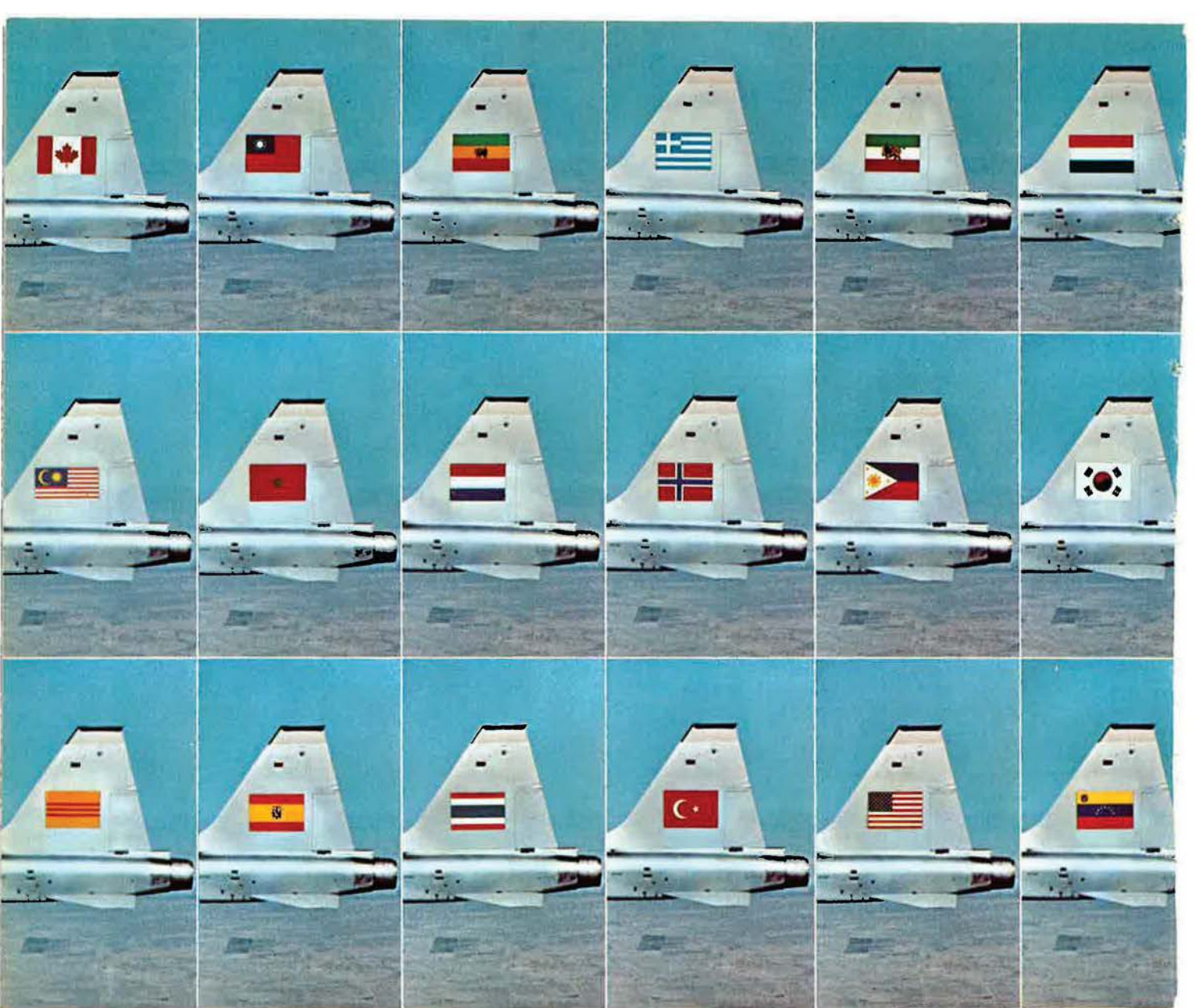
PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



F-111

**Combat Crews Call It
"One Smart Airplane"**



They tell our tale.

The tails of eighteen F-5 Freedom Fighters. Each representing the air force of a free world nation.

The story is 1,128 F-5 Fighters built so far since 1964. Proven in combat. Praised by pilots. By ground crews. And by the people who budget defense spending.

Because we designed the F-5 lean...precisely for their needs. By applying technology as a creative tool, we simplified. Improved performance. Made the F-5 make economic sense.

The F-5 Freedom Fighter proves our concept works. So do the 450 commitments we already have for the newly-minted F-5E Tiger II International Fighter (right).



And so do the new contenders we're bringing up now: The U.S. Air Force's YF-17. The multi-nation P530 Cobra.

Now, more than ever, the toughest family of light fighters in the world.

Flags shown identify F-5 users and do not necessarily represent actual tail markings of these nations. The countries are, from top left: Canada, Republic of China, Ethiopia, Greece, Iran, Libya, Malaysia, Morocco, Netherlands, Norway, Philippines, South Korea, South Vietnam, Spain, Thailand, Turkey, U.S.A., Venezuela.

NORTHROP

THIS MONTH

- 2 **The President's State of the World Message**
An Editorial by John L. Frisbee
- 8 **Congress and the Budget, Again** / By Claude Witze
- 22 **Whispering Death: The F-111 in SEA** / By Wayne Thomis
- 28 **Surviving in Hanoi's Prisons** / By John L. Frisbee
- 31 **The Military Code of Conduct**
- 34 **How USAF Prepares for Future Contingencies** / By Edgar Ulsamer
- 41 **Jane's All the World's Aircraft Supplement** / By John W. R. Taylor
- 49 **Reforming the Officer Promotion System** / By Ed Gates
- 54 **DoD's Race Relations Institute—Where It's Happening**
By Maj. Robert W. Hunter, USAF
- 60 **What the Bombing Survey Really Says**
By Maj. David MacIsaac, USAF
- 64 **A New Look from USAF's Weather Satellites**
By the Hon. John L. McLucas
- 75 **The Advantages of Going Regular** / By Ed Gates
- 80 **Arnold Air Society and Angel Flight Conclave—A Perfect Blend**
By Maj. Robert W. Hunter, USAF
- 82 **Memorable Tenth National Air Force Salute** / A Special Report

THIS MONTH'S COVER . . .

USAF pilots who flew the swingwing F-111 in Southeast Asia are mystified by the controversy over combat losses of the aircraft there. They believe it's "one smart airplane."
See p. 22.



THE DEPARTMENTS

- 4 **Airmail**
6 **Unit Reunions**
8 **Airpower in the News**
8 **The Wayward Press**
12 **Aerospace World**
17 **Index to Advertisers**
18 **Soviet Developments**
21 **Senior Staff Changes**
68 **MIA/POW Action Report**
70 **Airman's Bookshelf**
72 **The Bulletin Board**
75 **Ed Gates . . . Speaking of People**
78 **Letter from Europe**
83 **AFA News**
84 **This Is AFA**
88 **There I Was**



Circulation audited by
Business Publications Audit

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AIR FORCE Magazine (including **SPACE DIGEST**) is published monthly by the Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006. Phone: (202) 298-9123. Second-class postage paid at Washington, D.C. **Membership rate:** \$10 per year (includes \$9 for one-year subscription); \$24 for three-year membership (includes \$21 for subscription). **Subscription rate:** \$10 per year; \$2 additional for foreign postage. Single copy \$1. Special issues (Spring and Fall Almanac Issues) \$2 each. **Change of address** requires four weeks' notice. Please include mailing label. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 1973 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

THE PRESIDENT'S STATE OF THE WORLD MESSAGE

By John L. Frisbee

EXECUTIVE EDITOR, AIR FORCE MAGAZINE

ON MAY 3, President Nixon submitted to the Congress his Annual Report on Foreign Policy, better known as the "State of the World" message. The 190-page document is by far the most comprehensive and enlightening in Mr. Nixon's series of annual foreign-policy statements. It is an outline of the course he wants the US to follow in shaping a durable peace between now and the end of his Administration in the nation's bicentennial year. Equally significant, it contains some hardheaded warnings in the section on national defense—warnings that are sorely needed on the Hill and in the public at large.

We are concerned primarily with the message's observations on three aspects of defense policy, which is still the foundation on which our foreign-policy structure rests.

The Nixon Administration has made more headway toward accommodation with the two major Communist powers than has any of its predecessors. There is plenty of evidence in the foreign-policy report that Mr. Nixon and his advisers have not been taken in by their own success, however. That, we believe, is among the most important revelations of the message.

Despite progress toward détente (which too many people believe is already here), the Administration warns that "the Soviet Union is strengthening its armed forces in every major category, including those in which the United States traditionally has had a substantial margin of superiority. A Soviet military presence now has been established in many strategic areas of the world. . . . We have no responsible choice but to remain alert to the possibility that the current trend toward détente with the Soviet Union and China may not prove durable." (See also "Soviet Developments," page 18.)

Although the Administration clearly believes it neither feasible nor useful to attempt to regain nuclear superiority, it is "determined to maintain a national defense second to none." Ongoing programs in the strategic area are judged to be sufficient to deter all-out nuclear war in the foreseeable future, and both flexible and controllable enough to provide the President those options that he has called for "to face any potential aggressor contemplating less than all-out attack with unacceptable risks." This we can only read as an endorsement of the continued need for a Triad of strategic systems: submarine-launched missiles to help guarantee assured destruction of Soviet cities as part of the deterrent to all-out nuclear war, and the more accurate and controllable land-based missiles and bombers in their dual role of acting as deterrent to all-out war and providing the President options against a less than all-out attack on the US or its allies.

In this era of approximate nuclear parity, the report stresses that "greater reliance must be placed on nonnuclear forces. . . . Our ground, naval, and air forces have now reached the absolute minimum necessary to provide a credible conventional deterrent in an age of strategic parity. Compared to . . . 1964, we have a third fewer combat ships, thirty-seven fewer aircraft squadrons, and three and a third fewer ground divisions. . . . They are at the lowest level since the Korean War." There has been no reduction in comparable Soviet forces, which outnumber ours and are undergoing "significant qualitative improvements."

The report goes on to say that the US defense budget now takes only six percent of our Gross National Product and represents less than one-third of the total federal budget. (By comparison, it has been estimated that the Soviet military budget absorbs as much as forty percent of the USSR's GNP, that it probably is about \$10 billion a year higher than ours, and that the Soviets may be investing up to \$26 billion a year in military research and development, compared to our \$8 billion in FY '73. These comparisons do not suggest a lasting Soviet dedication to détente.)

While the State of the World message reflects guarded optimism concerning the attainment of a durable peace, it also contains, as we have indicated, sober warnings that need to be taken to heart as Congress sets about cutting the FY '74 defense budget. We believe the forces that budget will support are no more than minimally adequate. If they are, in fact, "second to none," it is not by virtue of size, but of quality and combat experience.

It will become increasingly difficult to maintain even a minimum acceptable level of US defense unless two very hard facts of life are better understood by the American people. The first, as information in the President's report suggests, is that we are running second to the USSR in force size, defense investments, and probably most significant in the long run, military research and development. That gap must not be allowed to widen.

Second, there is, as the report makes clear, only a "trend toward détente." It is not an accomplished fact, and no amount of wishful thinking will make it so.

So any "trend toward détente"—an unmeasurable factor—must be weighed against the measurable and quite visible trend toward clear-cut Soviet military supremacy.

It now is not, as we suggested some months ago, a case of being between the rock and the hard place, but between the rock and the soft place. And, in this analogy, the United States does not represent the rock. ■

A lot of people owe their lives to Hercules.

When earthquakes turned Managua, Nicaragua, from a city into rubble, Hercules was in the air within two hours with tons of plasma and medical supplies.

Famine struck the nation of Chad in Central Africa. Hercules struck

back with 500 tons of food. Landing where planes aren't supposed to land, like clearings as short as 2100 feet.

Even rough dirt fields

too tough for other planes, weren't too tough for Hercules to land on.

Or unload from. With huge doors in the rear and its own loading ramp, generators and water purification systems were easily unloaded in Guam, after Typhoon Karen paralyzed the island.

If you're beginning to think Hercules is as much a maiden of

mercy as a muscleman of cargo, you're right.

It brought iron lungs to Japan to fight polio. It brought 25 tons of insecticide to Morocco to fight locusts.

It's been all over the world helping to save lives. That's one big reason thirty nations own more than 1200 Hercules. Now, thirty nations can face an emergency knowing there's a way to help those in need.

Today, Hercules continues to roll off

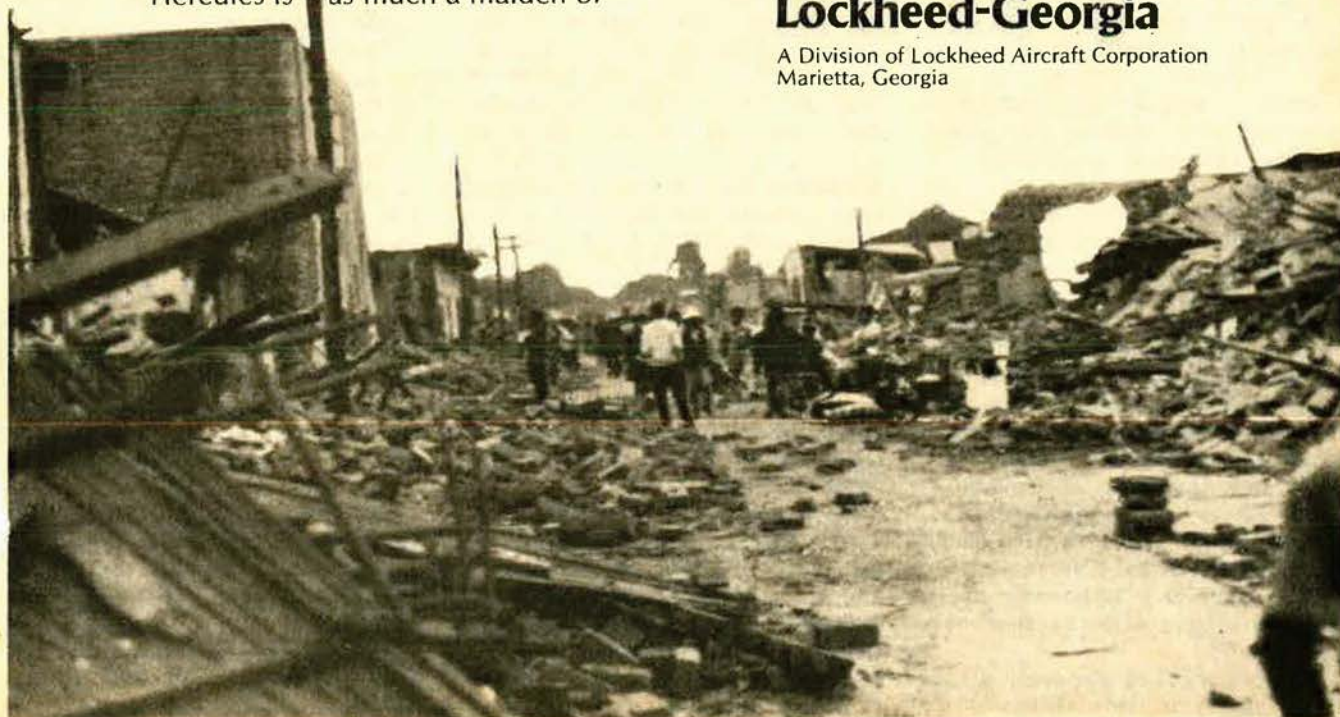
the Lockheed-Georgia assembly line, featuring new innovations within its forty-five different models.

To some, Hercules is just a plane.

To those in trouble, it's a lifeline.

Lockheed-Georgia

A Division of Lockheed Aircraft Corporation
Marietta, Georgia



MAP Limitations

Gentlemen: The article by Col. Don Clelland, "Military Assistance Program—MAP for Security," April '73 issue, is very impressive, timely, and correct.

I was involved to some degree with MAP in the Mediterranean area while I was with the Sixteenth Air Force in Spain for a period of three years. In my position as Chairman of the Inter-American Defense Board for the last three years, I have become more closely aware of the functioning of the MAP system as it pertains to the countries of the Western Hemisphere. The fact that this is, as Colonel Clelland points out, primarily a sales program of United States equipment is often overlooked or misunderstood. . . .

As a result of the legislation placing severe limitations on foreign military sales, the United States has lost billions of dollars. It is extremely difficult to comprehend the rationale for these self-imposed restrictions, particularly when our trade balance is so unfavorable and when, as Colonel Clelland indicates, most foreign countries prefer to buy US equipment. However well intentioned these sales limitations may be, they are simply unrealistic and are causing incalculable damage to our friendly relations with numerous countries. Our friends and allies find it very hard to understand our position.

I should also like to point out the almost infinite ramifications of this shortsighted policy. When a foreign country decides to purchase military equipment, this frequently starts a chain reaction of additional purchases usually in the commercial field. For example, one can see this in the communications and electronic equipment field, airport systems, and other sales of a nonmilitary nature, ad infinitum. The "snowballing" effect of the basic decision to purchase a given weapon system can, and frequently does, reach into many other areas of our industry.

The net effect of our truly grave misjudgment in this policy is to

lose friends, to lose world influence and prestige, to worsen our balance of payments situation, to lose technical skills and badly needed jobs at home, while our allies turn to other sources.

Perhaps it should be pointed out that one of the industries most affected—the aviation industry—where these highly technical job losses were most prevalent in the past two to three years, was the United States industry that had most to do with placing a man on the moon.

LT. GEN. E. B. LeBAILLY, USAF
Chairman
Inter-American Defense Board
Washington, D. C.

First on the Scene

Gentlemen: The article in the "Aerospace World" section of your February issue concerning the Managua, Nicaragua, disaster relief effort was a well-deserved tribute to the support personnel and aircrews of MAC. Their superb performance undoubtedly resulted in the saving of many lives and alleviation of suffering among the Nicaraguan populace.

In the interest of complete reporting, however, it should be pointed out that the first USAF aircraft to respond to this disaster were the TAC rotational C-130s at Howard AFB, Canal Zone, under the operational control of the Commander, US Air Forces Southern Command (USAFSO). The first of these aircraft and aircrews, whose parent unit is the 317th Tactical Airlift Wing, Pope AFB, N. C., were airborne from Howard to Managua hardly more than four hours from the time the initial request for medicines and other desperately needed supplies was received. It and three others arrived in Managua some twenty hours before the first MAC aircraft.

Throughout the airlift, these TAC C-130s, supported and assisted by USAF C-123 aircraft and aircrews and large numbers of USAF ground personnel, airlifted more than 1,200,000 pounds of supplies to the victims of the Christmas disaster.

The unsurpassed coordination and cooperation of the USAF commands and our allied Air Force partners provided an immediate and effective response which contributed immeasurably toward successful stabilization of the disaster conditions faced by the people of Managua. These significant operational accomplishments reflect the day-to-day professional capabilities of the Air Force team. We in USAFSO are proud to be part of that team.

COL. GEORGE H. MORRIS, USAF
Deputy Chief of Staff, Operations
Hq. USAFSO
APO New York

Zuider Zee Recoveries

Gentlemen: I wish to comment upon the short article on the WW II aircraft being recovered from the Zuider Zee by the Royal Netherlands Air Force, which appeared in the "Aerospace World" section of your April issue.

Although the article is substantially correct, the photo which you published (and which, unfortunately, received wide exposure in newspapers across the nation) is very misleading. It is not of a B-17 found under the water of the Zuider Zee.

Last September, at the invitation of Lt. Col. Arie P. de Jong, Director of Information for the RAAF, I spent a week in the Netherlands in connection with the RAAF aircraft recovery project. I was given the red-carpet treatment, including a helicopter tour of the recovery areas, and spent several days with the Identification and Salvage Officer, Mr. Gerrie Zwanenburg, at Soesterberg Air Base being briefed in detail.

The B-17 in the subject photo was belied-in in 1943 in a desolate area of northeast Holland. Because of the isolation of the region, German forces apparently did not wish to expose themselves to the Dutch and attendant risks by trekking to the plane, so they left it completely untouched.

The Dutch in the area did not. Over a period of time they gradually removed pieces of the plane for

their personal use. By the end of the war, the condition of the plane was quite different from what appears in the photo (which was taken by a Dutchman shortly after the plane bellied-in).

For all your readers who will consider writing to the Air Force Museum to advise us of this treasure lore, we are already receiving particularly significant items for display from the RAAF. However, the planes being found are usually not intact in any manner. They are generally quite disintegrated and, even worse, in many instances they are fragmented.

Finally, it is my personal opinion that all press releases made to date (at least here in the States) completely ignore the prime factor of the tremendous job being accomplished by the RAAF—the humanitarian aspect. Colonel de Jong has received a mass of letters from British, Americans, and Germans, all pleading for some small bit of information of loved ones who disappeared over Holland in WW II. In a remarkable number of instances, the RAAF has made it possible for human remains to receive final burial in an identified grave. The solace which the RAAF has afforded to next-of-kin, regardless of nationality, after thirty years of anguish can never be truly measured.

ROYAL D. FREY, Curator
Air Force Museum
Wright-Patterson AFB, Ohio

Gentlemen: I was intrigued with your article appearing in the April issue. It was on page 13 and concerned downed aircraft in the Zuider Zee.

It so happens my last mission (number twenty-two) ended in disaster there.

On December 11, 1943, we were flying a B-17, triangle "H" on the tail, out of Thureleigh, England. I was the bombardier. Over Emden, Germany, we were hit with an 88-mm shell that tore off our number two engine and severely damaged one and three. Flying left wing high, we lost altitude until we were forced to ditch in the Zuider Zee. The crew, some wounded, escaped onto rubber dinghies. The aircraft remained afloat about thirty minutes before sinking.

Our pilot demonstrated a remarkable feat of airmanship in successfully ditching a mortally wounded ship!

I would be most interested to learn if this airplane has been found. We were, and I was a prisoner of war for eighteen months. Do not know the fate of my other crew members after we were plucked from the water by the German Navy.

LT. COL. HAMMOND H. BITTMAN,
USAF (RET.)
Bittco Enterprises
10003 W. Washington Blvd.
Culver City, Calif. 90230

Gentlemen: As a member of AFA and the Connecticut Aeronautical Historical Association, you can understand my deep interest in the romantic era of aviation.

I have just finished your little news release on the find in the drained bed of the Zuider Zee. I would be more than just interested in obtaining more information and pictures of the air armada for the museum as well as myself. Any help that you could afford me in this respect would be deeply appreciated.

ROBERT E. MARTIN
87 Raymond Rd.
Windsor Locks, Conn. 06096

• Lt. Col. Arie P. de Jong, Director of Information of the Royal Netherlands Air Force (see Royal Frey's letter above), is preparing an article on the Zuider Zee project for publication in an early issue of AIR FORCE Magazine.—THE EDITORS

Historians' Corner

Gentlemen: I am writing a book of biographies entitled *The Generals and The Admirals*. It is a comprehensive collection of stories about the most noted two-, three-, and four-star officers since 1941.

Anyone with anecdotal material—or any interesting information, for that matter—on any generals or flag officers to be included in my book is encouraged to contact me immediately. Photographs will be especially appreciated.

ROBERT M. ANCELL, JR.
6436 Esther, N. E.
Albuquerque, N. M. 87109

Gentlemen: I am an historian and am carrying out research into the Allied air raids on Koblenz and its environs, which took place in the years 1944 and 1945.

The main attacks on Koblenz were April 19 and 22; July 19; September 19, 21, and 25; October 9; November 1 and 11; December

2, 4, 10, 11, 18, 24, 27, 28, 30, and 31, 1944; and January 1, 2, 5-8, and 29, 1945. The attacking aircraft were mostly from the Eighth and Ninth US Air Forces.

I appeal to any readers who took part in these raids to write to me, as I would like to have accounts from these airmen for my research.

DR. HELMUT SCHNATZ
54 Koblenz-Karthause
Akazienweg 35
Germany

Gentlemen: The Office of Air Force History is looking for unusual original photographs of any aspect of air operations in Southeast Asia (1950-73). This material is needed for the Air Force's forthcoming *Pictorial History of the Air Force in Southeast Asia*. Acknowledgments will be made in the publication for items contributed.

Hq. USAF
Office of Air Force History
Washington, D. C. 20314
Attn: Mr. Lawrence J. Paszek, or
Mr. Dean J. Allen, Editors

Hostile Press

Gentlemen: The attitude of hostility that some sectors of the press demonstrate toward the armed services is not really new and may not have anything to do with the Vietnam War, specifically. The military has always had its detractors, but the ones allied with the press are, of course, in a unique position to make their viewpoints felt.

I am reminded of a sequence of events during the Cuban crisis. At the time that UN Ambassador Adlai Stevenson was proposing neutral airborne observation of the missile removal, several aircraft at one of the southeastern Air Force installations were being prepared in the event the UN opted for such a scheme. This meant changing aircraft markings literally overnight. Obviously, no such activity could be done entirely behind closed doors, and some of the repaint jobs were visible from behind the flight-line fence the next morning.

By noon, the IO had received calls from the wire services, radio and TV nets, overseas press, and so forth. Since the proposal was still being debated, the White House felt that any information that could influence the outcome should be withheld. By nightfall, the press was climbing the walls (and fences) and were threatening defiance of the IO's requests.

Airmail

The IO prevailed, however, and a day or so later the UN rejected the idea. The aircraft were remarked, and one would have thought the flap would be forgotten.

When the Cuban crisis was about ended, the flight line was prepared for a big press conference; static displays, people to answer questions, the whole nine yards. It would have taken an idiot to miss the attitude of the majority of visitors. Ill-concealed contempt would come closest to describing it, I guess. There were no questions like, "How did it go?" or "How does the equipment work?" Direct quotes I remember were, "I hear you guys fell flat on your asses," "So these are the birds that did the dirty deed, huh?" and "It must have been a piece of cake going against a bunch of gooks who couldn't shoot back." It was perfectly clear that there were those among the visitors that day who were disappointed that the crisis had been resolved in favor of the US. . . .

GEORGE HODDER
Sunnyvale, Calif.

HELP!

Gentlemen: Attention: Ex-members of the 37th Fighter Squadron! I am looking for aircraft photos (color or black and white) of your unit when it was stationed at Ethan Allen AFB, Burlington, Vt., from 1951 to 1960.

I am working on a painting of the 37th which I hope will be accepted by the Air Force Art Collection. Need to know colorings, markings, and any personal insignia. I will return photos sent ASAP. Please, any photo of any aircraft will be of much help, no matter how big or small.

SSGT. MARTY J. ISHAM
5409 Morris Ave.
Camp Springs, Md. 20023

B-36 Articles

Gentlemen: I would like to contact former members of the 7th and 11th Bombardment Groups of the Eighth Air Force at Carswell AFB, Tex., during the 1948-51 period, when the B-36 was becoming operational in the Air Force inventory. I am preparing an article in my continuing series of B-36 articles for the American Aviation Historical Society Journal on the intro-

duction of the B-36 bomber into SAC, and the people and problems of that time.

MEYERS K. JACOBSEN
3050 Rue d'Orleans, Apt. 390
San Diego, Calif. 92110

UNIT REUNIONS

Air Commando Association

The 1973 convention/reunion of the Air Commando Association will be held October 5-8 in Fort Walton Beach, Fla. Present and former members of all air commando/special operations units and their support organizations are invited. Interested members and non-members should write

Maj. F. G. Owens, USAF (Ret.)
P. O. Box 7
Mary Esther, Fla. 32569

Spookies

The second annual "Spookfest" will be held in Colorado Springs, Colo., on September 29. Everyone formerly assigned or attached to any AC-47 unit is invited. Contact

Lt. Col. D. O. Sandfort
DFENG
USAF Academy
Colorado 80840
Phone: Autovon 259-3930

21st SOS

All former members of the 21st Special Operations Squadron who are interested in planning a reunion, please contact

Capt. Dale Roth
5040th Helicopter Sqdn.
Elmendorf AFB, Alaska 99506

Class 38-B

The 35th reunion of Flying School Class 38-B will be held at Randolph AFB, Tex., June 29-30. All 38-Bers should get in touch with

Col. B. B. Taylor, USAF (Ret.)
606 Rocklyn Dr.
San Antonio, Tex. 78239
Phone: (512) 655-0997

Class 38-C

The Flying Cadet-Student Officers Class of 1938-C is now approaching its 35th anniversary since graduating from Kelly AFB, Tex. Previous reunions have been held each five years. This year's reunion will be held at Randolph AFB, Tex., October 5-7. An informative memorandum with an updated class roster will be sent to classmates at the earliest practicable date. For information contact

Col. E. R. Manierre, USAF (Ret.)
425 Buchanan Ave.
Cape Canaveral, Fla. 32920

Class 40-D

Anyone knowing of any reunions of Pilot Class 40-D, please contact

Bruce Burgess
8614 Perrin-Beitel Rd.
San Antonio, Tex. 78286

58th Bomb Wing

The 58th Bomb Wing, 20th Air Force, consisting of the 40th, 444th, 462d, and 468th Bomb Groups, stationed in

the CBI and later on Tinian in the Mariana Islands, will hold their annual reunion in Dayton, Ohio, August 1-5, at the Imperial House North. Details may be obtained from

Thomas F. Harrington
353 Ridgewood Dr.
Fairborn, Ohio 45324

78th Fighter Group

Do the former members of the 78th Fighter Group, which fought in Europe during WW II (P-51s), have an organization, or annual reunions? If so, please contact

Andrew J. Madigan
7480 Miami Lkwy, G107
Miami Lakes, Fla. 33014

366th Fighter Group

The 30th anniversary reunion of the 366th Fighter Group is planned for September 21-22, in Pittsburgh, Pa. Details are available from

Harry C. Hayes
P. O. Box 183
Black River, N. Y. 13612

391st Bomb Group

Trying to locate men of the WW II B-26 outfit—the 391st Bomb Group that was stationed at Matching Green, England, with Col. G. E. Williams. With some help from many, we will have a reunion in the not-too-distant future. Please write or call

Lt. Col. Wm. C. Brooks, USAF (Ret.)
4845 Mt. Almagosa Dr.
San Diego, Calif. 92111
Phone: (714) 278-9845

457th Bomb Group (H)

The 457th Bomb Group (H) "Fireballs," 8th Air Force, Glatton, will hold the first Group reunion on July 20-22, 1973, at the Holiday Inn Downtown, Topeka, Kan. For information, write

Howard Larsen
1220½ West 1st St.
Topeka, Kan. 66606

500th Bomb Group (VH)

Does anyone have any information on a reunion for members of the 500th Bombardment Group (VH)? Would like to hear from former members.

W. A. Schorwerath
P. O. Box 333
Hermitage, Mo. 65668

506th F-B Squadron

Myrtle Beach, S. C., will be the scene of the 506th Fighter-Bomber Squadron (WW II) reunion August 24-27, 1973. If a brochure with details is desired, notify

Lloyd M. Shockey
1312 Sooner Rd.
Oklahoma City, Okla. 73110

614th Bomb Sqdn., WW II

The 614th Bomb Squadron, 401st Bomb Group, WW II, stationed at Deenethorp, England, will hold its reunion in Birmingham, Ala., August 10-12 this year. All who desire information contact

A. W. McCrary
P. O. Box 3855
Birmingham, Ala. 35208

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Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

Congress and the Budget, Again

WASHINGTON, D. C., MAY 3

In an atmosphere befogged by the revelations of the Watergate scandal, it is good to be able to report that constructive things are being done in Washington, although you wouldn't know much about it from reading the newspapers. Congress is preparing to reform its method of handling the federal budget. It is a subject that was discussed at length in the April issue of AIR FORCE Magazine, where we gave the House and the Senate credit for flexibility and predicted they would change procedures. (See "Who's in Charge of the Money?", April '73 issue, p. 30.)

At this early stage, there is no yardstick that can measure the impact of the proposed changes on national security. As pointed out in April, it is the entire question of priorities and the Nixon Administration impoundment of some funds intended for

social programs that precipitated talk of an impending constitutional crisis. Such a crisis is remote. There may be a clue in the relatively mild congressional reaction to the April 17 announcement that there will be closures and cutbacks at 128 domestic military bases. For their constituencies, some congressmen and senators put up a howl. Either it was not loud, or it was almost drowned out by the clamor over Watergate. There will be a saving of \$3.5 billion over the next ten years, and the military services are not unhappy. (*For more on base closings, see p. 12.*)

It was only the day after the base-closure announcement that Sen. John L. McClellan, chairman of the Appropriations Committee, introduced a bill called the Budget Control Act of 1973. An identical measure was offered in the House by Rep. Jamie L. Whitten.

It was Mr. McClellan who scolded Congress in harsh terms, but first laid down the harsh facts:

- Of the \$268.6 billion in outlays proposed in the

The Wayward Press

On February 25, 1973, there was a story in the Detroit News under the headline: "Congressman Says He Bought Secret Pentagon Documents." The by-line was that of Seth Kantor, of the newspaper's Washington bureau, a man described by his peers as an "investigative reporter."

Readers of the News were told that Congressman Harold Runnels, a member of the Armed Services Committee from New Mexico, said he had purchased some classified documents last summer from three unidentified men. Runnels had said in interviews, Kantor wrote, that this trio indicated they had access to sensitive information in the Pentagon and that it was for sale. They asked \$1,000 for data on any subject. Mr. Runnels said he made two purchases from them.

As a result of the News story, Mr. Runnels himself asked the Armed Services Committee to hold a hearing. This was done on March 27 by the

Armed Services Investigating Subcommittee. The chairman is F. Edward Hébert, who also is chairman of the parent committee.

At the hearing, Mr. Runnels said he did business with two men, not three, and identified them as Walter Snyder and Ben Thomas. He said they did independent research, and he hired them to do reports on the Army's Cheyenne helicopter and the Main Battle Tank-70. He paid them \$1,000 each for the reports, which he described as "so-so." The payments were made in cash because Mr. Runnels operates that way. He said he writes one check the first of each month "for what I think I will be spending during the month." Fees like those to Snyder and Thomas then come out of his pocket, and he has no interest in keeping a record of such expenses for tax purposes.

It developed at the hearing that Mr. Runnels does not know where Snyder

and Thomas came from, has no address or telephone number for them, and has lost or misplaced the \$2,000 worth of reports he bought from them. In his plea to the subcommittee, he denied that classified information was involved and said he had talked to Seth Kantor because he knew the reporter, who said he would be doing "in-depth" stories and wanted to know "if I had any leads or ideas." He denied mentioning "secrets."

Mr. Kantor took the stand at the hearing to give a different version of the story. He said Mr. Runnels did claim he was buying classified information and even asked if the Detroit News would be interested in paying for some of it. Kantor said Runnels called it "cloak-and-dagger stuff" and spoke in "low tones," making it clear "he was getting information that was not ordinary information from Pentagon sources."

Rep. Otis Pike, of New York, a vet-

Fiscal 1974 budget, \$208.1 billion—about seventy-five percent—is uncontrollable. The outlays were authorized in prior years, and most of the funds already are obligated.

• Of the same \$268.6 billion spending estimate, only forty-four percent—about \$120.8 billion—would represent new obligational authority provided in appropriation bills for Fiscal 1974. And, for much of this category, past authorizations require funding at this time.

Thus, by its own legislative action, Congress has splintered spending authority off from the appropriations process. In the past five fiscal years, Mr. McClellan told the Senate, it is true—as Sen. Hubert Humphrey keeps telling the nation—that Congress has cut new budget authority requests by about \$30 billion. But, at the same time, Congress has approved expenditures in nonappropriation bills that exceeded such budget requests by more than \$30 billion.

It is difficult to believe, but experts find a majority of the members of Congress still do not understand that appropriation bills do not determine government spending. One expert, Edwin L. Dale, Jr., who covers these affairs for the *New York Times*, now says appropriation bills are the least important part of the process. Congress votes for higher Social Security, or Medicare, or highways, or veterans' education, or black-lung benefits for miners, or higher retirement, or military pay, or food stamps, or housing subsidies, or price supports. The cost depends on who is eligible to collect under the law, and Congress has no alternative but to vote the money when it is needed.

Here is the way Mr. McClellan put it:

"In Fiscal 1973, of the 160 legislative actions having a direct or indirect effect on budgetary authority or spending, only nineteen were in the form of appropriations measures. All the rest—141 of them—were numerous legislative bills that bypassed the usual appropriations process, but which, nonetheless, were the source for Fiscal 1973 expenditures.

"We are circumventing long-established funding procedures for short-term fiscal expedients. We are bypassing dependable appropriations restraints for dubious spending concessions.

"In the process, we have caused severe fiscal strain, seriously eroded the power of Congress over the purse, and derogated our vital system of checks and balances with the executive branch over federal expenditures and prudent fiscal stewardship."

The day before he introduced the Budget Control Act, Chairman McClellan made another speech in the Senate, also overlooked in the mad news world of Watergate. Mr. McClellan has thirteen subcommittees working for him in the Appropriations Committee. He asked each subcommittee chairman to come up with a ceiling for Fiscal 1974. The Defense Subcommittee, which Mr. McClellan himself chairs and which includes four members of the Armed Services Committee—Senators Stennis, Symington, Jackson, and Thurmond—voted to cut the Nixon appropriation request by \$3 billion. Four other subcommittees proposed, collectively, a cut of another \$2.4 billion. There were, of course, subcommittees that anticipate asking for more money than the Administration has requested. The subcommittee on Agriculture, Environmental and Consumer Protection would boost the budget by \$801

eran and sophisticated member of the subcommittee, brought out in cross-examination that Runnels told Kantor the classification of the documents he bought was "confidential." Kantor interviewed Mr. Pike before he wrote the story, and the congressman told him he wouldn't pay ten cents for "confidential" information. Further, it came out, Mr. Pike told the reporter he didn't believe the story in the first place.

Newsman Kantor never saw the mysterious men, Snyder and Thomas, and never saw the reports they sold to Rep. Runnels. Under questioning, he said he thought Mr. Runnels "was trying to furnish me information on a man-to-man basis."

"By man-to-man, you mean close in, not at arm's length—what do you mean by that?"

"I mean, I don't think he expected his conversation to be broadcasted across the land," Kantor replied.

Then he said he was eager to find out who Snyder and Thomas were.

"Did your editors in Detroit ever give you any kind of an expense account, any sort of a fund of money to go out and try to find these fellows yourself?" the investigative reporter was asked.

"I had no names to go on," was the answer.

Kantor also was asked how he felt about reporting uncorroborated stories. His answer was only that he felt he could trust Congressman Runnels. If he had been dealing with someone he didn't know, he would have pursued it further.

"Did you ever at any time see any document or talk with any person who could substantiate the very serious charges you made in your article?"

The reporter replied that he talked only to Mr. Runnels and never saw a document marked "secret" or "confidential."

Chairman Hébert, himself a former city editor and news reporter, brought out that Kantor had talked to him, and other committee members, without using the name of Runnels. Mr. Hébert, for his part, challenged the reporter to document his charges, and, according to the chairman, Kantor said he would. But he did not. "I guess my fault is believing the congressman," he said.

Commented the chairman:

"If Mr. Runnels wants to go around dishing out thousands of dollars, I wish I had met him as a reporter and possibly I wouldn't have had to come to Congress to earn my keep.

"I am not in any way being facetious about it, because I feel very keenly about a reporter's responsibil-

ity. . . . I respect you for covering up your sources. I never ask a reporter to reveal his sources; that is his business, and I believe in it. . . . Certainly you didn't cover up your source in this instance. You identified Mr. Runnels in your headlines in your newspaper. . . . Why did you reveal your source, then?"

"We felt the time had come to reveal the story."

"Oh, you had a double standard, then?"

"I don't believe so. I felt all along it was important to get this story out, that there were people selling classified information, and we should find out who they are."

"You haven't found out yet?"

"I absolutely haven't. Today is the first time I find two names."

The subcommittee report says there is no evidence that classified documents were bought by Mr. Runnels, as suspected by investigative reporter Kantor. However sorry the performance by the congressman in this comedy, the performance by the press was worse. It was suggested at the hearing that Mr. Runnels may have been taken in by a couple of con men. That is a reasonable conclusion, and one that any reporter could have made into a good story.

Airpower in the News

million. The subcommittee on Labor; Health, Education and Welfare expects to seek an additional \$2.2 billion, or more than two-thirds of the economies proposed by the defense subcommittee. In effect, what Mr. McClellan and his subcommittee chairmen proposed is a tentative budget request of \$285.6 billion, instead of Mr. Nixon's \$288 billion.

Under the proposed Budget Control Act of 1973, the determination of these figures would not be left to the subcommittees. The bill would establish a special committee on the budget in both the Senate and the House. The House group would have twenty-one members, the Senate, fifteen. In both cases, one-third of the members would be drawn from the Appropriations Committees, one-third from the tax-responsible Ways and Means or Finance Committees, and one-third from legislative committees generally. The final classification would provide the lone opportunity for members of the Armed Services Committees to voice an opinion, if they merit a seat.

The plan calls for a joint staff of highly trained, professional, and nonpartisan experts. Rep. Al Ullman, of Oregon, a senior Democrat on the Ways and Means Committee, who supported the new Budget Control Act in the House, indicates there will be an effort to rival the executive branch's Office of Management and Budget (OMB) in organization and competence.

"We plan to hire an analyst of real competence to run the staff," Ullman has said. "We also visualize a very skilled staff on computers."

The House and Senate budget committees would be required to report out two resolutions each year. One would establish a ceiling on spending and new budgetary authority. The other would provide for revenue. On top of this, the spending and budget authority would be allocated among the subcommittees of the Appropriations Committees. There are other clauses, all designed to give Congress what it has needed, in recent years, to compete with the White House in the area of budget control.

The Budget Control Act is the product of a Joint Study Committee on Budget Control, established under a law passed in 1972. Members of that committee spoke out in support of the proposal during the floor discussion in both the House and Senate.

Sen. William V. Roth, Jr., of Delaware, for example, called it "the most significant congressional reform in a decade." He said it would "force both the House and the Senate to focus on both sides of the federal ledger, to twice a year review our available tax resources and decide how best to invest them in competing government programs. It carries with it political and economic sanctions against wasteful spending by instituting an automatic surtax should Congress break the spending ceiling it had determined appropriate for any given fiscal year."

Herman E. Talmadge, of Georgia, second ranking Democrat on the Senate Finance Committee, lamented the nation's "spending spree" and blamed it on an effort of the government to be all things to all people. He called the proposed law "a positive and long overdue first step toward spending reform and fiscal responsibility." Sen. John C. Stennis, of Mississippi, a member of the Appropriations Committee and chair-

man of Armed Services, submitted a statement calling for finances to be placed in sound order because "it is essential to counter the inflation that goes with financial irresponsibility."

There was similar support on the House side, where a group of eighty-three freshmen members signed a resolution in support of the program. If there is any opposition to the Budget Control Act, it is expected to come from liberals, mostly Democratic, who will fear that the new budget committees will be too conservative. Sen. Walter F. Mondale, of Minnesota, says that budget priorities are political questions and should be debated as such. Sen. Jacob K. Javits, of New York, is of a similar mind. The Budget Control Act has been referred to the Committee on Government Operations, of which Javits is a member. Mondale is a member of the Finance Committee.

Enactment of the budget control measure, and it can come by midsummer, certainly will have its impact on the Defense Department. The Pentagon has used the device of reprogramming to finance activities for which there had been no appropriation. This does not require the approval of Congress, only the approval of a committee or, sometimes, a subcommittee. In Fiscal 1970, for example, the House Appropriations Committee had reprogramming requests from the Pentagon totaling \$4.7 billion. The proposed law would tighten this kind of freedom.

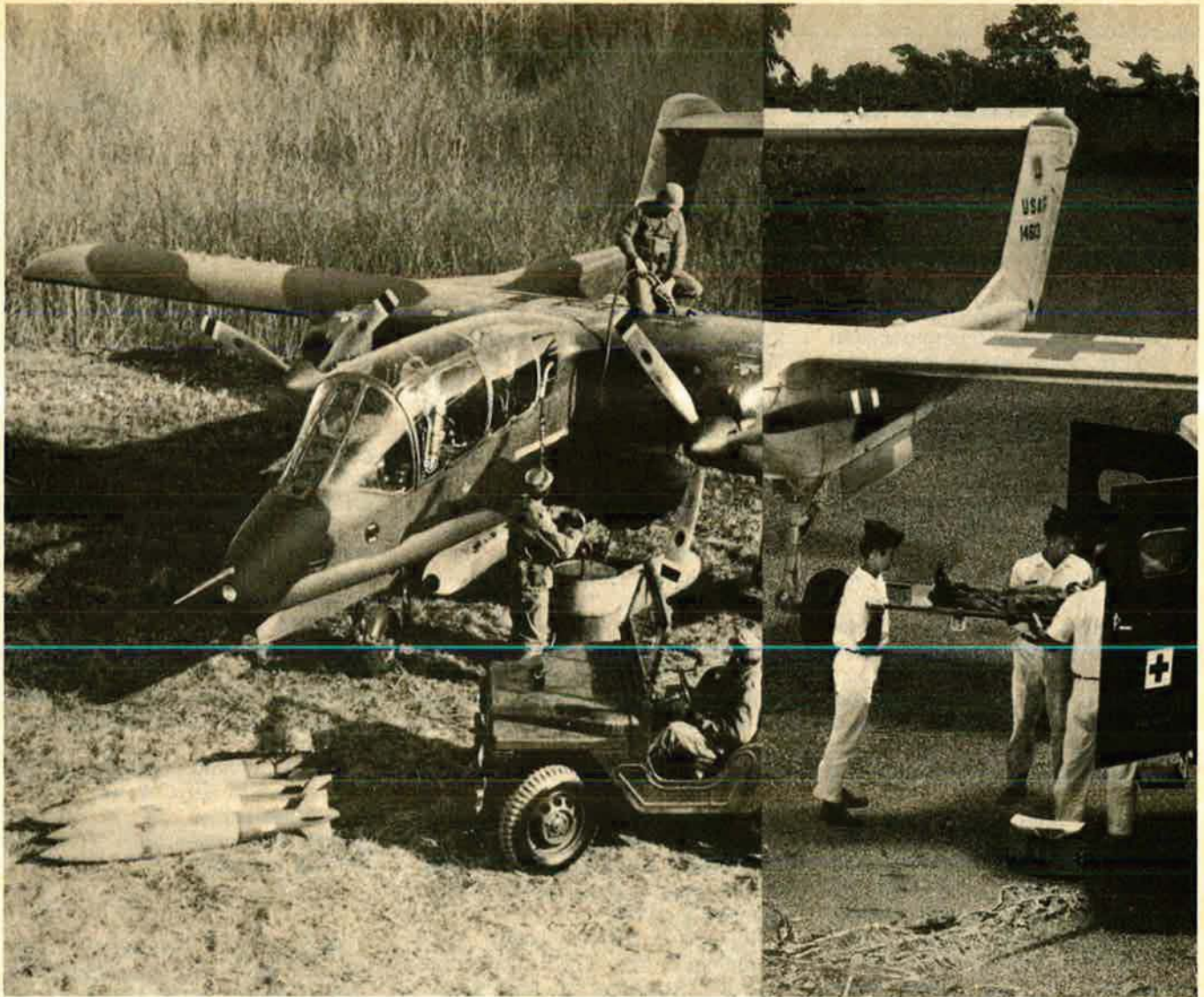
Apart from this kind of control, there is no reason to anticipate more than the normal amount of argument about the defense budget. Already, it is under way for Fiscal 1974. The \$3 billion cut proposed by Senator McClellan's subcommittee was outdone almost at once by the organization known as the Members of Congress for Peace Through Law. They would chop \$10 billion from the proposed budget, nearly half of it from Navy programs. Looking at USAF, the MCPL study would eliminate the B-1 bomber as a "slender increment" to our deterrent. It would stabilize Minuteman, halting the MIRV deployment. It would cancel both the Advanced Airborne National Command Post and the Airborne Warning and Control System (AWACS) aircraft. Other major cuts would come out of the size of our standing forces. MCPL says it does not agree with "the Defense Department's contention that the US is now militarily weak."

MCPL has been through this exercise before. It results in amendments being offered to the authorization and/or appropriation bills. Almost invariably, in the past, the amendments have been defeated.

The important news, for the long haul, is that Congress is overhauling its creaky machinery, having been prodded into it by White House actions. Using impoundments and the veto power, the executive branch has stepped into a void left there by Congress itself. Corrective action is imminent on the Hill.

As we go to press, there is a new dispute. The General Accounting Office has told Congress that Mr. Nixon has violated the 1973 appropriations act by distributing a campaign kit designed to rally support for the President in the spending debate. The 1973 law says no funds can be used "for publicity or propaganda purposes designed to support or defeat legislation pending before Congress." The White House contends it is only telling the nation how Mr. Nixon feels about the issues.

It just seems possible that if Congress had maintained the kind of control it now seeks through the Budget Control Act, there would have been no worry about publicity or propaganda from the White House, as there should not be. ■



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The Bronco OV-10 is just one airplane. But it can do so much, it's more like a small fleet.

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Since 1968, Bronco has accumulated more than 600,000 flight hours with the U.S. Marines, Navy and Air Force . . . 75% of that time in combat. It can be used day or night as a lightweight gunship with a 110-cubic-foot cargo bay that carries abundant ammunition. It can also be used for observation and reconnaissance; helicopter escort; target marking; gunfire spotting; and liaison, utility and training operations.

Bronco can be easily adapted for peacetime uses, too. Such things as security patrol,

disaster relief, medical missions, civil disorders, aerial mapping, agricultural spraying and chemical fire-fighting.

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One more important extra: Bronco OV-10 is designed, built and backed by Rockwell International, builder of more military airplanes than anyone else in the world.



Columbus Aircraft Division
Rockwell International

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

WASHINGTON, D. C., May 15

The Defense Department decision to shut or consolidate a large number of military bases and facilities across the land is expected to save an estimated \$3.5 billion over the next ten years. The cost in military and civilian jobs, however, is high—about 43,000. In all, 274 military installations in the US and Puerto Rico will be affected.

In addition, Air Force aircraft will be reduced from 12,535 in 1968 to 8,313 in 1974. Pilot training will decline from a peak of 4,440 in 1972 to 3,425.

One of the Air Force's nine pilot training facilities, Laredo AFB, Tex., will be closed.

With the phase out of forty-five B-52Ds by September 1974, Air Force has been directed to shut two SAC bases—Westover AFB, Mass., and McCoy AFB, Fla. DoD views these bases as too vulnerable to attack by sub-launched missiles.

Other large USAF bases to close (except for certain minor functions): Hamilton AFB, Calif.; Ramey AFB, Puerto Rico; and Forbes AFB, Kan. Forbes's primary mission has been tactical airlift, but the base is located too far from its Army airlift customers in the South, DoD explained.

For its part, the Army will be cut from 1,600,000 military personnel in 1968 to 804,000 in June 1974, with Army aviation training being slashed from 6,887 in 1969 to 1,502 by June '74.

The Navy's active fleet will be cut down from 917 in June '64 to 523 in June '74. Over the same time span, fleet aircraft will be reduced from 5,014 to 3,956.

"Under the Department of Defense Program for Stability of Civilian Personnel," DoD said, "every effort will be made to assist displaced civilian employees in obtaining other acceptable employment."



The Soviet Union experienced two severe reverses in space projects within the period of a month. The events have cast some doubt on the Apollo/Soyuz joint mission planned for 1975.

US space experts pretty much agree that the Soviet spacecraft Salyut-2, launched on April 2, suffered a "catastrophic failure." And, at the end of April, a Soviet rocket carrying a Lunokhod robot explorer bound for the moon fell instead into the Pacific.

The nature of the failures of

Salyut-2 and the lunar mission have not been made public, as the Soviets rarely report officially details of the mistakes they make in space.

US radar observers noted, however, that a large number of trouble-indicating fragments surrounded the earth-orbiting Salyut-2, and most of these apparently subsequently plunged into the atmosphere and burned up.

Later in April, Soviet officials did announce that they had no plans at that time to man the spacecraft, implying that a manning mission had never been intended, something US space officials found hard to believe.

At this writing, Skylab, the US counterpart of Salyut-2, was experiencing difficulties after its May 14 launch that could pose problems with its operation.



The Air Force has added a new aircraft type and corresponding number to its operational inventory.

The aircraft, a Boeing 747, is designated the E-4A by the Air Force; the wide-bodied, four turbofan heavy transport has ample space for its complement of electronics, communications, data-processing gear, and other facilities that equip the aircraft for its role as an Advanced Airborne Command Post.

The new airborne command post system—labeled 481B by the Air Force Systems Command's Electronic Systems Division, which is developing it at Hanscom Field, Mass.—is to replace the older Boeing 707 airborne command posts now in service. (See also p. 130, May '73 issue.)



An Air Force officer and a newsman have been named to top posts in the Office of the Assistant Secretary of Defense (Public Affairs).

Maj. Gen. Daniel "Chappie" James, Jr., will serve as Principal

US Navy Lt. Gary Thornton, a former POW, discusses recent history with Green Beret Sgt. John Rodriguez. The two attended a reunion of POWs and the Son Tay prison camp raiders sponsored by millionaire H. Ross Perot in San Francisco in April. "We were so proud of you guys and happy you did it," Thornton told Rodriguez.



—Wide World Photos

Deputy Assistant Secretary of Defense (Public Affairs) to Jerry W. Friedheim, DoD's Assistant Secretary for Public Affairs. General James will be the first military officer to hold the post.

A former fighter pilot, General James had been serving as a Deputy Assistant Secretary for Public Affairs. His new post has been designated a three-star billet.

General James has been cited for "his outstanding professional capabilities and his ability to communicate effectively with Americans of all walks of life." He has been singled out particularly for his work in Operation Homecoming, the release and repatriation of US POWs.

Succeeding General James as Deputy Assistant is William Beecher, formerly military correspondent for the *New York Times*. A graduate of Harvard and Columbia Universities, Mr. Beecher served as an Army artillery officer and later as a captain in the Army Reserve. Prior to his employment with the *Times* in 1966, Mr. Beecher worked for *The Wall Street Journal*, Fairchild Publications, the *St. Louis Globe-Democrat*, and the *Boston Globe and Herald Traveler*.



Time is taking its toll of the nation's aviation pioneers. AFA charter member Merian C. Cooper, a retired Air Force Reserve brigadier general and major figure in motion pictures, died at San Diego, Calif., in April. He was seventy-eight.

General Cooper, a 1914 graduate of the Naval Academy, led an extraordinary life. A pilot in France during World War I, he later joined a unit of the Polish air force and fought the Bolsheviks. Captured by Cossacks in 1920, he escaped.

General Cooper was a member of the Flying Tigers at the beginning of World War II and later served as an AAF colonel in the Pacific.

Noted in the civilian world for his work in films, General Cooper coauthored and coproduced the early classic "King Kong." (By coincidence, a star of that film, Robert Armstrong, died the day before General Cooper in Santa Monica, Calif. He was eighty-two.)

In "Flying Down to Rio," made in the early 1930s, General Cooper created a film-industry first when he paired Fred Astaire and Ginger Rogers as dance-team stars in what



Holding plaque naming him "Air Force Wing Historian of the Year" is TSgt. James F. Smith, second from left. The award recognized Sergeant Smith's work as historian of the 388th TFW, Korat RTAFB, Thailand. Attending the recent Pentagon ceremony are, from left, USAF Assistant Vice Chief of Staff Lt. Gen. A. J. Russell; Sergeant Smith; Maj. Gen. Ramsey D. Potts, USAFR, president of the AF Historical Foundation; and AF Secretary Robert C. Seamans, Jr.

was to become to film viewers a very popular partnership, still occasionally seen on late-night television.

General Cooper, a figure in the development of the "Cinerama" film process, was honored at an AFA testimonial dinner in 1966. He was cited "as a military pilot and planner in both world wars, as an inspired innovator in the art of motion pictures, and as a prophet of the aerospace age." His late brother, John Cobb Cooper, was an expert on the legal aspects of spaceflight and a contributor to *AIR FORCE Magazine*. The General's son, Richard M. Cooper, is a major in the Air Force.

MSgt. Roy W. Hooe, USAF (Ret.), died in April in Martinsburg, W. Va. He was seventy-eight. A thirty-year veteran, Sergeant Hooe participated in the 1929 pioneer test of aerial refueling that set an endurance record of some 151 hours. Other members of the Army Fokker trimotor crew were Carl A. "Tooey" Spaatz, later USAF Chief of Staff, and Ira Eaker and Elwood R. Quesada, both of whom later became lieutenant generals in the Air Force.

Sergeant Hooe served as crew chief for other aviation notables, among them: Gen. Billy Mitchell, Charles A. Lindbergh, and Amelia Earhart. Sergeant Hooe retired from the Air Force in 1950.

Aviation pioneer Harry M. Jones also died in April, in Tulsa, Okla. He was eighty-two.

In 1913, much of the time in sub-zero weather, Mr. Jones made the first air parcel-post flight from Boston to New York. Because of frequent force-downs and other problems, it took him a total of fifty-two days.

In 1913, he also landed the first aircraft on Boston Common, for which he was arrested by the police.



In a rather unusual program, the Air Force Systems Command's Armament Development and Test Center (ADTC) is converting surplus F-102 Delta Daggers into target drones.

Designated PQM-102s, the drones will be used for the test and evaluation of air-to-air missiles against "a low-cost, full-size, maneuvering, supersonic, afterburning target that is representative of the threat aircraft in the dogfight envelope," Air Force said.

The Dagger first flew in 1953 and became operational in mid-1956. It was designed as an all-weather jet interceptor, capable of speeds of 800 mph and altitudes of 50,000 feet. Daggers now equip several Air National Guard units.

By eliminating life-support systems and flight safety features, USAF hopes to keep operating costs at a minimum for a drone that will represent a realistic target system in testing new and current weapons.

The conversion work is being done by Sperry Rand Corp.'s

Aerospace World

Sperry Flight Systems Division,
Phoenix, Ariz.



Late in April, then Air Force Secretary Robert C. Seamans, Jr., was awarded the General Thomas D. White Space Trophy for 1972.

The trophy, honoring the retired Air Force Chief of Staff who died in 1965, is presented annually to the military or civilian member of the Air Force who made the most outstanding contribution to progress in aerospace.

Dr. Seamans, appointed Secretary early in 1969, is credited "with directing major advances in system testing and in efficient development of new programs for" modernizing the nation's defenses. "Under his leadership, great strides were made in Air Force space programs, and new early warning and communications space systems were placed in operation," said the National Geographic Society, which administers the trophy.

Secretary Seamans also has been elected President of the National Academy of Engineering for a one-year term, a job he will take upon leaving the Air Force in May. He succeeds Clarence H. Linder, President since May 1970.



Northrop Corp. officials are waxing optimistic about sales of the company's new F-5E International Fighter.

With about 450 ordered before the first production aircraft has even been delivered, Northrop has



USAF's three SEA aces, winners of the 1972 Mackay Trophy. From left, Capt. Steve Ritchie; J. C. Owen, president of the Aero Club of Washington, which sponsors the trophy; Capt. Chuck DeBellevue; and Capt. Jeff Feinstein. The aces were honored guests at a club luncheon in May. Another guest was Col. John A. Macready, USAF (Ret.), winner of the 1921, 1922, and 1923 Mackay Trophies. Below, the Thomas D. White Space Trophy, awarded to Air Force Secretary Robert C. Seamans, Jr. (see item at left).

hope that sales may ultimately reach 1,000.

Known as the Tiger II, the F-5E has been designed as a fighter for free-world nations, operational through the 1970s and into the '80s. It is intended as a match for the Soviet MIG-21.

Northrop also noted that its P-530 Cobra, being developed as a multi-role tactical aircraft, is garnering substantial interest from free-world nations.



Tornadoes, inevitably, have been going their usual destructive way in the Midwest, trailing death and wreckage in their wake (one even stabbed down in Fairfax, Va., to damage some property, but, by a miracle, killing nobody).

In the Midwest, of course, is



Northrop Corp.'s F-5E Tiger II International Fighter, for which the company has great sales expectations. Some 450 had been ordered even before the first production aircraft had been delivered.



A fifty-three-foot-long, full-size engineering model of Northrop's P-530 Cobra on display at the Paris Air Show. It is designed to be produced in cooperation with European and other aerospace industries.

SCIENCE/SCOPE

The U.S. Air Force has selected the Maverick missile built by Hughes as the basic airframe for developing a modular family of close air support missiles. Present modular concepts include three guidance-head options (laser, electro-optical, and infrared imaging) and two warheads (a shape charge for anti-tank or hard target use and a conventional charge for troop support).

A unique composite plastic for molding radomes is being developed by Hughes scientists under a U.S. Navy research contract. Because the fibers run perpendicular to the surface of the radome, so that their ends are exposed, the polymeric-fiber-reinforced composite resists deterioration due to rain, which has made it necessary to replace military aircraft radomes as often as every two months. Radomes molded from the new composite will have a projected life of two years.

A gyro-stabilized sight for the wire-guided TOW missile, developed by Hughes for the AH-1G HueyCobra attack helicopter under contract to Textron's Bell Helicopter Company, is now being delivered to the U.S. Army following successful tests at the Army's Yuma, Ariz., proving ground. In operation, the HueyCobra gunner holds the sight on the target and launches the TOW missile, which automatically follows his line of sight and impacts where he is holding the cross-hairs.

1500 watts of electricity from solar energy are being produced by the FRUSA (Flexible Rolled-Up Solar Array) system aboard a U.S. Air Force Agena satellite. Its two 16-foot panels, each with 17,250 solar cells, were rolled into a cylinder at launch, then unfurled in space. Now Hughes is developing an advanced multi-mission version with an analog/digital voltage regulator. Welded aluminum construction will enable it to tolerate much higher temperatures during near-sun missions.

The U.S. Navy's new air-to-air Agile missile will have a guidance subsystem developed by China Lake Naval Weapons Center with the assistance of Hughes, who will also provide system integration and engineering support. Agile will be used on the Navy's F-14, the U.S. Air Force's F-15, and other advanced aircraft for close-in combat.

Jacques Cousteau's oceanographic research vessel, Calypso, safely navigated the hazardous Drake Passage at the southern tip of South America with the help of an earth-orbiting sensor and a satellite built by Hughes. The multispectral scanner aboard NASA's Earth Resources Technology Satellite 1 photographed weather and ice-berg formations along the route. The pictures were processed by Goddard Space Flight Center and relayed to the U.S. Navy's Fleet Weather Facility, which relayed the information to the Calypso via Applications Technology Satellite 3.

The toughest vehicle test course in the West -- a punishing, pretzel-shaped 2.2-mile scale duplicate of the U.S. Army's famous 9-mile Munson test track at Aberdeen Proving Ground, Md., built by Hughes in Fullerton, Calif. -- is now available to any company or agency wishing to test any type of vehicle on the West Coast. It includes a 5.5-foot fording basin, rain test chamber, various washboards, rough cobblestones, a potholed country road, and a 20 percent side slope.

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in common: success.


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problem is large or small, bring it to us.
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UTC's 120", 1.2 million pound thrust solid rocket. Over 40 consecutive successes in the Titan III-C and -D programs.



UTC's new 45", 130,000 pound thrust Algol III. Has operated flawlessly on its first four missions as booster stage of NASA's Scout launch vehicle.



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



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

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

Aerospace World

located the infamous "Tornado Alley." For folks living anywhere in that area, tornado warnings are a way of life.

But science might soon lend a helping hand, in the form of more accurate detection methods. Tornadoes are the result of certain weather syndromes, a set of atmospheric conditions that trigger the violent phenomena.

The National Weather Service's National Oceanic and Atmospheric Administration is currently experimenting with electronic "tornado detectors." These devices, positioned along Tornado Alley, measure the electromagnetic "signature" of the cloud formations most likely to spawn the twisters.

The electrical "signatures" have been identified through numerous observations of tornadic thunderstorms over the last several years. It is hoped that earlier detection of tornado activity can lead to earlier warning, and thus save lives.



In late April, the Defense Department initiated a mass mailing to solicit employer support for the National Guard and Reserve programs.

J. M. Roche, chairman of the Committee for Employer Support of the Guard and Reserve appointed by President Nixon last June, said that some 850,000 employers would eventually be contacted. Assisting the Committee with this huge mailing is the US Air Reserve Personnel Center, Denver, Colo.

"The essence of the Committee's nationwide campaign," said DoD officials, "centers on encouraging employers—large and small—to sign Statements of Support for the



Earlier this year, about 500 cadets attended the first statewide, triservice JROTC Drill Meet on record, conducted at Clemson University, Clemson, S. C. Here, Col. William R. Sommer, Director of USAF's JROTC program, presents the AFA-sponsored Outstanding AFJROTC Drill Meet Trophy to a member of the Orangeburg-Wilkinson High School drill team, the top Air Force JROTC unit in the meet.

Guard and Reserve . . . pledges whereby the employer agrees to facilitate participation in the National Guard and Reserve programs."

Under the all-volunteer force concept, these organizations are to provide almost thirty percent of the nation's trained military manpower, at a cost of less than five percent of the defense budget.

Of 82,000,000 employees in the US, some 18,000,000, or twenty-two percent, are currently covered by the signed statements. Thus far, forty-three state governors have signed the statements, pledging full support to state employees participating in National Guard and Reserve programs. (See also pp. 76-77 of this issue.)



Last year, AFA commemorated the Air Force's Twenty-fifth Anniversary by offering to honor 1,000 outstanding Air Force technical and military training instructors with a one-year complimentary membership. AFA specified that these should be instructors who received the ATC Master Instructor Award or were named Instructor of the Month during 1972. ATC's DCS-

Technical Training Division has disclosed that 757 of the complimentary memberships have been awarded to those winning Master Instructor Awards and 204 to Instructors of the Month during the year.



It's hard to believe some of the figures projected for increased US civil air traffic over the next decade.

Index to Advertisers

Amtrak	20
E-Systems, Inc.	7
Hughes Aircraft Co.	15
Lockheed Aircraft Corp.	3
McDonnell Douglas Corp.	Cover IV
Northrop Corp.	Cover II
Rockwell International, Columbus Aircraft Div.	11
Sun 'n Green Condominiums	17
United Technology Center	16
Vought Aeronautics Div., LTV Aerospace Corp.	Cover III

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The FAA anticipates that airline passenger totals will soar an average ten percent annually in the next ten years, climbing from 200,400,000 in Fiscal Year '73 to a whopping 524,000,000 in FY '84. While domestic passenger enplanements are expected to rise from 179,100,000 to 461,200,000 in that time period, the passenger rate for international flights will register the larger percentage gain—from 21,300,000 to 62,800,000.

FAA predicts that another significant traffic indicator—revenue passenger-miles flown by US carriers—will swell from FY '73's 162,100,000,000 to 500,500,000,000 in FY '84.

To keep pace with this unprecedented growth, US airlines will add 1,000 more aircraft to the civil fleet, bringing the total to 3,600. (Some sixty percent of these aircraft are expected to be wide-bodied jets, accounting for about eighty percent of available seat-miles.)

The burden of serving this traffic flow will fall even more heavily on air traffic controllers, who will handle some 42,000,000 individual flights of aircraft in FY '84, up from 23,300,000 currently.

Other statistics—active pilots, students, aircraft and engine production, fuel consumption—all are expected to mushroom, the FAA reports.

Brace yourself for an aluminum overcast.



As of July 31, 1972, the Air Force reports, it had fifty enlisted and sixty-five officer career fields open to its personnel.

In the manning statistics, more

airmen were assigned to the aircraft maintenance career field than any other, and more officers were assigned to the navigator career field than any other.

It was quickly pointed out, however, that USAF had more pilots—39,035—than navigators—14,503—but pilots were assigned to a variety of Air Force Specialty Codes.

Almost 749 Air Force personnel have been serving outside the Air Force—with NASA, NATO, FAA, DoD, and other organizations. Of the Air Force people with NASA, twelve pilots also held astronaut ratings.



NEWS NOTES—USAF's new T-43A, military version of the Boeing 737-200 to be used for navigator/bombardier training, made its **maiden flight** in mid-April. The T-43A will make up the airborne element of USAF's Undergraduate Navigator Training System.

SOVIET DEVELOPMENTS

Over the past several years, a number of Soviet and Chinese soldiers have been killed in small clashes along the Sino-Soviet border. The Soviet military forces that are involved in these skirmishes are Border Guards, numbering between 175,000 and 500,000 men. Although they are armed with aircraft, tanks, and other modern equipment, they are not subordinated to the Ministry of Defense. Instead, they are part of the KGB (Committee of State Security). Other KGB forces are reported to control and guard all nuclear warheads. Still another KGB force, although not in uniform, includes the secret agents, who are estimated to number between 1,000,000 and 5,000,000.

It was a significant event when the head of the KGB, Yuri Andropov, was elevated to full membership in the Politburo in April of this year.

Another unexpected promotion to full Politburo membership was that of Marshal of the Soviet Union A. A. Grechko, the Soviet Minister of Defense. It is interesting to reread the *Washington Post* of April 1967, at the time of the death of the previous Minister of Defense, Marshal Malinovsky. There was then, and still is, a considerable misunderstanding in the United States about Soviet Party-military relations. The *Post* and other US publications discussed what they believed to be a Communist Party desire to control the military. *Post* headlines announced that "Civilian Is Rumored for Soviet Defense Minister" and "Kremlin Looking for a McNamara to Rule the Brass." The writers did not recognize that in the Soviet Union the military chiefs are part of the Party, which controls all elements of the Soviet state. They are literally one and the same.

The elevation of the Chief of the KGB and the Minister of Defense is not without precedent. The last Minister of Defense holding full membership on the Politburo was Marshal Georgi Zhukov. He had played a major role in

bringing Khrushchev to power in 1956. Khrushchev saw him as a potential rival and ousted him in 1957. The last KGB chief to hold full Politburo status was Lavrenti Beria, who was shot in the Kremlin in 1953. The man who pulled the trigger is reported to have been Marshal of the Soviet Union Kirill Moskalenko, currently the Inspector General of the Soviet Armed Forces.

The KGB was, and remains, a dreaded name in the Soviet Union. This force was responsible for carrying out Stalin's purges in the 1930s, which, directly or indirectly, resulted in the deaths of Soviet citizens estimated to have numbered as many as 15,000,000. That figure approaches the 20,000,000 Russian deaths attributed to the Germans in World War II. The KGB now appears to have regained the status that it had two decades ago.

A third key appointment to the Politburo, Foreign Minister Andrei A. Gromyko, rounds out the triad—or "triad," in US terminology. The Minister of Defense, the Chief of the KGB, and the Minister of Foreign Affairs together on the Politburo provide an increased capability for rapid decision-making.

Although these key Politburo appointments are significant in themselves, they must have some connection with a highly unusual meeting that took place in March 1973, exactly one month earlier. At that time, the fifth "All-Army Meeting of Party Organization Secretaries" was held in Moscow. The last such meeting was in May 1960, shortly after the formation of the Strategic Rocket Troops and the announcement of Khrushchev's new military doctrine. Nine years later, in May 1969, another such meeting was announced, with considerable fanfare, but for some reason it was canceled with no explanation.

At the March 1973 meeting, all the top Soviet military figures were present, including Marshal Grechko and the Commanders in Chief of the five Soviet military services.

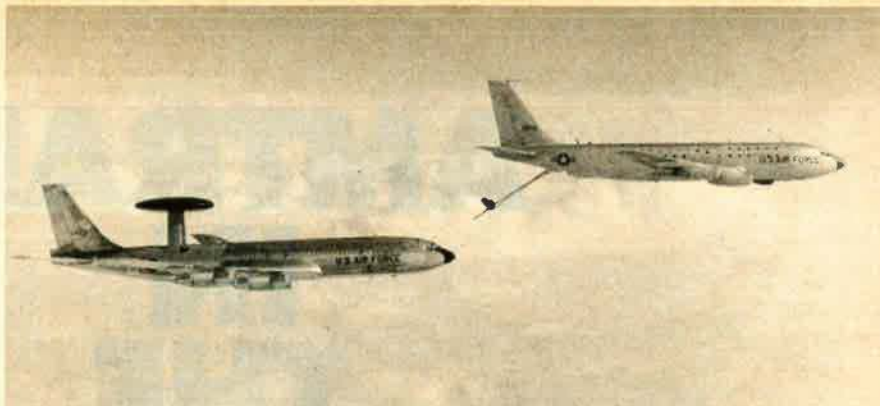
Lt. Col. Joseph F. Mudd, USAF, has been presented the American Legion's **Aviators' Valor Award** for 1971 for the helicopter rescue of a downed pilot in Vietnam.

The **526th TFS**, Ramstein AB, Germany; the 1st Tac Recon Squadron, RAF Alconbury, England; and the 7th SOS were named **best USAFE units** for tac fighter, recon, and support, respectively.

Brig. Gen. Frank K. "Pete" Everest, Jr., USAF (Ret.), former Commander of Aerospace Rescue and Recovery Service, has been named **Chief Test Pilot** for United Aircraft Corp.'s Sikorsky Aircraft Division.

USAF has let a contract that could total as much as \$30 million over the next three years for the maintenance and repair of **P&W J-57 jet engines**, which power F-101 Voodoo fighters and KC-135 tankers. **Southwest Airmotive Co.** is the contractor.

Applications are now being accepted for the **Air Force Sergeants Association's annual scholarship**



The Airborne Warning and Control System brassboard radar test-bed aircraft is refueled by a KC-135 tanker during an operational test flight over Europe during April. Objective of the program was to demonstrate the potential increase in NATO's effectiveness, while proving AWACS capability in the European environment. Flights were out of Ramstein AB, Germany.

fund awards competition. Eligible for financial help in attaining a college education or training are high school graduates or in-college dependents of AFSA members. In-

formation and applications: AFSA International Headquarters, P. O. Box 31050, Washington, D. C. 20031. Applications must be submitted by August 1, 1973. ■

By Col. William F. Scott, USAF (Ret.)

There is no evidence that the meeting heralds any changes in Soviet military doctrine. In fact, available evidence points in the opposite direction. Soviet publications officially approved as recently as April 1973 show no significant change in Soviet military thought from that announced in 1960. An excellent summary of still-current Soviet military doctrine is found in *The Soviet Army*, one of the five books nominated for the 1973 Frunze Prize. This prize is awarded annually "for excellent military writings," and nomination for the prize constitutes official approval. This authoritative work, now issued in an official English language version, states on pages 332-333:

Placed in a nutshell, the Soviet military doctrine, as Marshal R. Y. Malinovsky wrote, states that "the next war, if the imperialists manage to unleash it, will be a decisive armed conflict between two opposing social systems; according to the character of the weapons employed, it will inevitably be a thermonuclear war, a war in which nuclear weapons will be the principal means of destruction and missiles will be the principal means of delivering weapons on target. This war will be characterized by an armed struggle of unprecedented ferocity, dynamic, highly mobile combat operations, the absence of continuous stable front lines or distinction between front and rear, greater opportunities for dealing surprise strikes of great strength against both troops and the deep rear areas of the belligerent countries."

The changes that have taken place in the means of armed combat will affect the very way in which a war is started. The beginning of the war may well prove decisive for the whole outcome of the armed struggle. War may commence quite suddenly, without the usual menacing period, and it may immediately acquire a general, decisive scope. Such a beginning is the most tempting for an aggressor, hence the most probable.

In their plans of war against the Soviet Union and the countries of the socialist camp the general staffs of the main capitalist states count primarily on the suddenness of a nuclear strike. Accordingly, the Soviet military doctrine requires that the main and primary task of the Armed Forces is to be in constant combat readiness to repulse any sudden enemy attack at once and resolutely and foil his plans.

... the struggle to victory cannot be restricted to nuclear strikes, hence the war may drag out and require the protracted straining of all the forces of the Army and the nation practically to breaking point. Naturally, the ultimate victory can be achieved only as a result of the joint efforts of all the services and arms involving the participation of mass armies millions strong. The Soviet military doctrine requires that the Armed Forces, the country, the whole Soviet people be prepared for the eventuality of a nuclear war.

From the outset any future war will be of a dynamic, fluid character. Hence the task is to prepare for decisive, large-scale, swift and sudden operations involving all resources capable of taking the enemy completely by surprise. At the same time, we must have the manpower reserves and material stocks needed for a war of attrition. [Italics added. The phrase "completely by surprise" does not appear in the original Soviet text.]

Speculation on what is taking place within the top Soviet Party-military structure would serve little useful purpose. The reconfirmation of the nuclear doctrine; the rare "All-Army Meeting of Party Organization Secretaries"—the first for thirteen years; and the elevation of the Minister of Defense, the Chief of the KGB, and the Minister of Foreign Affairs to full Politburo status does suggest a situation that demands watching, despite the widespread belief in this country that a lasting détente with the USSR has been achieved. ■

AMTRAK IN THE VOLAR ERA

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The serviceman in civilian clothes need only show his ID card to get his furlough fare.

Amtrak field representatives are now calling on all posts to familiarize local transportation officers with the potential of train travel. They even offer "Standard of Service" train trips for officers wanting firsthand knowledge. Make sure your transportation

officer becomes familiar with Amtrak's services. Amtrak has much to offer the new Army serviceman. And, unlike

troop trains of the past, Amtrak is going all out to make sure he enjoys the experience.

We're making the trains worth traveling again.



Senior Staff Changes

B/G Randal T. Adams, Jr., from Asst. DCS/Ops, NORAD/CONAD, Ent AFB, Colo., to Cmdr., 26th NORAD/CONAD Rgn., with add'l duty as Cmdr., 26th Air Div., Luke AFB, Ariz., replacing M/G James E. Paschall . . . **B/G Kenneth E. Allery**, from Asst. DCS/Plans, J-5, to Asst. DCS/Ops, NORAD/CONAD, Ent AFB, Colo., replacing B/G Randal T. Adams, Jr. . . . **M/G Earl O. Anderson**, to V/C, Hq. AFRES, Robins AFB, Ga., recalled to replace B/G Alfred Verhulst . . . **B/G Robert S. Berg**, from Dep. ACS/Intelligence, Hq. USAF, to Dir., J-2, USSOUTHCOM, Quarry Hgts., C. Z., replacing B/G Lincoln D. Faurer . . . **Col. (B/G selectee) Tedd L. Bishop**, from Cmdr., 9th Weather Recon Wg., MAC, McClellan AFB, Calif., to Cmdr., 443d MAW, MAC, Altus AFB, Okla., replacing B/G Eugene B. Sterling . . . **Col. (B/G selectee) Lyle W. Cameron**, from Systems Program Dir., Prototype Program Office, ASD, AFSC, Wright-Patterson AFB, Ohio, to Systems Program Dir., AABNCP, ESD, AFSC, L. G. Hanscom Fld., Mass.

B/G Murphy A. Chesney, from Dep. Cmd. Surgeon, Hq. PACAF, Hickam AFB, Hawaii, to Cmd. Surgeon, Hq. TAC, Langley AFB, Va. . . . **Col. (B/G selectee) Lynwood E. Clark**, from Cmdr., 366th TFW, TAC, Mountain Home AFB, Idaho, to Cmdr., 327th Air Div., PACAF, Taipei AS, Taiwan, replacing M/G Donald H. Ross . . . **B/G William J. Crandall**, to Dep. Chief, AFRES, Hq. USAF, recalled to replace B/G Donald J. Campbell . . . **M/G Richard G. Cross, Jr.**, from Dep. Dir., Force Development, to Dep. Dir., Plans, DCS/P&O, Hq. USAF, replacing M/G George G. Loving, Jr. . . . **M/G Kenneth C. Dempster**, from Asst. Dir., Plans, Programs & Systems, DSA, Alexandria, Va., to DCS/Logistics, Hq. ADC, Ent AFB, Colo. . . . **B/G (M/G selectee) William A. Dietrich**, from V/C, 22d AF, MAC, Travis AFB, Calif., to DCS/Plans, Hq. MAC, Scott AFB, Ill., replacing retiring M/G Clare T. Ireland, Jr.

Col. (B/G selectee) Richard T. Drury, from Cmdr., 314th TAW, TAC, Little Rock AFB, Ark., to Dir. of the Staff, Inter-American Defense Board, 2600 16th St., N. W., Washington, D. C. . . . **L/G (Gen. selectee) George J. Eade**, from DCS/P&O, Hq. USAF, to Dep. CINC, USEUCOM, Stuttgart, Germany . . . **B/G Lincoln D. Faurer**, from Dir., J-2, USSOUTHCOM, Quarry Hgts., C. Z., to Dep. ACS/Intelligence, Hq. USAF, replacing B/G Robert S. Berg . . . **M/G James V. Hartinger**, from DCS/Plans & Programs, J-5, NORAD/CONAD, Ent AFB, Colo., to Cmdt., AWC, AU, with add'l duty as V/C, AU, Maxwell AFB, Ala., replacing retiring M/G Lawrence S. Lightner . . . **M/G Eugene L. Hudson**, from ACS/J-2, US Support Activities Gp., Nakhon Phanom AB, Thailand, to DCS/Logistics, Hq. SAC, Offutt AFB, Neb., replacing M/G George H. McKee . . . **M/G Robert E. Huyser**, from Dir., Plans, to Asst. DCS/P&O, Hq. USAF, replacing M/G (L/G selectee) Joseph G. Wilson.

B/G Hilding L. Jacobson, Jr., from Dir., Cmd. Control, DCS/Ops, Hq. SAC, Offutt AFB, Neb., to ACS/J-2, US Support Activities Gp., Nakhon Phanom AB, Thailand, replacing M/G Eugene L. Hudson . . . **M/G George M. Johnson, Jr.**, from DCS/P&O, to C/S, Hq. AFLC, Wright-Patterson AFB, Ohio . . . **M/G Warren D. Johnson**, from C/S, Hq. SAC, Offutt AFB, Neb., to Dep. Dir. (Ops & Admin.), Defense Nuclear Agency, Washington, D. C. . . . **Col. (B/G selectee) Thomas M. Knoles, III**, from Cmdr., 354th TFW, TAC, Myrtle Beach AFB, S. C., to Asst. DCS/Ops, Hq. TAC, Langley AFB, Va. . . . **M/G George G. Loving, Jr.**, from Dep. Dir., Plans, to Dir., Plans, DCS/P&O, Hq. USAF, replacing M/G Robert E. Huyser . . . **M/G George H. McKee**, from DCS/Logistics, to C/S, Hq. SAC, Offutt AFB, Neb., replacing M/G Warren D. Johnson . . . **Col. (B/G selectee) Thomas H. McMullen**, from Dep. Systems Program Dir., Dep. for B-1, to Systems Program Dir., A-X, ASD, AFSC, Wright-Patterson AFB, Ohio . . . **Col. (B/G selectee) William R. Nelson**, from Cmdr.,

474th TFW, TAC, Nellis AFB, Nev., to Asst. DCS/Logistics, Hq. TAC, Langley AFB, Va.

M/G James E. Paschall, from Cmdr., 26th NORAD/CONAD Rgn., with add'l duty as Cmdr., 26th Air Div., Luke AFB, Ariz., to DCS/Plans & Programs, J-5, NORAD/CONAD, Ent AFB, Colo., replacing M/G James V. Hartinger . . . **M/G Edmund A. Rafalko**, from V/C, Ogden AMA, AFLC, Hill AFB, Utah, to DCS/P&O, Hq. AFLC, Wright-Patterson AFB, Ohio, replacing M/G George M. Johnson, Jr. . . . **B/G (M/G selectee) Evan W. Rosencrans**, from Dir., Inspection, AFISC, Norton AFB, Calif., to DCS/Plans, USAFE, Ramstein AB, Germany, replacing M/G Kendall S. Young . . . **M/G Donald H. Ross**, from Cmdr., 327th Air Div., PACAF, Taipei AS, Taiwan, to Asst. Dir., Plans, Programs & Systems DSA, Alexandria, Va., replacing M/G Kenneth C. Dempster . . . **Col. (B/G selectee) Robert A. Rushworth**, from Cmdr., 4950th Test Wg., AFSC, Wright-Patterson AFB, Ohio, to IG, Hq. AFSC, Andrews AFB, Md., replacing B/G Walter F. Daniel.

B/G (M/G selectee) Kendall Russell, from Dep. for AWACS, to V/C, ESD, AFSC, L. G. Hanscom Fld., Mass. . . . **B/G Ralph S. Saunders**, from Cmdr., 60th MAW, to V/C, 22d AF, MAC, Travis AFB, Calif., replacing B/G (M/G selectee) William A. Dietrich . . . **Col. (B/G selectee) Charles E. Shannon**, from Cmdr., 1400th AB Wg., Hq. MAC, Scott AFB, Ill., to Cmdr., 60th MAW, MAC, Travis AFB, Calif., replacing B/G Ralph S. Saunders . . . **Col. (B/G selectee) Lawrence A. Skantze**, from Dep. for AGM 69, ASD, AFSC, Wright-Patterson AFB, Ohio, to Dep. for AWACS, ESD, AFSC, L. G. Hanscom Fld., Mass., replacing B/G (M/G selectee) Kendall Russell . . . **Col. (B/G selectee) Benjamin F. Starr, Jr.**, from Dir., Operational Rqmts., DCS/Ops, Hq. MAC, Scott AFB, Ill., to Cmdr., 62d MAW, MAC, McChord AFB, Wash., replacing retiring B/G Van N. Backman . . . **B/G Eugene B. Sterling**, from Cmdr., 443d MAW, MAC, Altus AFB, Okla., to Dir., Inspection, AFISC, Norton AFB, Calif., replacing B/G (M/G selectee) Evan W. Rosencrans.

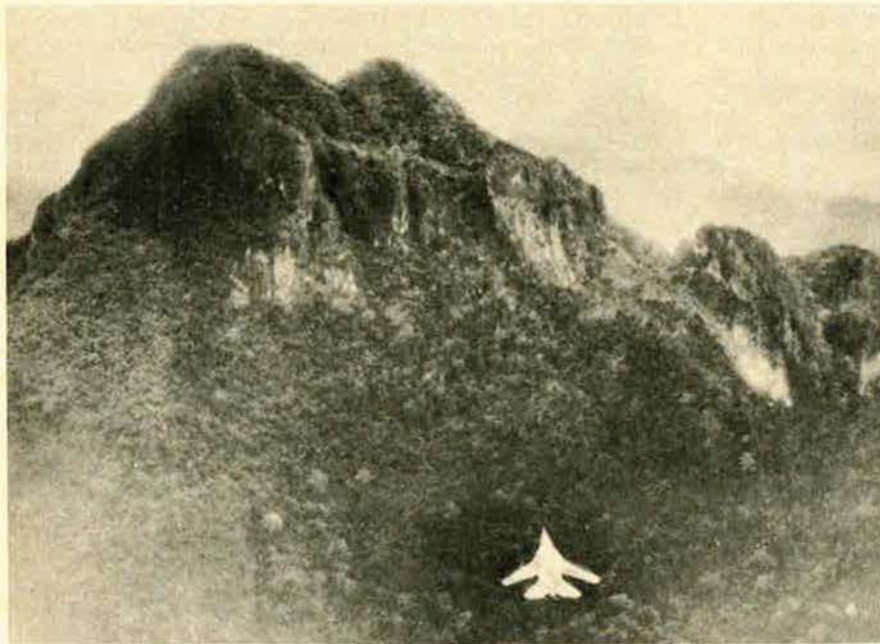
B/G Glenn R. Sullivan, from Cmdr., 17th Air Div. (Provisional), U-Tapao Airfield, Thailand, to Cmdr., ARRS, Hq. MAC, Scott AFB, Ill., replacing retired B/G Frank K. Everest, Jr. . . . **L/G Carlos M. Talbott**, from C/S, USSAG, Nakhon Phanom AB, Thailand, to Vice CINC, Hq. PACAF, Hickam AFB, Hawaii . . . **B/G Floyd H. Trogdon**, diverted from IG, Hq. AFSC, Andrews AFB, Md., to Dir., Aircraft & Missiles System, OASD (I&L), Washington, D. C., replacing M/G Vernon R. Turner . . . **M/G Vernon R. Turner**, from Dir., Aircraft & Missiles System, OASD (I&L), Washington, D. C., to C/S, Hq. AFSC, Andrews AFB, Md., replacing M/G (L/G selectee) Lew Allen, Jr. . . . **Col. (B/G selectee) Wayne E. Whitlatch**, from Cmdr., 49th TFW, TAC, Holloman AFB, N. M., to V/C, USAF Tac Air Warfare Ctr., TAC, Eglin AFB, Fla. . . . **M/G (L/G selectee) Joseph G. Wilson**, from Asst. DCS, to DCS/P&O, Hq. USAF . . . **M/G Kendall S. Young**, from DCS/Plans, USAFE, Ramstein AB, Germany, to Air Deputy, AFNORTH, Oslo, Norway.

PROMOTIONS: To be **General:** George J. Eade. To be **Lieutenant General:** Lew Allen, Jr.; Carlos M. Talbott; Joseph G. Wilson. To be **Brigadier General:** John P. Flynn; David W. Winn.

To be **Major General (ANG):** Gordon L. Doolittle; Raymond L. George; George M. McWilliams; Robert S. Peterson. To be **Brigadier General (ANG):** John C. Campbell, Jr.; Winett A. Coomer; William D. Flaskamp; Leo C. Goodrich; Cecil I. Grimes; Ronald S. Huey; Paul J. Hughes; Grover J. Isbell; Billy M. Jones; Raymond A. Matera; Patrick E. O'Grady.

RETIREMENTS: M/G Rollen H. Anthis; B/G Van N. Backman; M/G Clare T. Ireland, Jr.; M/G Lawrence S. Lightner.

—Compiled by Catherine Bratz



An F-111A, using its terrain-following radar, flies a roller-coaster pattern during a daylight training mission in Thailand. Most actual missions were at night, in weather, and at 200 feet through this kind of landscape.

During the last four months of the Vietnam War, F-111s of the 474th TFW set a phenomenal record for bombing effectiveness, survivability, and combat readiness. Here is an on-the-spot report on some very hairy missions, and the overall performance of . . .

Whispering Death: The F-111 in SEA

By Wayne Thomis

WHEN THE 474th Tactical Fighter Wing brought its swingwing F-111A twin jets to Takhli Air Base 130 miles north of Bangkok, Thailand, last September, a Seventh Air Force operations officer, part of the

teams controlling air combat over Southeast Asia, asked:

"Do you people have smart bombs?"

The reply, verging on the flip-pant, was:

"No, but we've got smart airplanes."

And the 474th proved its claim. The F-111s flown by two squadrons (the 429th and 430th) of gung ho aircrews and maintained by dedicated, hard-working maintenance people "cut a new groove" in aerial fighting. They demonstrated in the crucible of battle—final test of any weapon or military theory—that the low-level, high-speed penetration of even the most sophisticated defenses is the right way to go.

The Vietnam performance of the 474th TFW's forty-eight aircraft speaks for itself. Here is a brief summary of these operations:

- **Sorties flown:** Approaching 3,500 at the time of cease-fire.

- **Bombing effectiveness:** Rated by Seventh Air Force analysts as very close to accuracies achieved by the guided bombs (smart bombs). In the case of the 474th, targets were not hit by single bomb drops, but rather by salvos of twelve to sixteen iron bombs on each sortie. At the end of the fighting, strike planners were sending single F-111s to hit an airfield, attack a SAM site, or a railroad yard—with the certainty that the target would be hit by that single-plane mission, flown at night, in bad weather, against the toughest ground defenses in the history of air warfare. Never, before the guided bombs or the F-111s, could single-plane missions be launched with foreknowledge that the strike would be effective.

- **Mission aborts:** Less than one percent. No other equipment in the inventory had a lower abort rate, even though the F-111s were in their first full-scale combat assignment. Weather scrubbed missions only once, according to wing operations records, and that at the height of the year's worst monsoon rains.

- **Plane losses:** An astonishingly



low total of only six. This represents a combat loss ratio of one-sixth of one percent of the aircraft exposed to enemy fire. No other units engaged in Southeast Asia (F-4s, A-7s, B-52s, A-6s) proved so survivable—a fact apparently overlooked by correspondents who reported the final days of the air war, which intensified right up to the cease-fire.

"We certainly expected more losses," reported the F-111 crews who were rotated back to the 474th Wing home base at Nellis AFB, Nev., in late January.

TFR: Making Believers

"We gradually gained great confidence in our planes, our navigation and bombing equipment, and that fantastic, really unbelievable TFR [terrain-following radar]. All this special electronics enabled us to go in at very low altitudes. We went on mission after mission [crews averaged forty-five to fifty-three sorties] without taking a hit," an aircrew member of the 429th told this writer.

"By actual count, there were less than ten hits taken by 474th aircraft up to the time we left, about January 20. We know that one of the planes that didn't return took SAM hits. The crew so reported as they punched out. Those boys are coming home as prisoners—their names are on published lists—so we'll get the full account later.

"There was only one precautionary landing away from Takhli because of damage. That was at Udorn, in north Thailand. Inspection on the ground showed half a dozen small holes near the tail. The skin inspection plates were opened up and routes of the flak traced. Fortunately, the shrapnel cut no lines, and the plane was flown to Takhli with only tape across the entry holes."

Do not assume, however, that the F-111 crews took combat lightly. Moments of terror, hours of sober consideration of tactics and flight planning, long hours of energy-

absorbing concentration while flights were in progress are acknowledged by all. Penetrations of the Hanoi/Haiphong defenses and the Red River delta with its SAMs and AAA demanded the highest sort of courage and self-control.

"We were always nervous, no matter where we were targeted, because flying as low as we did and as fast is inherently dangerous.

"You are only a quarter of a second—at 500 miles an hour—from hitting the ground if anything goes wrong," explained Lt. Steve Glass, Weapons Systems Officer.

"Think about flying around in daylight and good weather only 200 feet above the ground and going up and down over hills and into valleys, keeping this height," said Capt. Jackie Crouch, former F-105 pilot with two earlier SEA tours.

"Now do this at night, in mountains and in heavy cloud when you can't see anything outside the cockpit. That is really, really exciting, even without the enemy threat.

"It takes real discipline to come up over these mountains, as we did at night, out on top of the cloud layer in the moonlight. We'd see those jagged peaks all round us poking through the cloud tops, and we'd have to put the nose down back into that mist. And as we went down, the moonlight would fade, and the cloud get darker, and we'd know we were descending below those peaks and were depending on our radars and our autopilots—and with Hanoi coming up. . . .

"I won't say that I wasn't worried.

"One night when the weather was very bad, I was in cloud for the last eleven minutes before bombs away—and that means at the lowest levels of the whole flight, going up and down hills and keeping our clearance still at 200 to 250 feet above these obstructions.

"We didn't see a thing outside the cockpit, not even after the bombs left us. For me, this thing was really remarkable. Even now I can't explain how fantastic it was, what extraordinary instrumentation we

have, what systems—I find it hard to comprehend even now.

"The confidence I gained in the airplane—it made a believer out of me. I'll tell anyone in the Air Force that, given a choice on a night strike of going in high or going in low, I'll go in low every time. And I'll go anywhere in the F-111."

The crews had the highest possible praise for their TFRs—the terrain-following radar that electronically observes their height above ground and directs the autopilot during final phases of all strike missions. The crews could pick the height they wanted to maintain above obstructions, and the TFR plus the autopilot provided the control inputs to give it to them, regardless of hills, mountains, trees, valleys, or other ground irregularities.

Confident though they were, the crews are overwhelmingly aware of the proximity of the ground during bombing runs. An indication of this is a notice they posted on the bulletin board in the Takhli officers' club. It said:

"Effectiveness of SAMs is less than fifteen percent for all firings.

"Effectiveness of Triple A is less than five percent, day or night.

"But—Effectiveness of the ground remains 100 percent. Don't let it hit you."

Headlines the Hard Way

The 474th was a bit shaken when one of the first two planes launched, within three hours after the long ferry flight from Nevada, failed to return. Its fate and that of its crew remain a mystery even today. In the weeks of combat that followed, five other F-111s also were lost. Of these, four were 430th aircraft, and two were from the 429th. The sixth and last was hit by ground fire over Hanoi. The crew was able to make a radio report before they punched out in the capsule. Both men made it safely to the ground, but were captured.

During the first weeks of combat,



Whispering Death

"I'll tell anyone in the Air Force that, given a choice on a night strike of going in high or going in low, I'll go in low every time. And I'll go anywhere in the F-111."

the F-111 crews maintained radio silence following takeoff as a security measure. This contributed to the mystery of the early losses. Investigators had no clues, or virtually none, on which to base investigations. By early November, Seventh Air Force changed the rules. Pilots had to make a brief radio check at course change points to high-flying radio-relay planes. "We've got to have some line on the F-111s," headquarters said.

"But this wasn't everything they'd hoped for," Captain Crouch said. "We were expected to make those calls when we were busiest. I got so I just let them go, once I was down low in final stages of a strike."

Maj. Carlos Higgins, another F-111 left-seater with the 429th, said: "Once you were low, you had to monitor everything; you had to be thinking and looking—by radar—as far ahead as possible so you would know what the terrain was like, and you had to count on this information from your right-seat man whose radar is better than the small vertical indicator scope on the pilot side. You count on your right-seat man to keep giving you word on obstructions so you could be sure the autopilot was obeying the TFR.

"But, if you missed making a position report by five minutes, they

would call you. Often I'd come back with, 'Jumbo Two Four, still alive,' and let it go at that."

F-111 crews never could understand why Seventh Air Force and PACAF Headquarters got so excited over F-111 combat losses. Other types of plane were lost daily, inevitably, in the hazards of a bitter war. Such plane and crew casualties were routinely reported and routinely accepted. But not so with the F-111s. Captain Crouch voiced the 429th attitude:

"We never could figure why the generals went straight up when an F-111 failed to return. Navy could lose an A-6, which was just as expensive and almost as sophisticated in navigation, radar, and bomb delivery as we are, yet nothing was said.

"The same attitudes were evident when Air Force or Navy F-4s went down, almost every day. Even with the B-52s, when they began hitting Hanoi—those shoot-downs were more or less accepted. But let an F-111 be lost and everybody seemed to go right through the roof. It wasn't realistic."

"Certainly we ourselves had expected to lose more than we did," said Capt. Paul Sperry, right-seater for Major Higgins.

"Look how the airplane performed in battle," Major Higgins said. "We couldn't understand all the bad publicity it received during development. But once in battle, its performance was ignored, or the publicity referred only to losses. The F-111 played a major role in the resumed bombing pressures on Hanoi and did great work that was never acknowledged."

Close, But No Cigar

The North Vietnamese, the Major said, respected the F-111s. They called the plane "Whispering Death" in propaganda broadcasts. This, the 429th crews agreed, is a good description of the only warning sounds of an F-111 in a high-speed, very-low-level bombing approach.

"This kind of a name indicates the surprise with which we hit them," he said. "When we bombed in bad weather or rain, we wondered whether they could hear us in advance at all. They must have been surprised when the bombs flashed on impact in downpours, as they



In 3,500 combat missions flown: abort rate, less than one percent.

often did. We thought the bomb flashes were often the first clue—other than their radar—of where we were."

North Vietnamese radar coverage was "unbelievable," all agreed. "There was no such thing as coming in under it in the Red River delta," Major Higgins said. "The place is so small, so heavily defended, so flat, that they are looking in all directions for attacks all the time.

"Once you came skiing over the mountains [crews called their

ground-hugging tactics “skiing”), you found yourself within their radar energy outputs. There was no escaping this,” he continued.

“Of course, we never were sure what return they were getting—whether they actually could track us against the ground. Our onboard

“You must remember that Hanoi/Haiphong is a little bitty place—it only took us five to six minutes to fly across it,” said Captain Crouch. “With all that lead we saw floating around, we expected hits, but we kept coming back without a scratch. Lots of it came so close we could

“really catches your eye as it surrounds you.”

Zapping the SAMs

“SAM gunners tried for us,” said Captain Crouch. “Their equipment let them guide the SAMs—if their



countermeasures equipment told us they were looking. But ground fire—triple A—seemed to be rather indiscriminate. Once there was firing along your track, the guns ahead would shoot straight up with everything available, hoping, we thought, that we would fly into the barrage.

“We were all surprised how readily and repeatedly we went in and came out despite the defenses, the knowledge by the ground crews that we were coming back night after night, the certainty of the targets we would hit. And those gunners—they’ve had more practice in the last five years than any gun or missile crews in history.”

hear the supersonic ‘whack’ as it went by.”

“One night, five rounds went by so close we felt the passage and heard it,” said Lieutenant Glass. “We thought we’d been hit. But we looked over the panel and nothing flickered. When we got home, inspection turned up nothing.”

The 474th crews saw some “really unusual sights,” they said, during their dusk-to-dawn sorties. SAMs are “very visible,” the fireball at the tail being easily followed from the moment of ignition on launching rails “until they go by you.” As for triple A—it comes in all colors, sizes, and trajectories, and at night

radar could track us. They tried often enough. The hits we did take usually were SAM shrapnel.”

The 474th had a special feeling for SAMs, anyhow. They were turned loose by Seventh Air Force to attack SAM sites on December 21. They recall that, during the nights of the eighteenth through the twentieth of December, Air Force electronic countermeasures planes and crews flying high above the battle reported eighty to 120 SAM firings, mostly at the B-52s operating at 28,000- to 35,000-foot levels. The Air Force count on expenditure of SAMs in this period, by day and night, totaled 600 firings.



Whispering Death

The author, Wayne Thomis, who recently retired as Aviation Editor of the Chicago Tribune after forty years with that paper, has logged 12,000 hours of stick time since he soloed in 1932. A Navy pilot in the Pacific during World War II, he shot down four enemy aircraft and was himself shot down once. He has covered a variety of assignments around the world, but is best known for his reporting on civil and military aviation. Mr. Thomis is now living in Florida, where he continues to write for the Fort Lauderdale News.



An F-111A, loaded with sixteen CBU-58 cluster bomblets, ready to go.

"On those nights, we saw plenty of SAM fireballs," said Lieutenant Glass. "After 'bombs away,' I looked back once and saw four rising together, a salvo. And over the common radio frequency we all monitored, the countermeasures watch never stopped talking, reporting SAM tracks. I heard him call at least fifty before we were out of range."

"The North had accumulated quite a stockpile before December," Captain Crouch said. "Their radars were peaked up, and triple A had plenty of ammo. They'd not been using it while we kept the bombing below the twentieth parallel."

"When we came back to renew the Hanoi assault, they were ready. Hits on the B-52s and others were sufficiently damaging that Seventh Air Force sent us against the SAM sites after the third night. And a SAM site, usually a big star with launchers at the points and radar

and control trailers at the center, is a good target for us."

"If you'd like a good figure for comparison, after we went to work," interjected Captain Sperry, "the firings dropped way down immediately. We got counts of eighty to 120 firings during each of the early nights; they dropped to twenty-eight on December 21, and to eighteen on December 22."

"There were nights after that," concluded Captain Crouch, "when not a single SAM was fired."

Faster Than Lights Out

"I think we convinced Seventh Air Force of our accuracy and our value after those four tough days."

The two squadrons never will forget other experiences during that bombing renewal. Maj. Jack Funke, Captain Crouch, and Major Higgins recall vividly the earliest sorties flown the night of December 18.

"The delta weather was way down, ceiling 200 feet or thereabouts, and cloud piled up to 28,000 feet," Lieutenant Glass re-

membered. "Talking it over later, we agreed the North Vietnamese, who long ago had turned the clock around, working at night and resting by day because of the day attacks, never expected anybody to hit them in such weather conditions."

"We came skiing down the mountains and plunged out into the open under the lower edge of the overcast, and it seemed to us the entire Hanoi valley was lighted up like Las Vegas," said Captain Crouch. "Hanoi was bright with neon and street lights, and the port was aglow in the distance. On the roads leading out of town and on the mountain switchbacks to the south, truck headlights were blazing like strings of pearls."

"We happened to arrive about ten minutes to eight in the evening, Hanoi time," said Lieutenant Glass. "We were coming so fast, we were almost on release point before any of those lights started going out. Sections of the town blacked out one at a time, and we knew sirens were screaming and somebody down there was pulling master switches, even as the bombs left us."

Captain Crouch and his right-seater, on December 19, in very poor weather, had the unusual experience of bombing Yen Bai airfield while the runway lights were still on.

"The field is one of Hanoi's fighter defense bases," he recalled in a slow drawl. "At 300 feet we were running in and out of ragged mist, but five miles out I could see the runway lights. I couldn't believe it."

"Geary's steering directions from our equipment pointed right at them, though. I thought either they decided nobody could go bombing in this weather and were working on the lights, or they had some MIGs out and were trying to recover them. Either way, I thought, it's fine for us."

"Still, we bombed on our own radar. Looking down, after bomb release, I saw the runway and some blobs of building near it. No planes; they keep their fighters at the ends of five-mile taxiways, or taxi-tracks, and operations must be buried somewhere nearby."

The night attacks served to keep Hanoi's technical-warfare people on twenty-four-hour alert and contributed to a general fatigue factor that could have had great importance in breaking down the defenses. The defenses had "failed," in the view of the 474th crews, as bombing was resumed on December 26, following a thirty-six-hour Christmas pause at President Nixon's order.

Conclusion: One Smart Airplane

The F-111 is demanding of its pilots; all low-level operations are energy-draining. Men and equipment are cranked to peak performance in these phases, matched by no other combat airplanes, the crews said.

"You are really busy, monitoring everything, once you get well into a mission," said Major Higgins. "Things are happening so fast that you have to stay well ahead, just to keep up. Chances are the equipment is so good it would get you where you want to go, if you just sat back. But nobody can do that once in a combat area.

"Our F-111s are not fighters—they're bombers. Demanding as it is, the airplane will deliver an attack in weather and against defenses that are the very best the enemy has shown at any time. And do it over and over again. It's got capabilities no other aircraft in the inventory can match."

The crews agreed: "We always planned our missions so we could bomb manually and make a return to base without our computer, more or less by dead reckoning. But we never did either of these things.

That speaks for the equipment reliability."

This writer was told by Seventh Air Force operations officers that the F-111 had "really come out smelling like a rose." They said earlier doubts based on its rather unsuccessful 1967 appearance in Southeast Asia—long before the developmental period was concluded



Maj. Jack Funke climbs aboard for a Mu Gia Pass mission.

—and upon a somewhat cool attitude toward F-111s held by Pentagon brass "were completely dispelled."

"It's a great airplane, and it does a job like nothing else can in darkness and bad weather," I was told. "We had crews from Strategic Air Command out here seeing how the TAC outfit flew. We had TAC F-111 crews from England, and from two US-based F-111 outfits. And we had more than our share of congressmen and senators from Washington to observe the F-111s in battle.

"They saw the birds going out of Takhli, one by one—the crews

briefed, flight planned, rested, re-briefed on weather and the strike areas, and then sent off on their solitary missions. Some two and a half hours later when our men and their birds were back, the observers had the chance at the club to sit and talk to the people who had been over Hanoi that night.

"Our conclusion is that we need more F-111s. It's going to be a long time before we get anything else that will come close to this aircraft and its systems—nothing at all before 1980 when the B-1 now is scheduled."

True cost-effectiveness of the F-111 in battle is only appreciated by the combat planners, said a Seventh Air Force operations officer while Linebacker II, the December 1972 campaign against military targets in the Hanoi/Haiphong area, was going on.

"When 500 planes fly strikes against Hanoi—from Navy, Marine, and Air Force sources—there are another 500 planes supporting them. These supporting aircraft are around and above the battle, but don't make the strikes. There are the F-4 combat air patrols, and the tankers that must maintain position for F-4s, A-7s, A-4s, and A-6s to get a drink of fuel if they need it. And there are the electronic countermeasures birds, the traffic controllers, the communications relayers, and the heavy commitment of those great air rescue crews and copters.

"The F-111s don't need this support armada. They can come into an area, fuel and arm at their home base, then go out and bomb and return with no support from anybody else. Their low-level speed is as great or greater than enemy fighters, and their legs are long enough to bypass the tankers. All this adds up to savings that are dramatically in favor of the low-level swingwingers—the F-111s."

Like the crews say, it's one smart airplane. ■

Interview With POW Cols. Robbie Risner and George Day

How were American airmen who were held prisoner by the North Vietnamese able to withstand years of isolation, torture, privation, and uncertainty—including betrayal by a few of their own countrymen—and emerge from that ordeal unscarred in mind and spirit? Two senior USAF/POWs, supported by the comments of other former prisoners, discuss professionalism, esprit, training, organization, the Code of Conduct, and, above all, faith—the combination for . . .

SURVIVING IN HANOI'S PRISONS

By John L. Frisbee

EXECUTIVE EDITOR, AIR FORCE MAGAZINE

THERE'S no way that one person can ever possibly tell another what it's like—the simple thing of standing on your knees for ten or twelve hours. You just start pouring sweat, and your muscles start to tremble, and there's no way you can ever tell another person who hasn't done it what it's like.

"After a while, the North Vietnamese began to realize that they were leaving scars on the POWs, and that these things would show up, that later on we would be released. So they started doing things like putting cloth underneath the ropes [used in the "rope treatment" to pull the prisoners' arms back to the point where shoulders often were dislocated] so that scars wouldn't be left. Many people had scars that over a period of four or five years have eventually gone away."

The speaker was Capt. Myron L. Donald; one of the many former prisoners of war who have appeared before the press and TV cameras to tell what really happened in North Vietnam's prisons and detention camps. No reasonable person can doubt that physical and mental mistreatment of the prisoners, which AIR FORCE Magazine was the first to reveal in October 1969, did exist—and to an even greater extent and degree than was suspected.

Never before in the history of this country have American military men suffered such prolonged torment. No other of our fighting men who were captured by an enemy have maintained as uniformly high standards of courage, self-sacrifice, and *esprit de corps*, or such unshakable devotion to their country and their professional ethics. Our pride in these men is tinged with more than a little awe.

Curiously, in the press conferences that we have monitored, few reporters have pursued the underlying question: How were the POWs able to withstand years of isolation, torture, privation, and uncertainty and emerge with so few apparent psychological scars? Department of Defense planners had anticipated difficult problems of psychological readjustment, remembering the depressed and withdrawn behavior of many repatriated Korean War POWs. But this time, the instances of psychosis seem to be few.

As a professional publication, it seems more appropriate for AIR FORCE Magazine to address this question, which is important to military people who could someday face a comparable situation, rather than to elaborate on the details of mistreatment.

The report that follows is based on personal conversations with two senior POWs—Col. Robinson Risner and Col. George E. Day—on transcripts of several interviews with other Air Force former POWs, and on discussions with Air Force officers who have spent many hours with the POWs.

Two Who Were There

Both Colonel Risner and Colonel Day lived through the worst days of the POW ordeal, and the somewhat less-bad days from late 1969 to homecoming in the early months of 1973. Capsule summaries of their experiences will help to put their testimony in perspective.

Robbie Risner, who went through pilot training during World War II, was recalled to active duty with the National Guard in 1951. He was a jet ace in Korea and was on his second SEA tour in F-105s when he was shot down near Hanoi on September 16, 1965.

From the moment of his capture, he was a marked man. Following his first tour in SEA, his picture had appeared on the cover of *Time* Magazine, and he had spoken to many audiences in the US. The North Vietnamese had compiled an extensive dossier on Colonel Risner, and told him that, next to President Johnson and Secretary of State Dean Rusk, he was the man they wanted most.

Colonel Risner was kept in solitary confinement for fifty-four months, ten of them with his cell completely blacked out. He was beaten and otherwise tortured repeatedly in attempts to extort antiwar statements from him. At one time, he was kept facedown in stocks for ten days—not even released to take care of natural functions.

Colonel Day served as a Marine infantryman in World War II. After the war, he joined the National Guard, went through pilot training during the Korean War, and at the time he was shot down in September 1967 was flying as an F-100 Misty FAC, based at Phu Cat. Although badly injured when he bailed out and captured immediately by North Vietnamese regulars, he escaped a week later from a North Vietnam compound at Vinh Linh and made his way south on foot through the DMZ. While moving south, he was again wounded by friendly fire aimed at a North Vietnamese outpost, nearly caught in a B-52 strike on an enemy camp, and finally shot and recaptured two weeks after his escape by North Vietnamese regulars near Quang Tri. Colonel Day plans to write a book about his almost incredible experiences.

After recapture, he was subjected to punitive torture, during which his arm was again broken, before being moved to Little Vegas—one of the several prisons in and near Hanoi, where he shared a cell with Navy Cmdr. John McCain. Later moved to The Plantation and finally to The Zoo, a complex of buildings that had been built by the French before World War II, he was tortured many times both as a punishment for alleged transgressions by officers under his command and in attempts to force him to make propaganda statements.

Professionalism, Training, Organization

A frequently noted reason for the contrast between POW resistance and resiliency in Korea and Vietnam—a reason with which both Colonels Day and Risner agree—was the makeup of the Vietnam POW group. All who were held in the North were aircrew members, all volunteers, and, with three exceptions, all officers serving in a professional military organization. Many of the Korean POWs were very young, uneducated draftees, serving in an Army that had been virtually destroyed by demobilization after World War II and which had to be rebuilt in the midst of a war.

The Vietnam POWs were mature, accustomed to responsibility, shaped by the unique disciplines of flying high-performance aircraft, used to facing danger and to functioning as a team, and adept at handling unforeseen situations. In a word, they were professional military airmen. But that alone doesn't explain the magnificent performance of the POWs, though their professionalism did permeate many of the other factors.

Certainly, the Air Force and Navy survival training programs were a positive factor in preparing airmen, both physically and psychologically, for the hardships of imprisonment. Both Colonels Risner and Day believe that this training was more than adequate, but that it may need some modification and refinement as a result of Vietnam experience. One would expect that. Colonel Day, however, doesn't believe it possible for a man "to train himself to be prepared for the savagery and brutality and the absolute disregard for human standards" that were typical of the North Vietnamese.

Colonel Risner believes that a deeper understanding of North Vietnamese psychology and sociology might have been useful. And there have been reports, but not from these two colonels, that some POWs were not fully aware of the provisions of the Geneva Conventions; hence, were not sure of their legal status as prisoners of war.

The continuation of military organization and discipline in the camps—even when prisoners were segregated in small groups of two and three—kept alive a sense of cohesiveness and purpose. Many people have been surprised that organizations would or could be set up, when communication between cells and compounds was so difficult. Colonel Risner pointed out that it is required by the Military Code of Conduct and was done immediately in every camp.



Col. Robinson Risner: seven and a half years a POW, four and a half in solitary: "We learned not to be embarrassed about the things that are important, like God and patriotism. We found out just how important they were to our very survival."

During the years when prisoners were not allowed to talk to each other on pain of extreme punishment, an elaborate system of communication was devised. Messages were sent by tapping on walls, by the manner in which a broom was used in sweeping, by movements during calisthenics, even by the way a bamboo fan was waved. The North Vietnamese never fully understood how prisoners communicated with each other. According to Colonel Risner, the Communists termed the Americans "the greatest communicators in the world."

On April 28, 1968, when Colonel Day had recovered somewhat from his wounds and injuries, he was moved from The Plantation to The Zoo—"a bad treatment camp." He was put in a room with Maj. (now Col.) Jim Kasler, one of the officers horribly tortured by the North Vietnamese. Kasler "tapped over" to Day and told him that, as the senior officer, Day now had command.

Maj. (now Col.) Larry Guarino had been The Zoo senior officer before Colonel Day's arrival. He passed to Day the camp policies, told him that he was expected to adhere to the Code of Conduct, and that he would be required to take a lot of torture as the SRO. Day was informed that he had under his command eighteen people in the building and a total of 186 in The Zoo and The Zoo Annex. He was given the names of 310 POWs. All of this information had been accumulated while the prisoners were forbidden to converse with each other.

The North Vietnamese tried continually to break down organization in the camps. They refused to recognize the authority of the SRO. All orders were given to a junior officer. It was policy that junior officers would refuse to receive orders or would take them to the SRO, then return and inform the guard, "My commanding officer says so-and-so."

As treatment began to improve during the last months of the war, POW leaders were able to organize programs to occupy the time of the prisoners. In The Zoo, for example, Colonel Day said that educational courses were started in any subject for which there was a qualified instructor—math through spherical trigonometry, thermodynamics, languages, philosophy. Colonel Day, who is a law-school graduate, taught a course in the law. "There was a real thirst for knowledge."

Loyalty—Esprit de Corps

Another sustaining force was group loyalty, often maintained at the cost of extreme suffering. During a press conference at March AFB, Calif., Col. Laird Gutterson gave an example of what loyalty meant to the POWs, although his story wasn't told to make that point.

Colonel Gutterson was asked, "Was there a time when you hit a low spot—when you might have lost faith for a moment?"

"I hit the lowest spot when I suddenly realized that I could be had," Colonel Gutterson replied. "I went in there with the idea that there was nothing and no one on earth that could force me to do or say anything I didn't want to. And when I finally awakened from that pipe dream to the reality that I did have a limit that I could take before I would do anything to make the pain at that instant stop, the realization was a tremendous psychological blow to me. It left me feeling as if I had been in swimming just below the sewage disposal area. I have talked to others, and they seem to have had the same sensation."

Colonel Gutterson went on to explain: "I went through the rope treatment five times, and the fifth time they finally got to me. The technique was the same, other than that with my shoulders now dislocated they added in simultaneous kicks to the shoulders from each side. Apparently, something happened, because I came up with pains like I didn't know existed."

"They were trying to force me to agree to call in a helicopter so they could shoot it down as it was attempting to rescue me. The idea that I could even give lip service to such a thing was so alien to me that when I came out of the ropes for the fourth time, I looked up at them and said, 'Why you are crazy ———.' And, of course, without the usual twenty minutes of rest to think things over—bang, into the ropes. They went at it with a vengeance, and, all of a sudden, the last thing I remembered was screaming, crying, and every opening in my body was voiding, eyes and everything. At that instant, I would have done literally anything to make them stop."

"Did you call in the chopper then?"

"No."

"Did you black out?"

"No. I don't remember blacking out. When I finally got out of the pain, a guard saved my mind by a statement he shouldn't have made. He said, 'If you try to warn them, we will kill you.' I knew that was my out. I knew that if I was placed in the situation of calling in a chopper, I would say, 'It's a trap,' and get killed. That gave me something to hang onto."

Colonel Day named Larry Guarino as another who provided the same kind of loyalty and leadership by example. Guarino was one of the most tortured prisoners in North Vietnam—"a very tough guy. He set the example continually. Everyone felt compelled to keep the faith with him."

The Code of Conduct

The subject of torture raises an allied question. Does the Code of Conduct (*for the text of the Code, see box, p. 31*) make sense, par-

ticularly when applied to prisoners of war who are held for primarily political purposes—as were those in Vietnam—and held beyond a point in time when they could possibly reveal military information that would endanger friendly forces? A great many civilians, and no doubt some in the military, say no.

On the other hand, among the strongest supporters of the Code are officers who suffered the most prolonged and vicious mistreatment because of their refusal to violate it. Colonel Risner firmly believes that the Code should not be tampered with beyond some minor modifications that he and other former POWs have discussed with Department of Defense officials.

Colonel Day thinks that “the Code is an absolutely marvelous document. It was very well thought out. It is broad enough to give guidance if you have the intelligence and the knowledge of American history and culture to interpret it. Most POWs did have that intelligence and background. I would suggest that it be left in its exact form.”

Colonel Gutterson had this comment on the Code: “In the first place, name, rank, and serial number are only a part of the Military Code of Conduct. It does allow you to minimize [the enemy’s] gains at all steps. At the time it was introduced, I [discussed the Code

MILITARY CODE OF CONDUCT

I

I am an American fighting man. I serve in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

II

I will never surrender of my own free will. If in command I will never surrender my men while they still have the means to resist.

III

If I am captured I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

IV

If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information nor take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every way.

V

When questioned, should I become a prisoner of war, I am bound to give only name, rank, service number and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.

VI

I will never forget that I am an American fighting man, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

In Air Force Regulation No. 50-15, dated 23 December 1964, each item of this code is accompanied by an Explanation. Here, the Explanations and accompanying footnotes are omitted, except that for No. V, which is as follows:

“When questioned, a prisoner of war is required by the Geneva Conventions and permitted by this Code to disclose his name, rank, service number and date of birth. A prisoner of war may also communicate with the enemy regarding his individual health or welfare as a prisoner of war and, when appropriate, on routine matters of camp administration. Oral or written confessions true or false, questionnaires, personal history statements, propaganda recordings and broadcasts, appeals to other prisoners of war, signatures to peace or surrender appeals, self criticisms or any other oral or written communications on behalf of the enemy or critical or harmful to the United States, its allies, the Armed Forces or other prisoners are forbidden.

“It is a violation of the Geneva Conventions to place a prisoner of war under physical or mental torture or any other form of coercion to secure from him information of any kind. If, however, a prisoner is subjected to such treatment, he will endeavor to avoid by every means the disclosure of any information, or the making of any statement or the performance of any action harmful to the interests of the United States or its allies or which will provide aid or comfort to the enemy.

“Under Communist Bloc reservations to the Geneva Convention, the signing of a confession or the making of a statement by a prisoner is likely to be used to convict him as a war criminal under the laws of his captors. This conviction has the effect of removing him from the prisoner of war status and according to this Communist Bloc device denying him any protection under terms of the Geneva Convention and repatriation until a prison sentence is served.”

with] a man from Scotland who had been captured in World War II, and who had voluntarily transferred over to an American camp in Germany. I'd like to give his answer because I think it probably describes the way we used the Code of Conduct over there. He said, 'You know, it's a little higher than you could really ever hope to reach, but I think in reaching for those heights, you'll stand very tall.'

These judgments deserve serious thought before any significant changes are made in the Code of Conduct.



Col. George Day, reunited with his family at March AFB, Calif., after five and a half years as a POW. "I would suggest that the Code of Conduct be left in its exact form."

There were other less formal or less grim aspects of prison life that helped keep the POWs going. Capt. Myron Donald believes that "a sense of humor was probably one of the biggest things that kept us going. It was also the thing that most annoyed the Vietnamese. Quite often, guys would be in their rooms with their hands and legs in irons, laughing until the tears rolled down their faces. It would drive the Zips berserk. . . . There were many things like that. We made up commercials in some of the larger rooms, putting in catcalls and funny lines. I think humor was one of the biggest single things that kept us going."

Colonel Day is convinced that "a great attribute for an officer who may someday be a prisoner is a good education—the ability to recall and to keep an active, inquisitive mind. By a good education, I don't mean one measured simply in years of schooling. I mean a quality education." He cited Cmdr. John McCain, one of the most seriously injured POWs. "John was a jewel to live with because of his fine education—his active mind and his ability to recall."

There were grim moments, too, not related to torture or the more normal hardships of imprisonment. Among them were some of the statements made by Americans who were in Hanoi as guests of the North Vietnamese government. Their antiwar broadcasts and reports that the prisoners were well treated were played back to the POWs over and over. Maj. Carl Lassiter characterized the effect on the prisoners as "appalling."

As Colonel Day said, "We recognized that dissent is one thing that makes our American system great. Dissent back home was one thing. However, I was particularly disappointed at the naïveté of some US visitors to North Vietnam who had been in high places and had access to a great deal of information. That kind of dissent was something else."

Surviving Solitary

How about the POWs who were kept in solitary confinement for long periods? Colonel Risner survived four and a half years in solitary and is today one of the most articulate, alert men we have met. "You have to have a very tough-minded determination to lick it," he said. "You must have faith in the things that matter. You must be ingenious in devising ways to keep the mind busy. Physical exercise is another way to pass the time. Often, when I was able, I exercised in my cell for as many as fifteen hours a day."

Both Colonel Risner and Colonel Day agreed that "learning how to waste time skillfully is 180 degrees opposite to what we have been used to." Americans are action-oriented people. Adjusting to doing nothing, particularly in solitude, was a traumatic experience for which most Americans are ill-prepared by education or temperament.

Many POWs, whether they spent long months in solitary or not, came out of their prison experience more philosophically inclined than they had been before, Colonel Day believes. Some of those who did not have, or were not able to develop, internal resources "vegetated to a great extent." Apparently, such cases were few.

Faith, Always Faith

From these men who suffered so much so long, one message comes through loud and clear. Without faith in the institutions that form our society, few men can endure and survive, unmarked in spirit and mind.

Robbie Risner summed it up this way:

How did we manage? I mentioned before a very strong faith in God, which we didn't let die, which we practiced, and which we



Col. Larry Guarino, one of the most tortured POWs, and Lt. Cmdr. William Tschudy en route home.



Col. Laird Gutterson and family. A guard's threat of death gave him "something to hang onto."

encouraged. And then, a faith in the other things we hold dear but seldom talk about. Faith in our country.

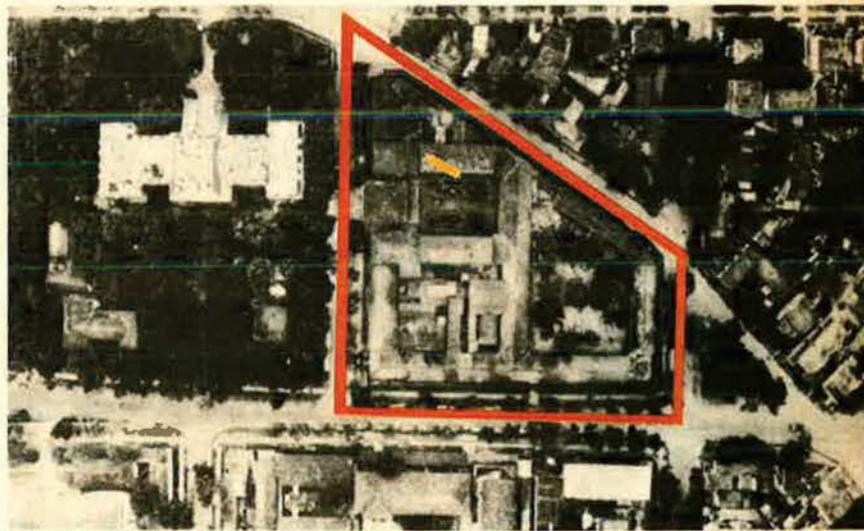
When I say 'country,' I would like to define that, because sometimes country is so nebulous that it doesn't provide the real strength that you might need, that a person might need in a critical time. I think, to personalize it, it's faith in our President, who is our Commander in Chief. Always our Commander in Chief, regardless of his political party or our political affiliation, he is still our Commander in Chief.

Faith, undying faith, in the people that are yours and the people you belong to. Faith in your family, faith in your wife and kids, knowing full well that they are with you 100 percent of the time; that they never lose faith in you; that they think about you and talk about you every day; that they never forget you. This is important—to have faith in your family. This is a real anchor, like a candle in the window. It's a place to return to in your mind in time of hardship.

Faith in our way of life. This is another thing the Communists attacked incessantly—our way of life, our society. You have to have faith that your way of life is the absolute best.

And then, pride, I think, is also a very strengthening factor. It is not false pride at all to be proud that you are an American. It always made me stand a little taller and a little prouder to know that I was an American. I had pity for the North Vietnamese who would never know the freedom that I have as part of my heritage. I think our taste for freedom grew so much more acute than ever before. Our appreciation for the things that we daily take for granted grew and grew. Now I see things around me—like the flag—that I hadn't noticed too much before I was captured. I appreciate them so very much more. They are so much more meaningful to me now.

Something else that we learned is not to



The Hanoi Hilton, best known of ten North Vietnamese POW camps, undamaged after the bombing campaign of December 1972.

be embarrassed about the things that are important, like God and patriotism. We always knew they were important, but we found out just how important they were to our very survival, and to the strength we needed to resist the daily deluge of propaganda, harassment, and torture, and to never lose faith.

We learned to say "God bless you." And we learned to say "God bless America" with every ounce of feeling we had. I hope we never lose sight of these things and never lose the feelings we have for them."

These men have brought back from Hanoi's dungeons and torture chambers a depth of commitment and a faith that must be shared by us all, lest this country go the way of once-great nations that are no more.

What can we say to them but, "God bless you, one and all." ■

THE LESSONS OF VIETNAM

In determining the kind of aerospace power the nation will need in the years ahead, Air Force planners must consider three important factors: the lessons of the air war in SEA, the effects of the Total Force Concept on tasks to be performed by each of the services, and USAF's optimum role in the Nixon Doctrine. Gen. George J. Eade, USAF's former Deputy Chief of Staff for Plans and Operations and now the Deputy Commander in Chief, US Forces in Europe, analyzes these factors as he describes for AIR FORCE Magazine how . . .

USAF Prepares for Future Contingencies

By Edgar Ulsamer

SENIOR EDITOR, AIR FORCE MAGAZINE



Gen. George J. Eade, Deputy CINC, USEUCOM, was DCS/Plans and Operations, Hq. USAF, until April 1973. Prior to his assignment to the Pentagon in 1970, he had served in SAC since 1946 as a pilot, commander, and staff officer.

EXCEPT for operations in Cambodia and Laos, which are likely to be limited in duration and scope, Air Force involvement in the Southeast Asian war appears to have ended. As the curtain falls on eight years of shooting war, Air Force analysts and planners are "auditing" the credits and debits rung up by US airpower during that period and applying the findings to future force planning.

A pervasive and fundamental lesson of the Vietnam War, in the view of Gen. George J. Eade, USAF's former Deputy Chief of Staff for Plans and Operations, is that the effective use of tactical air, as for any type of military power, requires a precise and realistic understanding of its capabilities and limitations by those who are empowered to call it into action. During the first few years of the Southeast Asian war, airpower was given roles that it could not possibly carry out effectively. Even worse, it was shackled in the very areas where it is most effective. The combination of factors damaged the public image of airpower to a degree that is unfortunate and, to some extent, irreparable.

In retrospect, the problems with how airpower was used during the early years of the Vietnam War are easily defined: "Because the national objective was neither to conquer nor to defeat North Vietnam but only to allow South Vietnam to decide its own destiny, airpower was constrained from attacking the real sources of the enemy's supplies, such as marshaling points; instead, tactical air was asked to search out individual vehicles and boats as they infiltrated under a triple canopy of jungle, to do so under all-weather conditions, and to attack and destroy them," General Eade told AIR FORCE Magazine.

Two basic conclusions can be drawn from this experience: When one is structuring tactical forces of the future, he must take into consideration how national authorities may wish to employ those forces to achieve national objectives, and decision-makers wishing to employ current forces to achieve national objectives must be helped to understand those limitations of the equipment that can't be overcome. But, while current assessments bring out the need to guard against overblown expectations,

This photo of Hanoi, taken in January 1973 after completion of Linebacker II, refutes charges of "carpet bombing." Military target areas are: 1. Gia Lam RR yard; 2. thermal power plant; 3. Gia Lam Airfield; 4. RR station; 5. barge yard; 6. port area; 7. Army depot; 8. tank truck conversion facility; 9. RADCAM station; 10. vehicle repair area; 11. Quinh Loi storage area; 12. Bac Mai Airfield; 13. Bac Mai storage area. Areas accidentally damaged are: 14. An Duong/Nghia Dung area; 15. Cuban Chancellery; 16. Kham Thien area; 17. Bac Mai Hospital; 18. textile plant. No. 19 is the infamous (and undamaged) Hanoi Hilton prison.

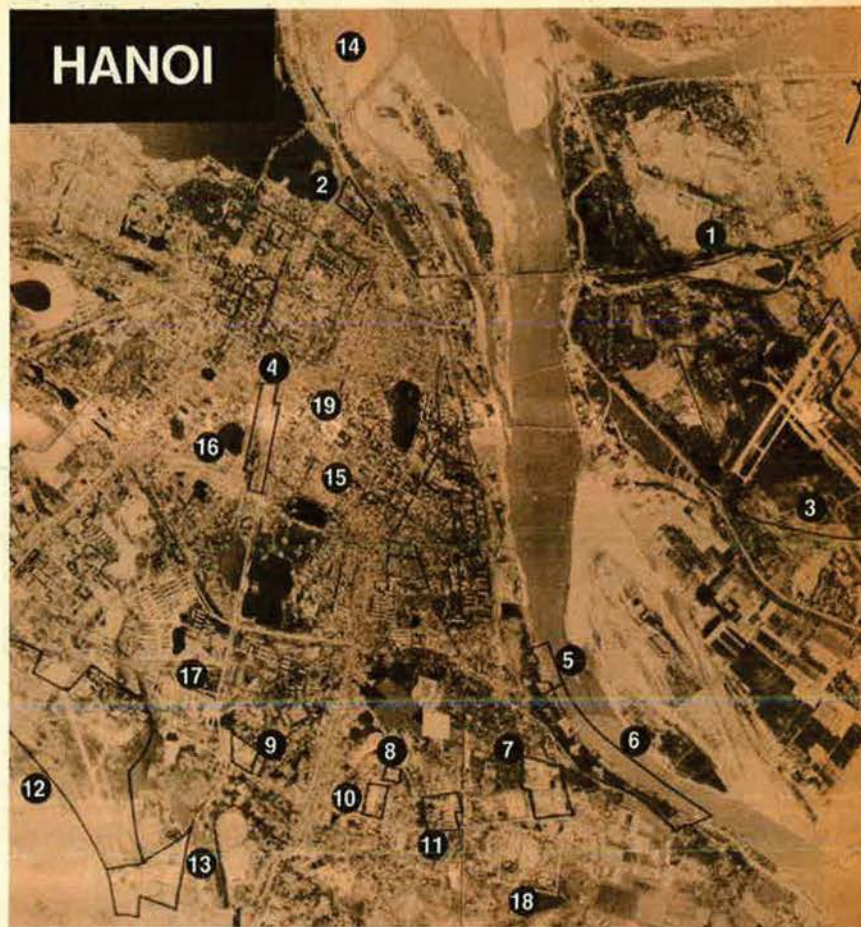
they also yield sharply contrasting findings: The unassailable success story of the Linebacker operations. Linebacker I included air operations in North Vietnam in response to the spring 1972 invasion. These continued until October 1972. Linebacker II was the air campaign of December 1972 against military targets mainly in the Hanoi-Haiphong area. Even under the test of time, these air operations stand up as exemplary applications of tactical airpower.

Linebacker Lessons

Among the lessons of Linebacker II, none is of more far-reaching importance to force planning than the dramatic proof of "the ability of the Air Force to get through to even the most heavily defended targets to a greater degree than we ourselves had anticipated. This holds true for the related criterion of loss rates. During Linebacker II, we lost fifteen B-52s, two F-4s, two F-111s, and one A-7, which is a great deal below the level the planners of the campaign had estimated," according to General Eade.

Another critically important factor was high crew morale and professionalism. Of the thousands of crew members involved in the operation, only one, a B-52 pilot, refused duty. "While this single incident generated considerable coverage in the news media, the thousands of flyers who performed their job with professional competence got considerably less public attention. We know of many cases of extreme heroism, including B-52 crews that completed bomb release on target after their aircraft sustained as many as three SAM hits. The professionalism of the maintenance operations is shown by the fact that we had only one B-52 air abort out of 729 missions flown . . . and he had four engines shut down."

The assessment of air operations during 1972 also leads to definite conclusions about the soundness of USAF's basic tactics. "Our tactics, the product of an evolution that took years, were proved out in North Vietnam over an extended, painful period of time. It is, of course, true that we refined them as we went along and that, as a result, we became even



more effective, but the point is that what we went in with was already effective and sound," according to General Eade.

These conclusions strengthen the Air Force's belief that the logic underlying its basic penetration doctrine is effective, enduring, and applicable to a wide range of conditions. As General Eade puts it, "We plan to use the lessons learned in Southeast Asia whenever airpower is called into action in the future. The undergirding rule is to avoid defense where you can. Where you can't, you degrade the enemy defense with either onboard or support ECM [electronic countermeasures]: If that doesn't work, and only as a last resort, do you actually attack and destroy the defenses. Linebacker proves that this doctrine can be made to work under many kinds of circumstances."

The B-52 Lessons

With the B-52s racking up about a ninety-eight percent penetration score against the heavily defended, concentrated target complex



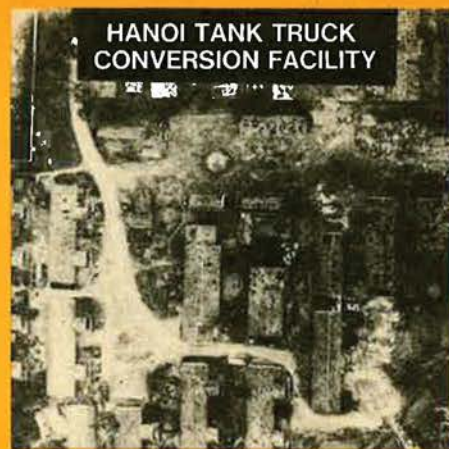
HANOI THERMAL POWER PLANT BEFORE

Hanoi power plant, Nov. 16, 1972. Note earlier bomb damage at right.



HANOI THERMAL POWER PLANT AFTER

After Linebacker II strike on plant, presumably with guided bombs.

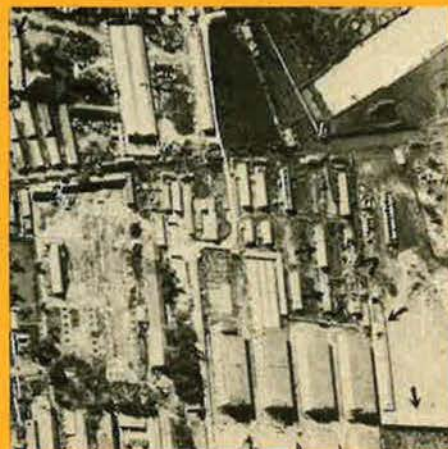


HANOI TANK TRUCK CONVERSION FACILITY

Hanoi tank truck conversion facility, photographed Dec. 29, 1972.



Results of Dec. 18, 1972, B-52 strike on Ai Mo warehouses.



Bac Mai storage area after a precision Linebacker II strike.



Part of Kinh No rail yard, north of Hanoi, showing B-52 strike damage.

of North Vietnam, "I certainly would not want to be in the shoes of the air defense commander of the Soviet Union who has to explain to his boss why Soviet-built defenses didn't do better," General Eade points out with feeling.

The performance of the B-52s and their crews, the Air Force believes, was an unqualified success because "we were able to fly 729 missions into the world's most heavily defended target area, bomb with extreme, devastating accuracy, and succeed in doing all this at a loss rate of about two percent in spite of some 1,300 SAMs being fired against us."

Almost all factors involved in Linebacker were "tougher than what would be encountered in operating in nuclear war. Because of the massing of anti-aircraft weapons in the Hanoi-Haiphong area, we decided to penetrate at high altitudes where the force was more vulnerable to SAM attacks. In a nuclear war, the B-52s would come in low because AA can't be massed to the same degree over the wide geographic areas in which we would expect to operate.

"In a nuclear war, there would be an element of surprise, in terms of the approaches and targets selected, that was missing in North Vietnam where targets were concentrated in a small area. In addition, we had a rather sizable air traffic control problem because we had to squeeze a large number of aircraft, night after night, into a very tight air space. All told, we believe, the Soviets must view the B-52s' success during Linebacker II as convincing proof of the enduring value of our bomber force as a flexible strategic deterrent," according to General Eade.

Other factors enter into the evaluation of what Linebacker II taught military planners about the effectiveness of a manned bomber force in a nuclear war. The nuclear standoff weapon of the B-52—the Short Range Attack Missile (SRAM)—was not used. Had it been, bomber loss rates would have been reduced even further. Also, the SIOP (the Single Integrated Operational Plan covering all strategic forces) is predicated on the mutual support among all three components of the strategic Triad. By the time the bombers began their

penetration under nuclear war conditions, the effects of the ICBMs and SLBMs would have eased the bombers' penetration task considerably. (In calculating the attrition of strategic bomber forces in nuclear war, the Air Force does not rely on the effectiveness of the ICBM and SLBM forces. Whatever destruction the other elements of the Triad might bring to an enemy is treated solely as a bonus so far as the bomber force is concerned. "We operate from the premise that the bomber force is fully effective and viable without help from any other strategic force," according to General Eade.)

The fact that fifteen B-52s were lost to North Vietnamese air defenses during Linebacker II has caused some speculation about how long the Air Force could sustain a campaign of this type. These questions were often tied to the insinuation that North Vietnam was obviously not a superpower, either technologically or militarily, and that the manned bomber would not be effective against a technically sophisticated adversary. In the view of Air Force operations analysts, the facts diametrically oppose these assumptions.

"The B-52 operations against North Vietnam were never meant to be sustained over long periods of time. At the end of Linebacker II, we were already running out of suitable targets for the B-52s. Also, at that time, we had defeated most of the SAM threat. So far as North Vietnam being a second-rate country in terms of air defense capability, we believe this to be completely unjustified. We are of the opinion that North Vietnam has developed the most highly experienced air defense forces in the world. Obviously, they have more experience in firing SAMs against aircraft than anybody.

"Also, they have more experience in active ground-control intercepts than any other military forces. In the aggregate, they have developed an air defense system that is as dense and as capable as anything that other countries have been able to deploy. Their people, of course, have been carefully trained and well coached by Russian experts in the use of sophisticated air defense weapons.

"Finally, the argument that our loss rates indicate the manned bomber's obsolescence doesn't hold water. Under nuclear war conditions, it is not likely that our bomber force would have to carry out sustained operations. A one-time penetration is probably enough to gain the basic objective of deterrence. This, of course, is not to say that we couldn't use our bombers over and over, if needed," General Eade believes.

The B-1, Worthy Successor

One of the most reassuring lessons of the air campaign, in the view of Air Force planners, is that it validated the fundamental design

features of the new strategic bomber, the B-1. The fact that the B-52 could be transformed from a high-altitude to a low-altitude nuclear bomber, and then to a conventional bomber capable of both high and low operations, stems in the main from the aircraft's large payload and interior space. It was possible to modify one model—the "D" version—to carry 108 iron bombs, and to provide all B-52s with significant improvements in ECM capability.

The B-1 possesses the attributes of payload and interior space to an even greater degree than the B-52. In addition to more than doubling the internal payload of the B-52 and having more space for power sources, ECM, and other avionics packages that might be developed in the years ahead, its greater penetration speed and reduced radar cross section, combined with an array of other advanced features, make the B-1 far more suitable for both conventional and nuclear war missions than the aging B-52.

Operational analysts believe that, apart from conventional war requirements, any future strategic bomber must be able to stand off from its target as well as to penetrate enemy defenses. "We don't think that it makes sense to penetrate when that's not really necessary. At the same time, we don't want to deny ourselves the ability to penetrate to the target when this does become necessary or advantageous. So, the first question is, 'Do we want a standoff bomber or do we want a penetrator?' The answer is that we want both. The B-52 has confirmed that this is not only sound thinking, but also technically possible, first with the Hound Dog missile and now with SRAM. Because it carries more SRAMs than the B-52, the B-1's ability to function in a dual mode is even more pronounced. In addition, the B-1 can be used more flexibly in either mode because of its higher penetration speed and supersonic cruise capability."

Recent Air Force studies of the survivability of the two aircraft, according to General Eade, indicate that, because of the B-1's more rapid reaction time, "it is possible to get thirteen B-1s off a single runway in about the same time it takes for the first B-52 to become airborne," according to General Eade. The ability to "flush" on warning is one of the most crucial factors in determining the ability of bombers on ground alert to survive a surprise ICBM or SLBM attack.

While the B-1 is expected to enter the inventory in force by the end of this decade, the Air Force does not plan to retire the B-52 then. "We plan to keep seventeen squadrons of B-52G and -H models in the force for as long as we can maintain them economically. Eventually, of course, the aircraft will simply become too old, but that day, we think, is quite some time off. We don't really know when the B-52 will have to be retired," General Eade told AIR FORCE Magazine.

Other Vietnam Lessons

Air tacticians learned two important lessons from the contrast between Linebacker I and Linebacker II. The former demonstrated the enormous effectiveness of air-delivered guided weapons, mainly laser-guided bombs, but also some electro-optical lock-on systems. Bad weather conditions during Linebacker II permitted only limited use of guided weapons, which depend on visual target designation. In a sense, Linebacker II deflated some overly optimistic notions about the omnipotence of guided weapons and put their advantages and disadvantages into a more realistic perspective. General Eade believes that "... the Air Force should move toward a mix of guided and unguided munitions. I don't think that we will ever see the day when guided weapons will become the Air Force's *only* munitions.

"This is especially true if we look at Europe, which is of crucial importance in our planning. The long winter nights and generally poor weather there obviously don't permit total dependence on visually delivered weapons. On the other hand, of course, we would use guided weapons whenever weather does permit."

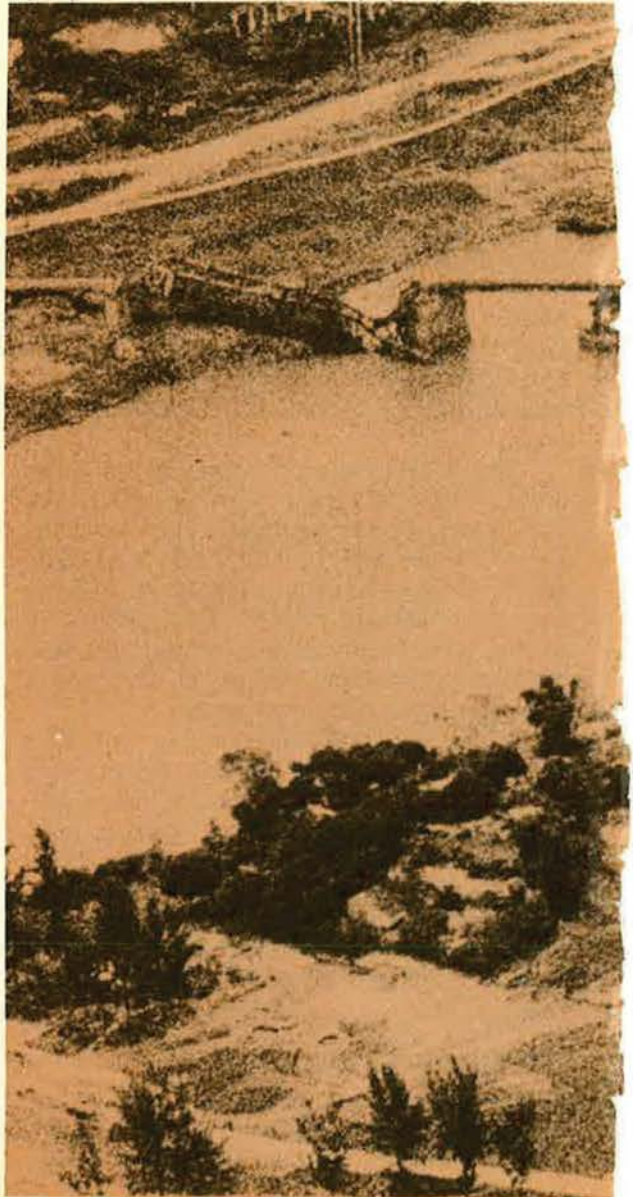
Guided-weapons technology can also be taken a step further by exploiting the potential of small guided nuclear weapons for tac air missions. The advantage of such weapons, "provided that we can use them with essentially a zero CEP [circular error probable] and, therefore, without fear of significant collateral damage and fallout, is that they would enable us to attack very hard targets," according to General Eade. Such a capability would be important in a conflict involving the Warsaw Pact countries, which make widespread use of superhard hangarages to protect their aircraft and other weapons and supplies.

Although airdropped sensors were used extensively during the war in Southeast Asia (see "Igloo White," p. 48, June '71 issue), their effectiveness turned out to be marginal. As a result, Air Force planners are not certain that such devices will be ready for widespread use in the near future, especially in NATO

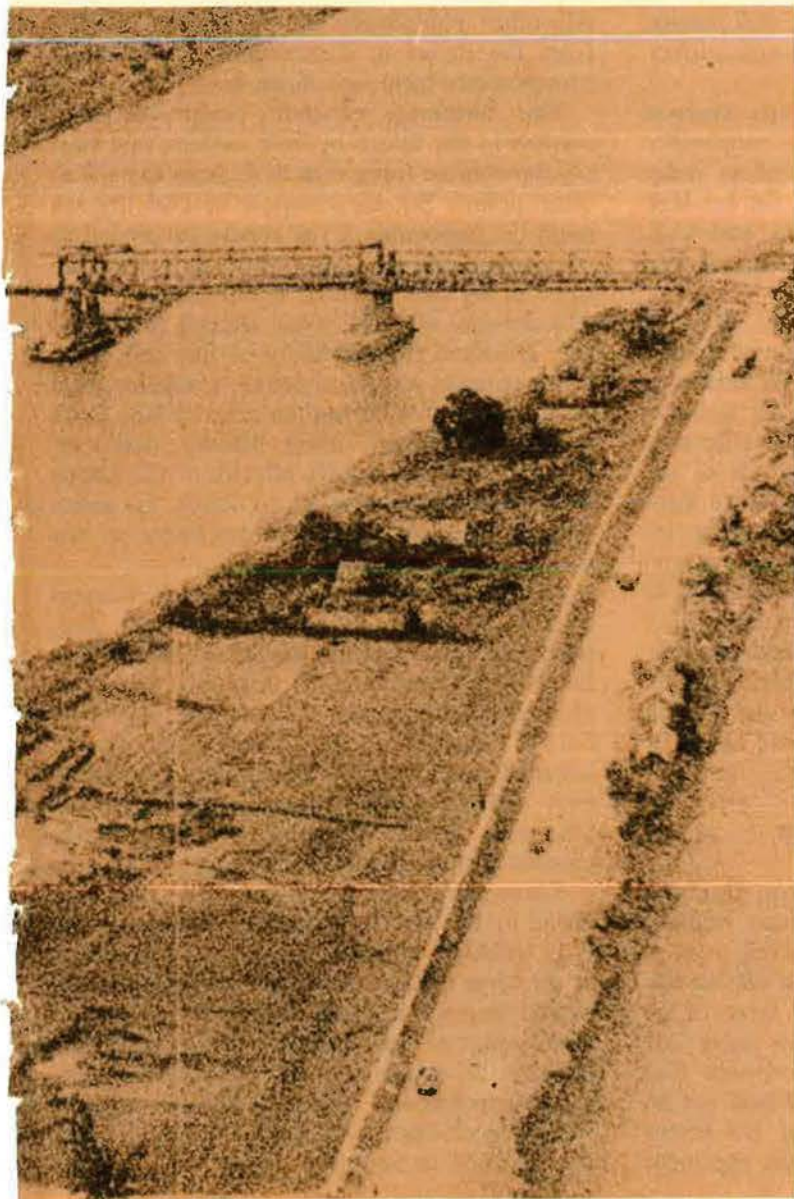
areas. General Eade points out that "we had quite a few problems in using sensors in Southeast Asia. Many of the sensor advocates, it turned out, overestimated the capabilities of these devices. Some of the problems are still not resolved. What's more, these problems might be even more pronounced in Europe.

"The principal difficulty, and one that has defied us for quite some time, is that we have yet to come up with really good, reliable sensors, and that we have to find ways to get these sensors on the ground awfully fast and in large quantities. There is no question in my

USAF F-4s, using terminally guided weapons, destroyed the Canal de Rapides bridge during Linebacker II.



Bac Mai Hospital, adjacent to Bac Mai Airfield (see photo, page 35), was hit accidentally, but clearly not "destroyed" as reported by some US visitors to Hanoi during the December 1972 Linebacker II operation.



mind that we will have to do a great deal more work before we know what the sensor is really worth."

There is wide consensus that Vietnam brought out dramatically and painfully the need for a modern Airborne Warning and Control System (AWACS). Over a period of time, "we developed a lash-up system in Southeast Asia consisting of radio-relay aircraft, airborne command posts, EC-121s, and offshore shipboard systems. All these elements were limited in terms of capability, and we tied them together as best we could. In effect, we had all the elements of an AWACS but it was in bits and pieces and quite limited. As a result, we had a massive command and control problem, and our people did a magnificent job of improvising to solve the problem. But the North Vietnamese fighters were under full radar control while we had great problems in controlling our own forces, including our counterair. Our people had to rely on their eyeballs and airborne radar against the GCI-controlled North Vietnamese pilots.

"With few exceptions, and even those are not certain, our fighter losses were a result of complete surprise by the enemy. The first time those crews knew they were under attack was when a missile went up their tailpipe," according to General Eade.

In still another area, Air Force operating expertise and understanding of the potential of remotely piloted vehicles (RPVs) gained significantly from Southeast Asian experience. RPVs, according to General Eade, will be used in the future for recce, ECM, command and control, radio relay, and target location. They also show a potential for the strike role, but "how and where they fit in with the conventional force, especially in terms of cost-effectiveness, will depend on how we develop them."

The New Total-Force Era

The total-force concept of the Department of Defense is beginning to influence the shape and nature of the Air Force—not only the relationship between active-duty and Reserve forces, but also cooperation with the other services. Recognizing that national defense requires an analysis of the total task to be performed by the total available force, the Air Force is working on a range of projects with the Navy to aid in the control of sea lanes of communication, traditionally a collateral Air Force function.

The Chief of Naval Operations had requested that the Air Force examine the feasibility of mating the Navy's new all-weather antiship missile, the Harpoon, to the B-52. This is being done. Currently in advance develop-

ment and slated to be operational by the mid-1970s, the Harpoon is a conventionally armed standoff weapon with a range of more than sixty nautical miles. It can be delivered from the air by shipboard and weighs about 1,400 pounds. (In a tentative way, the Air Force has also looked at the possibility of using conventionally armed SRAM missiles for similar sea-lane control missions.)

Another effort in cooperation with the Navy involves tests of the B-52's ability to deliver certain Navy mines, some already in the inventory and others currently under development. Other studies involve use of the Air Force's new guided air-to-ground missile, the Maverick, either in its present form or with a larger warhead, against ships.

The Air Force also is looking at other guided weapons, including guided glide bombs, to determine their suitability for use against naval targets. These weapons, which show great promise for such applications, could be delivered from a standoff position, well outside the effective defensive range of a hostile surface fleet.

Studies of how existing Air Force weapon systems might augment US Navy capabilities involve also the F-111, whose excellent radar system appears to be well suited for sea-lane control operations, and the SR-71 and U-2, both of which have excellent ocean-surveillance capability.

Preliminary studies indicate that the Air Force could use both conventional and nuclear munitions for antishipping and ASW missions, but that the former is preferred for political reasons. The driving factor behind efforts to increase the Air Force's contributions to the naval requirement under the total-force concept is the great range and rapid reaction inherent in the Air Force's aircraft. Using currently available bases, the Air Force could provide effective sea-lane protection throughout the Atlantic, the Pacific, and the Mediterranean. The Navy's Commander in Chief/Atlantic recently requested the Air Force to furnish information as to how its land-based airpower could be used to augment his forces.

The Nixon Doctrine and Airpower

The principal tenet of the Nixon Doctrine is that the United States will extend military help only to those allies who actively seek it and who, in spite of their own best efforts, are unable to cope with the superior force of an aggressor. Under these conditions, most Air Force planners feel, it is inconceivable that a country which is so threatened would not be willing to provide base rights for US forces coming to its aid. Concomitantly, the argument

that proximity forces, meaning forces that stand off at sea or in a third country, are more suited to implement the Nixon doctrine than land-based air does not seem valid.

Air Force planners recognize that, under the new global policies of the United States, the element of rapid deployment takes on added importance. As most recent crises demonstrated, they not only erupt rapidly but can only be resolved if the supporting force gets there rapidly, in a matter of days rather than weeks.

Air Force planners are proud of the speed with which USAF tactical air units were able to react to the invasion of South Vietnam a year ago. "We had some advance forces on the scene and in combat within thirty hours, and the bulk of the force flying combat in eighty hours," General Eade points out. Furthering the Air Force's fast-reaction capability is the so-called "bare-base" technique, which requires only a runway and potable water. All other equipment and facilities, designed from the outset in a modularized and easily transportable form, are flown in.

This bare-base capability might be augmented in the future by bulk tankers that supply the combat force with POL from the US or other points. But the resupply of POL by sea might be impossible if the enemy succeeded in interdicting the sea lanes with his submarine force or by other means. Initial studies of the effectiveness of a 747-type aircraft in such a role indicated the feasibility of this approach. (This concept was first tried on a smaller scale by the Air Force during the siege of Khe Sanh in South Vietnam, using bladder tanks on KC-135s.) Using a large aircraft of the airbus type, it would be possible to supply an entire wing of aircraft with POL anywhere in the world over long periods of time.

Another feature of the Air Force's weapon systems, in being or under development, supports the quick-reaction capability required by the Nixon Doctrine. This is simply the range of such aircraft as the F-111, B-52, and B-1. F-111s stationed in the United Kingdom, for instance, can fly combat missions in the Middle East and the Mediterranean area from their UK bases. With refueling, their combat radius extends into the Indian Ocean area.

These capabilities, strengthened in the years ahead by the advent of the F-15, the A-10, the B-1, AWACS, new satellite systems, and others, in the view of General Eade, "will provide the United States Air Force with the flexible and broad range of capabilities needed to cope with any and all future contingencies that we now are able to foresee." A crucial element of these future capabilities, obviously, will be the lessons learned in Southeast Asia. ■

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Chinese-built F.6 (MiG-19SF) single-seat fighter, in service with the Pakistan Air Force (John Fricker)

CHINA STATE AIRCRAFT FACTORY; Shenyang, People's Republic of China

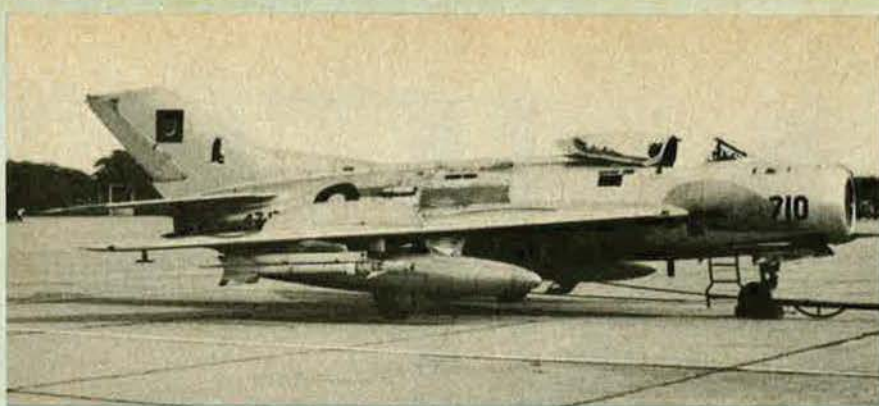
This factory had its origin in the Mukden plant of the Manshu Aeroplane Manufacturing Company, one of several aircraft and aero-engine manufacturing facilities established in Manchukuo (Manchuria) by the Japanese invaders in 1938. After the Communist regime became responsible for the whole of mainland China in 1949 the Manchurian factories were re-established and re-equipped with Soviet assistance. Today the factories at Shenyang and Harbin are the main centres of Chinese aircraft and aero-engine production, with design and development centres at Shenyang, Peking, and Harbin.

First combat aircraft manufactured at Shenyang, under license, was the Soviet MiG-17 fighter, with deliveries to the Chinese Air Force beginning in 1956. Well over a thousand MiG-17s were built, under the Chinese designation F.4, plus several hundred MiG-15UTI (F.2) fighter/trainers, before production was completed in the mid-'sixties. F.4s were exported to Albania, Cambodia, and North Vietnam. These types have been followed by Chinese versions of the MiG-19 (F.6) and MiG-21 (F.9), as detailed overleaf. A copy of the Tupolev Tu-16 twin-jet bomber is also in production in China, and a twin-jet derivative of the F.9 has been reported.

The capability of China's aircraft industry has been revealed most openly by study of the F.6 single-seat day fighters supplied to

Pakistan. Generally similar to the Soviet MiG-19SF, the F.6s equipped three first-line squadrons of the Pakistan Air Force (Nos 11, 23, and 25) at the time of the 1971 war with India. They were credited with the destruction of twelve enemy aircraft, made up of one MiG-21, eight Su-7s, and three Hunters, for the loss of three F.6s.

An assessment of the F.6 by a western observer described the general standard of workmanship of the airframe as very good. At low altitudes this fighter is said to outmanoeuvre any type of combat aircraft in service in Asia except the F-86, and to outclimb the MiG-21 and F-104 Starfighter. The potential of the Pakistani F.6s has been much enhanced by supplementing their standard cannon armament with two Sidewinder missiles.



This F.6 of the Pakistan Air Force has been modified to carry two Sidewinder missiles (John Fricker)

SHENYANG F.6

The F.6 is basically a MiG-19 fighter built in the Chinese State Aircraft Factory. Its original design was initiated by the Mikoyan bureau in the early 'fifties, with the aim of producing the first Soviet fighter able to exceed Mach 1 in level flight. Construction of a prototype, designated I-350 at the time, was authorised on 30 July 1951. Powered by two 4,410 lb (2,000 kg) st Mikulin AM-5 turbojets, this aircraft was flown for the first time by Major Grigori Sedov in September 1953. It achieved its maximum speed of Mach 1.1 in level flight on several occasions before being handed over for state trials in early 1954.

The initial production MiG-19 day fighter began to enter service with the Soviet air defence force in early 1955. Before long an all-moving tailplane replaced the former, ineffective elevators on the MiG-19S (S for *Stabilisator*), which also had three 30 mm guns instead of the original armament of one 37 mm and two 23 mm cannon. This version introduced an attachment under each wing for a bomb or air-to-surface rocket.

Meanwhile, Vladimir Klimov's bureau had been developing a new turbojet designated RD-9. Of similar overall dimensions to the small-diameter AM-5, it had a considerably higher rating, and was adopted as the standard power plant of the MiG-19 in 1957. Again the aircraft's designation was changed, to MiG-19SF (*Porsirovanny*; increased power). At the same time, another version with limited all-weather capability was put into production as the MiG-19PF (*Perekhvaichik*; interceptor), with a small *Izumrud* radar scanner inside its engine air intake and a ranging unit in the intake top lip. The later MiG-19PM (*Modifikatsirovanny*; modified) differed from the PF in having four first-generation radar-homing missiles (NATO *Alkali*) instead of guns.

In the Soviet Union the MiG-19 was phased out of production by the end of the 'fifties, although many SFs and PMs remain in service in the Warsaw Pact countries, Cuba, Iraq, and Egypt. Some had been delivered to China before the deterioration of Moscow-Peking relations, and, with great skill, these were copied down to the last rivet so that assembly lines of MiG-19SFs and their RD-9B turbojets could be set up at Shenyang. The designation F.6 was given to the resulting fighters, which became standard equipment in the Chinese Air Force. The first F.6 was completed in late 1961 and deliveries began in the following year. Over 100 were in service by mid-1964 and by the time manufacturing ended, recently, as many as 1,500 may have been built.

Immediately after the Indo-Pakistan war of September 1965, China offered F.6s to

Pakistan, which had an urgent need of replacements. Forty were supplied initially and, despite problems such as poor component interchangeability resulting from hand manufacture, and the fact that the sparse servicing handbooks were in Chinese, the first PAF squadron was operational within a year. Subsequent deliveries have brought to about 80 the total of F.6s acquired by Pakistan, and it is expected that Tanzania will receive sufficient F.6s for a single squadron this year.

The following description is based on known details of the basic MiG-19SF (which was never covered fully in contemporary issues of *Jane's*), modified where possible to apply specifically to the Chinese F.6:

TYPE: Single-seat day interceptor and air-superiority fighter.

WINGS: Cantilever mid-wing monoplane of all-metal construction. Wing section TsAGI S-12S at root, SR-7S at tip. Anhedral 4° 30'. Sweepback at quarter-chord 55°. Entire trailing-edge of each wing formed by aileron (inboard) and large Fowler-type flap, both hydraulically powered. Compressed-air emergency extension system for flaps. Trim tab in port aileron. Large full-chord boundary layer fence above each wing at mid-span to enhance aileron effectiveness.

FUSELAGE: Conventional all-metal semi-monocoque structure of circular section, with divided air intake in nose and side-by-side twin orifices at rear. Top and bottom "pen-nib" fairings aft of nozzles. Entire rear fuselage detaches at wing trailing-edge for engine servicing. Forward-hinged door-type airbrake, operated hydraulically, on each side of fuselage aft of wing trailing-edge. Forward-hinged perforated door-type airbrake under centre-fuselage. Shallow ventral fin strake under rear fuselage. Upward-hinging pitot boom mounted on lower lip of nose intake.

TAIL UNIT: Conventional all-metal structure. Hydraulically-actuated one-piece horizontal surfaces, with electrical emergency actuation in the event of hydraulic failure. Anti-flutter weight projecting forward from each tailplane tip. Stick-to-tailplane gearing, via electro-mechanical linkage, reduces required stick forces during high-g manoeuvres. Sweepback on vertical surfaces 57° 30'. Electrically-actuated trim tab in rudder. Large dorsal fin between fin and dorsal spine enclosing actuating rods for tail control surfaces.

LANDING GEAR: Wide-track tricycle type, with single wheel on each unit. Hydraulic actuation, nosewheel forward, main units inward into wing-roots. Pneumatic emergency extension system. All units of levered-suspension type, with oleo-pneumatic shock-absorbers. Main-wheel tyres size 660-200 mm; max pressure 142 lb/sq in

(10 kg/cm²). Nosewheel tyre size 500-180; pressure 100 lb/sq in (7 kg/cm²). Pneumatically-operated brakes on main wheels, with pneumatic emergency back-up. Pneumatically-deployed parachute brake housed in bottom of rear fuselage above ventral fin strake. Small tail bumper.

POWER PLANT: Two Chinese-built versions of Klimov RD-9B axial-flow turbojet, each rated at 5,730 lb (2,600 kg) st dry and 7,165 lb (3,250 kg) st with afterburning. Hydraulically-actuated nozzles. Two main fuel tanks in tandem between cockpit and engines, and two smaller tanks under forward end of engine tail-pipes, with total capacity of 477 Imp gallons (2,170 litres). Provision for two 176 Imp gallon (800 litre) underwing drop-tanks, raising max total fuel capacity to 829 Imp gallons (3,770 litres).

ACCOMMODATION: Pilot only, on ejection seat, under rearward-sliding blister canopy. In emergency, canopy is jettisoned by an explosive charge at the lock, after which it is carried away by the slipstream. Fluid anti-icing system for windshield.

SYSTEMS: Cockpit pressurised by air-conditioning system mounted in top of fuselage aft of cockpit, using compressor bleed air. Constant temperature maintained by adjustable electric thermostat. Two independent hydraulic systems. Main system, powered by pump on starboard engine, actuates landing gear retraction and extension, flaps, airbrakes, and afterburner nozzle mechanism. System for tailplane and aileron boosters is powered by a pump on the port engine, and can also be supplied by the main system should the booster system fail. Electrical system powered by two DC starter/generators, supplemented by a battery, providing 27V DC, and 115V 400Hz, and 36V 400Hz AC.

ELECTRONICS AND EQUIPMENT: Standard equipment includes VHF radio, blind-flying equipment, radio compass, radio altimeter, tail warning system, navigation lights, taxiing light on nosewheel unit, and landing light in bottom of front fuselage.

ARMAMENT: Installed armament of three 30 mm NR-30 guns, one in each wing root and one under starboard side of nose. Aircraft in service in Pakistan have an attachment under each wing for a Sidewinder air-to-air missile, outboard of drop-tank. Alternatively, an attachment inboard of each tank for a bomb weighing up to 500 lb or 250 kg, a rocket of up to 212 mm calibre, or a pack of eight air-to-air rockets. Optical gunsight. Camera gun in top lip of air intake.

DIMENSIONS, EXTERNAL:

Wing span	29 ft 6½ in (9.00 m)
Wing chord, mean	9 ft 10¾ in (3.02 m)
Wing aspect ratio	3.24
Thickness/chord ratio, mean	8.24%
Length overall	42 ft 11½ in (13.09 m)
Length of fuselage	38 ft 9½ in (11.82 m)
Height overall	13 ft 2¼ in (4.02 m)
Wheel track	13 ft 7½ in (4.15 m)

AREAS:

Wings, gross	269 sq ft (25.00 m ²)
Airbrakes (three, total)	16.15 sq ft (1.50 m ²)
Ventral fin	6.61 sq ft (0.614 m ²)

WEIGHTS AND LOADINGS:

Weight empty, nominal	12,700 lb (5,760 kg)
Normal T-O weight	16,755 lb (7,600 kg)
Max T-O weight	19,180 lb (8,700 kg)
Max wing loading	71.28 lb/sq ft (348 kg/m ²)
Max power loading	1.67 lb/lb st (1.67 kg/kg st)

PERFORMANCE:

Max speed at 32,800 ft (10,000 m)	783 knots (902 mph; 1,452 km/h)
Cruising speed	512 knots (590 mph; 950 km/h)
Min flying speed, flaps up	189 knots (218 mph; 350 km/h)

Landing speed
127 knots (146 mph; 235 km/h)

Rate of climb at S/L
22,635 ft (6,900 m)/min

Time to service ceiling
8.2 min

Service ceiling
58,725 ft (17,900 m)

Absolute ceiling
65,190 ft (19,870 m)

T-O run, with afterburning
1,690 ft (515 m)

T-O run, with underwing tanks,
no afterburning
2,953 ft (900 m)

T-O to 82 ft (25 m), with afterburning
5,000 ft (1,525 m)

T-O to 82 ft (25 m), with underwing
tanks, no afterburning
6,170 ft (1,880 m)

Landing from 82 ft (25 m),
with brake-chute
5,580 ft (1,700 m)

Landing from 82 ft (25 m),
without brake-chute
6,495 ft (1,980 m)

Landing run, with brake-chute
1,970 ft (600 m)

Landing run, without brake-chute
2,920 ft (890 m)

Normal range at 46,000 ft (14,000 m)
750 nm (863 miles; 1,390 km)

Max range with external tanks
1,187 nm (1,366 miles; 2,200 km)

Combat radius with external tanks
370 nm (426 miles; 685 km)

Max endurance at 46,000 ft (14,000 m)
2 hr 38 min

SHENYANG F.9

Design of this Chinese version of the Mikoyan MiG-21 fighter was based initially on that of a number of Soviet-built aircraft of this type that had been delivered to China prior to the political break in 1960. The difficult task of copying the airframe, RD-11 afterburning turbojet and equipment was completed so quickly and efficiently that the F.9 began to enter service with the Chinese Air Force in 1965. The design has been updated by reference to Soviet late-model MiG-21s despatched to North Vietnam via China; production is believed to total at least 1,300 aircraft to date.

HAL

HINDUSTAN AERONAUTICS LTD; Address: Indian Express Building, Vidhana Veedhi, PO Box 5150, Bangalore 1, India

HAL HF-24 MARUT (Wind Spirit)

Development of the HF-24 Marut single-seat fighter was started by HAL in 1956, under the design leadership of Dr Kurt Tank, who was responsible for the wartime Focke-Wulf aeroplanes. The first prototype HF-24 Mk I (HF-001; BR-462), powered by two Rolls-Royce Bristol Orpheus 703 turbojet engines, flew for the first time on 17 June 1961. It was followed by the second Mk I prototype (BR-463) on 4 October 1962.

The HF-24 was ordered to Mk I standard as a ground attack fighter, with Orpheus 703 non-afterburning engines. The first of 18 pre-production Maruts (BD-828) flew in April 1963, and a token delivery of four aircraft to the Indian Air Force was made on 10 May 1964. Eventually, 12 of the pre-production Mk Is were handed over to the IAF, the others being used for test and development programmes.

The first series production Mk I flew on 15 November 1967, and this version equips No 10 and 220 Squadrons of the Indian Air Force, which used its Maruts successfully, without loss, in the December 1971 war with Pakistan. A total of about 80 Maruts had been built by early 1973, including two Mk II tandem two-seat training versions (BD-888 and BD-889). The first of these began its flight tests on 30 April 1970, in the hands of Wg Cdr R. D. Sahni, then chief test pilot of the Bangalore Divi-



HAL HF-24 Marut Mk I (two Rolls-Royce Bristol Orpheus 703 turbojet engines)

sion of HAL. It was followed by the second Mk II in March 1971 and the two development aircraft had completed a total of more than 200 test flights by early 1973. Differences by comparison with the Mk I are minimal. The internal rocket pack is removed to make way for the second seat; full dual controls are fitted, and a wide choice of equipment enables the Mk II to be used for several advanced training rôles, including instrument flight and armament training. Delivery of about 12 production Mk IIs to IAF is expected to begin in 1974.

Development of the Mk II, and of other versions of the HF-24, has been the responsibility of an all-Indian design team under S. C. Das since the departure of Dr Tank and his German team in 1967. They include two experimental prototypes (HF-032 and BD-884), known originally as Mk IIs but now designated Mk II, fitted with an afterburning version of the Orpheus 703 engine. One of these prototypes was continuing the flight test programme in early 1973; but the Rolls-Royce/Turboméca Adour is under investigation as an alternative power plant, in afterburning form. In addition, the search continues for an engine that could give the Marut its intended Mach 2 performance in a future HF-24 Mk III version.

The following description applies to the HF-24 Mk I:

TYPE: Single-seat ground attack fighter, stressed to +8g.

WINGS: Cantilever low-wing monoplane of thin section. Sweepback approx 45° at quarter-chord. All versions have extended-chord (dog-tooth) leading-edge on outer panels; in addition, overall wing chord is increased on later production aircraft. Conventional torsion-box structure. Hydraulically-actuated ailerons and trailing-edge flaps, with automatic reversion to manual control following hydraulic failure. No de-icing system.

FUSELAGE: Conventional all-metal semi-monocoque structure, narrowed in accordance with area rule in region of wing trailing-edge. Rear fuselage detaches at transport joint for engine removal. Two hydraulically-operated box-type airbrakes on lower fuselage aft of main-wheel wells, opening downward. Engine air intake, with non-adjustable half-cone centre-body, on each side of cockpit.

TAIL UNIT: Cantilever all-metal structure with sweepback on all surfaces. Hydraulically-operated low-set variable-incidence tailplane with electrical trim and manual emergency setting. Hydraulically-actuated elevators, with automatic rever-

HAL HF-24 Marut Mk I, in squadron service with the Indian Air Force, equipped with underwing fuel tanks (Alan W. Hall)





Prototype of the HAL HF-24 Mk IT two-seat training version of the Marut (Alan W. Hall)

sion to manual control following hydraulic failure. Manually-operated rudder, with trim tab, on early models. Some aircraft are fitted with hydraulically-actuated rudder. Fin area increased on aircraft with extended-chord wings.

LANDING GEAR: Retractable tricycle type, with single Dunlop wheel on each unit, supplied by Dowty Rotol. Hydraulic actuation, nosewheel retracting forward, main units inward into fuselage. Steerable nosewheel. Main-wheel tyres size 29 x 8-15, pressure 100 lb/sq in (7.03 kg/cm²). Nosewheel tyre size 19 x 6.25-9, pressure 140 lb/sq in (9.84 kg/cm²). Maxaret anti-skid system. No brake cooling. RFD-GQ Type LB-52 Mk 2 ring-slot braking parachute, diameter 10 ft 6 in (3.20 m).

POWER PLANT: Two HAL-built Rolls-Royce Bristol Orpheus 703 turbojet engines, each rated at 4,850 lb (2,200 kg) st, side by side in rear fuselage. Fuel in main fuselage collector tank, wing centre-section supply tank and two integral wing tanks, with total usable capacity of 549 Imp gallons (2,491 litres). Provision for up to four 100 Imp gallon (454 litre) underwing drop-tanks and internal auxiliary tank.

ACCOMMODATION: Pilot only, on Martin-Baker Mk S4C zero-altitude ejection seat, under rearward-sliding blister canopy. Windscreen heated by sandwiched gold-film electrode. Side screens and canopy demisted by warm air from air-conditioning system.

SYSTEMS: Air-conditioning system includes two air-cycle heat exchangers and cold air unit. Cockpit pressurised to differential of 3.5 lb/sq in (0.25 kg/cm²) between 24,000 and 40,000 ft (7,300 to 12,200 m). Dowty Rotol hydraulic system, pressure 4,000 lb/sq in (280 kg/cm²), supplied by two engine-driven pumps, for all services. Nitrogen system, pressure 3,000 lb/sq in (210 kg/cm²), to provide emergency power for landing gear, airbrakes, and flaps. 24V DC single-wire earth return electrical system, with two 24V 25Ah batteries and 4Ah emergency supply battery.

ELECTRONICS AND EQUIPMENT: Standard equipment includes DFA 73 D/F, TA and RA Bendix receiver, 12-channel VHF, and Ferranti ISIS (integrated strike and interception system) two-axis rate gyro gun-sight.

ARMAMENT: Four 30 mm Aden Mk 2 guns in nose, with 130 rds/gun, and Matra Type 103 retractable pack of 50 SNEB 68 mm air-to-air rockets in lower fuselage aft of nosewheel unit. Attachments for four 1,000 lb bombs, napalm tanks, Type 116 SNEB rocket packs, clusters of T10 air-to-surface rockets, drop-tanks, or other stores under wings.

DIMENSIONS, EXTERNAL (A: with extended-chord wings; B: without extended-chord wings):

Wing span: A, B 29 ft 6¼ in (9.00 m)
 Wing chord at root:
 A 14 ft 5½ in (4.40 m)
 B 13 ft 1½ in (4.00 m)
 Wing chord at tip:
 A 3 ft 7¼ in (1.10 m)
 B 3 ft ¾ in (1.00 m)
 Wing aspect ratio:
 A 2.90
 B 3.18
 Length overall 52 ft 0¾ in (15.87 m)
 Height overall 11 ft 9¾ in (3.60 m)
 Tailplane span 16 ft 9 in (5.104 m)
 Wheel track 9 ft 2¼ in (2.80 m)
 Wheelbase 18 ft 2¾ in (5.555 m)

AREAS (A: with extended-chord wings; B: without extended-chord wings):

Wings, gross:
 A 306.8 sq ft (28.50 m²)
 B 273.9 sq ft (25.45 m²)
 Ailerons (total):
 A 13.50 sq ft (1.254 m²)
 B 13.73 sq ft (1.276 m²)
 Trailing-edge flaps (total):
 A 26.26 sq ft (2.44 m²)
 B 23.90 sq ft (2.22 m²)
 Fin:
 A 35.91 sq ft (3.336 m²)
 B 35.05 sq ft (3.256 m²)
 Rudder, incl tab:
 A, B 5.32 sq ft (0.494 m²)
 Tailplane:
 A, B 59.765 sq ft (5.544 m²)
 Elevators (total):
 A, B 8.78 sq ft (0.816 m²)

WEIGHTS AND LOADINGS (A: with extended-chord wings; B: without extended-chord wings):

Weight empty, equipped:
 A, B 13,658 lb (6,195 kg)
 T-O weight, clean:
 A, B 19,734 lb (8,951 kg)
 Max T-O weight:
 A 24,048 lb (10,908 kg)
 B 24,085 lb (10,925 kg)
 Max wing loading:
 A 79.95 lb/sq ft (390 kg/m²)
 B 88.15 lb/sq ft (430 kg/m²)
 Thrust/weight ratio:
 A, B 0.492

PERFORMANCE:

Max level speed attained at 40,000 ft (12,200 m) Mach 1.02
 Max level speed at low level 600 knots (691 mph; 1,112 km/h)
 Stalling speed:
 with external stores
 160 knots (184 mph; 297 km/h)
 clean 130 knots (150 mph; 241 km/h)
 flaps and landing gear down
 120 knots (138 mph; 223 km/h)
 Normal landing speed 145 knots (167 mph; 268 km/h)

Time to climb from S/L to 40,000 ft (12,200 m) 9 min 20 sec
 T-O run 2,790 ft (850 m)
 Min ground turning radius 28 ft 10½ in (8.80 m)

BOEING

BOEING AEROSPACE COMPANY; Address: PO Box 3999, Seattle, Washington 98124, USA

BOEING COMPASS COPE B USAF designation: YQM-94A

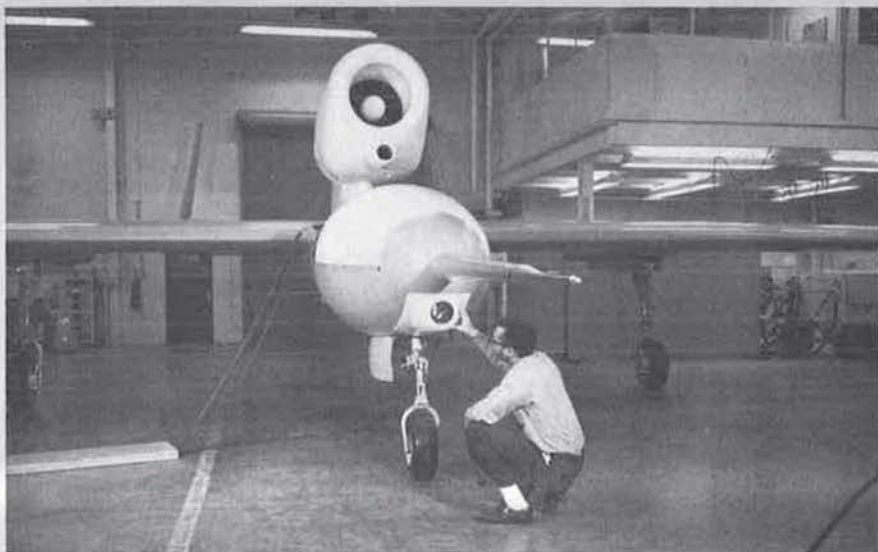
Under the Compass Cope programme, sponsored by the USAF (Aeronautical Systems Division) and the National Security Agency, prototype RPVs have been built by Teledyne Ryan and Boeing Aerospace, for competitive evaluation in a fly-off competition beginning in the Spring of 1973.

The primary purpose of the winning RPV will be that of signal intelligence collection. The Compass Cope winner has been designated by the USAF for its Pave Nickel programme to monitor radar emissions along the western borders of the German Democratic Republic. Another typical application which has been quoted is that of patrolling areas of the Arctic Ocean to monitor firings from the northern missile test sites of the USSR, a task carried out at present by Boeing RC-135 manned aircraft flying from Elmendorf AFB, Alaska. The US Navy has also expressed interest in the Compass Cope vehicle for an ocean surveillance rôle, including possible operation from aircraft carriers.

Unlike most RPVs to date, which are air- or ground-launched and are recovered by the "air snatch" mid-air retrieval system (MARS), the Compass Cope vehicles are designed to take off and land using conventional runway techniques. Each of the competing designs is powered initially by a single engine: a decision on whether to adopt a single- or twin-engined configuration for production aircraft will be taken after analysis of the fly-off competition results.

Boeing Aerospace design studies for a vehicle of this type began in September 1970, and a prototype contract was awarded by the USAF on 15 July 1971. Two YQM-94A prototypes have been built, of which the first was rolled out on 30 November 1972. Prior to this, the remote control operating systems for the RPV were flight tested in a Cessna 172 light aircraft.

The first YQM-94A prototype was delivered to the USAF in February 1973, and was due to be followed in March by the second prototype. Flight evaluation by the 6510th Test Squadron of the USAF at Edwards AFB, California, was scheduled to begin in April 1973.



Boeing YQM-94A Compass Cope B RPV (General Electric J97-GE-100 turbojet engine)

TYPE: High-altitude long-endurance strategic RPV.

WINGS: Cantilever shoulder-wing monoplane. Constant-chord centre section, slight sweepback on outer wing leading-edges. Aluminium skin, with bonded glass-fibre honeycomb core. Airbrakes and ailerons on each trailing-edge; no trailing-edge flaps or leading-edge lift devices.

FUSELAGE: Glassfibre honeycomb semi-monocoque structure of basically circular section, tapering towards rear.

TAIL UNIT: Cantilever unit, of similar construction to wings. Tailplane indexed in line with wings. Twin endplate fins and rudders, the former having small fore-and-aft pointed fairings at the base. Full-span elevator, with tabs.

LANDING GEAR: Retractable tricycle type, basically that of an Aero Commander, with single wheel on each unit. All units retract rearward, the main units into cylindrical fairings which project aft of the wing trailing-edges.

POWER PLANT: Prototypes each fitted with

one General Electric J97-GE-100 non-afterburning turbojet engine, rated at 5,270 lb (2,390 kg) st, installed in a pylon-mounted pod above the fuselage, in line with the wings. Alternative power plants under consideration for subsequent examples include one Garrett AiResearch XF104-GA-100 (ATF 3) turbofan (4,050 lb; 1,837 kg st), Garrett AiResearch TFE 731 turbofan (3,500 lb; 1,587 kg st), or Teledyne CAE J100-CA-100 turbojet (2,700 lb; 1,225 kg st); or two Pratt & Whitney (UACL) JT15D-4 turbofans (each 2,310 lb; 1,048 kg st). Fuel is contained in integral tanks occupying the full span of the wings. Provision for restarting engine in flight.

GUIDANCE, CONTROL, AND RECOVERY SYSTEMS: Avionics module, located in lower half of fuselage forward of wings, is removable as a complete unit. On-board instrumentation, developed by Sperry Flight Systems Division and Univac Division of Sperry Rand, includes an integrated flight control system, with

internally-generated ILS; a redundant stabilisation system; and an APW-26 airborne transceiver and other data link equipment. A TV camera is mounted in the under-nose fairing. Ground control of the RPV is exercised via a command module which embodies standard cockpit instrumentation, TV screen, and navigation display; data link equipment which includes a microwave command digital guidance system; a wide-band microwave data transmission system, to permit the return of video signals; and a TPW-2A X-band radar van.

OPERATIONAL EQUIPMENT: Apart from the nose-mounted TV camera, details of other operational equipment are classified. All sensors and antennae are housed in the lower half of the fuselage, the payload module being located just forward of the avionics module.

DIMENSIONS, EXTERNAL:

Wing span	90 ft 0 in (27.43 m)
Wing aspect ratio	16.7
Length overall (excluding nose probe)	42 ft 0 in (12.80 m)
Wheel track	21 ft 0 in (6.40 m)

WEIGHTS:

Payload for 24 hr mission	700 lb (317.5 kg)
Max T-O weight	approx 13,000 lb (5,897 kg)

PERFORMANCE (at max T-O weight):

Cruising speed at altitudes from 50,000 to 70,000 ft (15,240 to 21,340 m)	Mach 0.5 to 0.6
Max endurance	30 hr

FAIRCHILD

FAIRCHILD INDUSTRIES, INC; Executive Office: Germantown, Maryland 20767, USA

Fairchild Space and Electronics Company, one of the divisions of Fairchild Industries, has been actively engaged in remotely piloted vehicle (RPV) development since 1968. It has concentrated on the design, construction, and testing of low-cost RPV systems in the low subsonic speed range, by adopting as the key feature of its projects the Sailingwing type of folding wing developed at Princeton University under the sponsorship of Fairchild Industries.

FAIRCHILD SAILWING RPV

The Sailingwing RPV embodies a specially-shaped fabric wing attached to a rigid wing leading-edge. The wing is wire-braced, and can be folded back alongside the fuselage to facilitate transport, handling, and storage on the ground. Manned and unmanned flight tests, and wind tunnel testing by NASA, have proved that it is equal aerodynamically to conventional rigid wings. In particular it offers excellent immunity from stalling, combined with exceptionally low wing weight.

Fairchild's development programmes have utilised an engineering RPV model with a wing span of nearly 15 ft. As can be seen in the illustrations on the next page, the basic fuselage structure comprises a flat-sided metal box beam, with a streamline fairing on each side at the front to enclose the controls, equipment, and 50 lb (23 kg) payload. The tail unit is conventional, with wire-braced fixed surfaces, and movable rudder and horn-balanced elevators.

A tricycle landing gear, with shock-absorbers built into the main-wheel legs, is shown in an accompanying photograph (p. 46). Tests have been conducted also with a lighter, jettisonable gear, utilising tiny main wheels carried on rearward-swept cantilever legs attached to the fuselage undersurface.

Boeing YQM-94A strategic RPV, built under the USAF's Compass Cope programme





Fairchild Sailwing RPV (13 hp McCulloch engine) with tricycle landing gear attached

When fitted with this type of gear for take-off, the RPV touches down on a small under-belly shoe and tail bumper, with the wingtips protected by wire skids, as shown in the three-view drawing.

An off-the-shelf 13 hp McCulloch reciprocating engine, driving a two-blade fixed-pitch wooden pusher propeller, has been used to power the engineering model. Command, autopilot, and telemetry down link systems have been developed. Typical testing involved low-altitude flights of several hours' duration.

Considerable effort has been devoted to investigating methods of launching and recovering RPVs, and a unique recovery system has been evolved. This was tested initially by launching a dummy RPV into it. In phase two an engineering model drone was launched pneumatically and directed through a simulated recovery net. Current experiments involve making live RPV landings in the recovery system. Future development by Fairchild will concentrate on perfecting an automatic landing system.

DIMENSIONS, EXTERNAL:

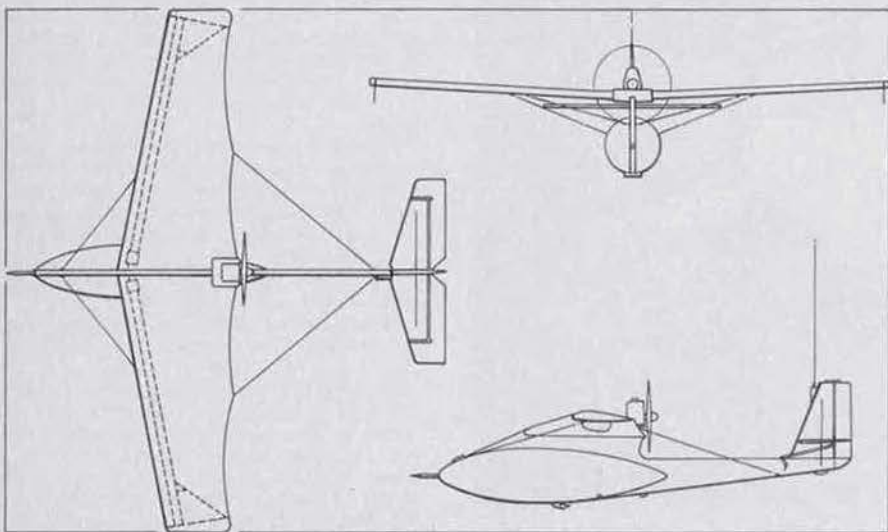
Wing span	14 ft 8½ in (4.48 m)
Wing chord at root	3 ft 4½ in (1.03 m)
Wing chord at tip	1 ft 8½ in (0.52 m)
Sweepback on wing leading-edge	11°
Wing dihedral	3°
Length overall, incl nose probe	12 ft 8½ in (3.87 m)



Fairchild Sailwing RPV fitted with lightweight jettisonable landing gear and with wings folded

Length, excl nose probe	11 ft 10¾ in (3.63 m)
Height, bottom of fuselage to top of propeller disc	3 ft 6 in (1.07 m)
Tailplane span	5 ft 4¾ in (1.65 m)
Fuselage diameter	1 ft 6 in (0.46 m)
Propeller diameter	2 ft 2 in (0.66 m)
AREA:	
Wings, gross	33.7 sq ft (3.13 m²)
WEIGHT:	
Max T-O weight	250 lb (113 kg)

Fairchild Sailwing RPV in operational configuration (William Hobson)



CSIR
COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (Aeronautics Research Unit, National Mechanical Engineering Research Institute); Address: PO Box 395, Pretoria, South Africa

Initially, the CSIR concentrated on the spin-off from aeronautical research. This work led to the establishment in 1952 of a small aerodynamics division, within a research unit which has since become the National Mechanical Engineering Research Institute. By 1960 the division had become involved in various operational and other aeronautical projects, and was re-formed as an aeronautics division to provide research assistance when needed by the emerging South African aircraft manufacturing industry. This division grew into what is now the Aeronautics Research Unit, established in 1968.

Facilities at the ARU include supersonic and low-speed wind tunnels, a computer-controlled data handling system (capacity 20,000 bits/sec), a colour Schlieren system, and a data recording system for free-flying models.

Current ARU activities include research into high-lift devices, lifting rotors, airframe fatigue, manufacture of aircraft canopies, separation of underwing stores, aircraft and missile stability, atmospheric turbulence, and aircraft and aero-engine noise problems.

The ARU has also designed and is developing a two-seat experimental autogyro, which flew for the first time in late 1972.

CSIR EXPERIMENTAL AUTOGYRO II

The CSIR (ARU) autogyro was designed to have a minimum level flight speed of 23.5 knots (27 mph; 43 km/h), a maximum level speed of 86 knots (99 mph; 160 km/h), a rate of climb of 905 ft (276 m)/min, and an endurance of 3 hr. The design was started in March 1965, and construction of a prototype began in April 1967. This aircraft (ZS-UGL), after tethered tests from a lorry platform, made its first free flight at Swartkop air force base, near Pretoria, on 30 November 1972, piloted by Capt J. H. Rautenbach.

As a result of initial flight trials various modifications were subsequently made, and the description which follows applies to the aircraft as it was in late February 1973: TYPE: Two-seat experimental autogyro.

ROTOR SYSTEM: Single two-blade teetering rotor. Blades, which are of constant chord and NACA 8-H-12 section, each consist of a light alloy extruded spar and a foam-filled, light-alloy-skinned rear section; each is attached to the hub by a single teeter hinge. Metal trim tab on



CSIR Experimental Autogyro II (180 hp Lycoming O-360-A engine)



Two-seat experimental autogyro built by the South African Council for Scientific and Industrial Research

each trailing-edge, near tip. No rotor brake.

ROTOR DRIVE: For rotor spin-up only, the aircraft has a belt/clutch power take-off, connected to a dog clutch on the rotor by steel-tube shafting via a two-stage 90° gearbox. Rotor/engine rpm ratio 1:10.

FUSELAGE: Box-type structure of light alloy construction, with fairings of glassfibre-reinforced plastics.

TAIL UNIT: Twin fins and rudders, bridged by a fixed-incidence tailplane and supported on twin strut-braced tailbooms. All tail surfaces of light alloy stressed-skin construction. Full-span trim tab on tailplane.

LANDING GEAR: Non-retractable tricycle type. Shock-absorption by bungee rubber bands and nosewheel oleo leg. Nosewheel steerable and self-centering. Small skid beneath each fin.

POWER PLANT: One 180 hp Lycoming O-360-A four-cylinder horizontally-opposed air-cooled engine, driving a Hartzell two-blade constant-speed pusher propeller. Power take-off for rotor spin-up. Rubber bag-type fuel tank in fuselage, capacity 30 Imp gallons (136 litres). Refuelling point on top of fuselage. Oil capacity 2 Imp gallons (9 litres).

ACCOMMODATION: Crew of two, with dual controls, on side-by-side seats in extensively-glazed cabin. Forward-opening door, with glazed panels, on each side. Two spaces for baggage above and behind seats. Cabin is not heated, ventilated, or air-conditioned.

SYSTEMS AND EQUIPMENT: 12V battery and radio equipment fitted.

DIMENSIONS, EXTERNAL:

Rotor diameter	36 ft 6¼ in (11.13 m)
Rotor blade chord (constant, each)	1 ft 0¼ in (0.31 m)
Propeller diameter	6 ft 0 in (1.83 m)
Length of fuselage	15 ft 3 in (4.65 m)
Width of fuselage	3 ft 11¼ in (1.20 m)
Height to top of rotor hub	9 ft 2¼ in (2.80 m)
Wheel track	8 ft 0½ in (2.45 m)
Wheelbase	6 ft 6¼ in (2.00 m)
Cabin doors (each):	
Max height	3 ft 1½ in (0.95 m)
Max width	3 ft 1½ in (0.95 m)
Height to sill	2 ft 7½ in (0.80 m)

DIMENSIONS, INTERNAL:

Cabin:	
Max width	3 ft 10½ in (1.18 m)
Max height	3 ft 3¼ in (1.00 m)

AREAS:

Rotor disc	1,046.25 sq ft (97.20 m ²)
Rotor blades (each)	17.98 sq ft (1.67 m ²)
Fins (total)	13.99 sq ft (1.30 m ²)

Rudders (total)	6.46 sq ft (0.60 m ²)
Tailplane	12.38 sq ft (1.15 m ²)
*WEIGHT:	
Max T-O weight	1,851 lb (840 kg)
*PERFORMANCE (estimated, at max T-O weight):	
Max level speed	83 knots (95.5 mph; 154 km/h)
Max permissible diving speed	104 knots (119 mph; 193 km/h)
Normal cruising speed	74.5 knots (85.5 mph; 138 km/h)
Econ cruising speed	66 knots (75.5 mph; 122 km/h)
Min level flight speed	26 knots (30 mph; 48 km/h)
Max rate of climb at S/L	800 ft (244 m)/min
Service ceiling	14,000 ft (4,267 m)
Min landing area	circle of 98 ft 6 in (30 m) diameter
T-O run	200 ft (61 m)
T-O to 50 ft (15 m)	550 ft (168 m)
Landing from 50 ft (15 m)	250 ft (76 m)
Landing run	30 ft (9 m)

*Up to late February 1973 the aircraft was considered overweight, and final weights, loadings, and performance figures could not therefore be given at that time.

ROBIN

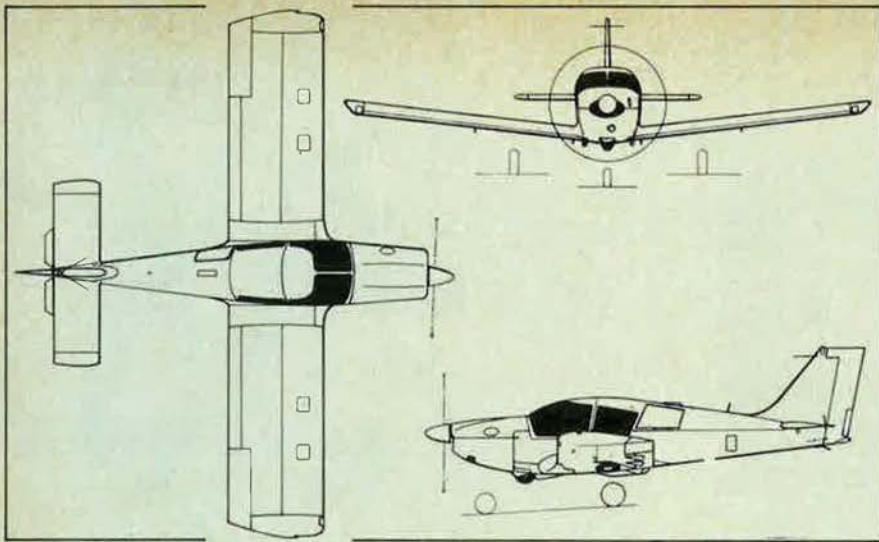
AVIONS PIERRE ROBIN (CENTRE EST AERONAUTIQUE); Head Office: Aérodrome Dijon-Darois, BP 38, 21000—Dijon Cedex, France

During 1973 Avions Pierre Robin is manufacturing six types of wooden light aircraft, all of which represent highly-refined developments of the company's well-known Jodel series and were first flown in prototype form in 1972. They are the 2/4-seat DR 400/2+2, 3/4-seat DR 400/125 Petit Prince, 4-seat DR 400/140 Major and DR 400/160 Chevalier, 4/5-seat DR 400/180 Régent, and DR 400/180R Remorqueur glider-tug which can also be flown as a four-seat tourist.

First of the company's new generation of all-metal light aircraft to enter production was the HR 100/200 Royale. It has been superseded by the more powerful HR 100/210F (F: fixed landing gear) which is being built at a current rate of two per week. The similar but smaller two-seat HR 200 Club and HR 200 Acrobin are also in production. They will be supplemented in July by the HR 100/Tiara, representing a further major stage of development in that it is the first Robin (Centre Est) aircraft

First Robin aircraft with retractable landing gear, the HR 100/Tiara prototype, unpainted before its first flight





Robin HR 100/Tiara four/five-seat all-metal light aircraft (Roy J. Grainge)

with a retractable landing gear. The current production series will be completed later this year by the HR 100/210R, also with retractable landing gear.

Under development are two entirely new six-seat single- and twin-engined aircraft, powered by 320 hp Teledyne Continental Tiara engines.

ROBIN (CENTRE EST) HR 100/TIARA

This was the first Robin light aircraft to be built with a retractable landing gear. Design began in September 1971 as a further major development stage beyond the HR 100/200, with new vertical tail surfaces, a redesigned wing structure, and a Teledyne Continental Tiara engine. Construction of the prototype (F-WSOV) was started in April 1972 and the first flight was made on 18 November 1972. Certification is expected in July, and the HR 100/Tiara will then enter production.

TYPE: Four/five-seat all-metal light aircraft.
WINGS: Cantilever low-wing monoplane. Wing section NACA 64A515 (modified). Dihedral 6° 18' from roots. Incidence 4° 41'. No sweepback. Aluminium alloy single-spar structure of constant chord. All-metal Frise-type ailerons and NACA slotted flaps. No tabs.

FUSELAGE: Aluminium alloy semi-monocoque structure in cabin section. Rear fuselage top decking and engine cowling are of non-stressed polyester.

TAIL UNIT: Cantilever structure, similar to wings in construction. Sweptback vertical surfaces. One-piece all-moving horizontal surfaces, with automatic anti-tab inboard on each trailing-edge. Trim tab in rudder.

LANDING GEAR: Retractable tricycle type, with single wheel on each unit. Electro-hydraulic retraction. Nosewheel protrudes slightly when retracted, to reduce damage in a wheels-up landing. Oleo-pneumatic shock-absorbers. Main-wheel tyres size 420-150 or 6.50-3, pressure 31.5 lb/sq in (2.2 kg/cm²). Nosewheel tyre size 330-130 or 5.00-5. Hydraulic disc brakes.

POWER PLANT: One 320 hp Teledyne Continental Tiara 6-320 six-cylinder horizontally-opposed air-cooled engine, driving a Hoffmann three-blade constant-speed metal propeller. Four fuel tanks in wings, each with capacity of 25 Imp gallons (113 litres). Total fuel capacity 100 Imp gallons (452 litres).

ACCOMMODATION: Two persons side-by-side in individual front seats. Rear bench seat for two or three passengers. Access via forward-sliding canopy. Baggage space

aft of rear seats, accessible internally or by upward-opening external door on port side.

ELECTRONICS AND EQUIPMENT: VHF radio, VOR, navigation and landing lights, and rotating anti-collision beacon at top of fin standard. Provision for installing full IFR equipment, including autopilot.

DIMENSIONS, EXTERNAL:

Wing span	29 ft 9½ in (9.08 m)
Wing chord (constant)	5 ft 6 in (1.675 m)
Wing aspect ratio	5.36
Length overall	24 ft 10¾ in (7.59 m)
Height overall	6 ft 8¼ in (2.04 m)
Tailplane span	10 ft 6 in (3.20 m)
Wheel track	10 ft 7 in (3.225 m)
Wheelbase	7 ft 1 in (2.16 m)
Propeller diameter	6 ft 6¾ in (2.00 m)
Propeller ground clearance	1 ft 1¼ in (0.34 m)

DIMENSIONS, INTERNAL:

Cabin: Length	9 ft 2 in (2.80 m)
Max width	3 ft 8 in (1.115 m)
Max height	3 ft 11¼ in (1.20 m)

AREAS:

Wings, gross	163.6 sq ft (15.2 m ²)
Ailerons (total)	10.98 sq ft (1.02 m ²)
Trailing-edge flaps (total)	16.68 sq ft (1.55 m ²)
Fin	10.93 sq ft (1.015 m ²)
Rudder, incl tab	7.21 sq ft (0.67 m ²)
Tailplane, incl tabs	29.71 sq ft (2.76 m ²)

WEIGHTS AND LOADINGS:

Weight empty	1,764 lb (800 kg)
Max T-O weight	3,086 lb (1,400 kg)
Max wing loading	18.86 lb/sq ft (92.1 kg/m ²)
Max power loading	9.65 lb/hp (4.38 kg/hp)

PERFORMANCE (at max T-O weight):

Max level speed at S/L	186 knots (214 mph; 345 km/h)
Max cruising speed at 7,000 ft (2,135 m)	172 knots (199 mph; 320 km/h)
Stalling speed, flaps down	59.5 knots (68.5 mph; 110 km/h)
Rate of climb at S/L	1,770 ft (540 m)/min
Service ceiling	over 19,700 ft (6,000 m)
T-O run	952 ft (290 m)
T-O to 50 ft (15 m)	1,772 ft (540 m)
Landing from 50 ft (15 m)	2,166 ft (660 m)
Landing run	1,150 ft (350 m)
Range with max fuel, three persons and 110 lb (50 kg) baggage	1,240 nm (1,430 miles; 2,300 km)
Range with four persons and 132 lb (60 kg) baggage	865 nm (994 miles; 1,600 km)

Robin DR 400/180 Régent, most powerful of the 400 series of wooden lightplanes, with a 180 hp Lycoming O-360-A engine



The all-metal HR 100/210F, with 210 hp Continental IO-360 engine and fixed landing gear



NEW LEGISLATIVE PROPOSAL

For two decades, all plans for simplifying the inconsistent and confusing officer promotion system have failed. Now, at last, changes are on the horizon in the proposed Defense Officer Personnel Management System with its new grade-ceiling tables. Although there are hurdles ahead, the services—USAF in particular—can look with some optimism to success in this latest attempt at . . .

REFORMING THE OFFICER PROMOTION SYSTEM

OVER the years, a few Pentagon authorities have insisted that a simplified officer promotion system was a realistic goal, one that could be attained.

How much better things would be, they have argued, if the confusing laws and policies that govern promotions were streamlined so that all persons concerned could understand them fully.

Instead of three separate Air Force promotion programs—one for Regular officers, one for Reserves, and the active-duty temporary promotion setup that is for all members of the commissioned force—a single program would emerge. It would apply equitably, regardless of an officer's component.

A promotion would be a promotion, not a paper exercise as is usually the case today with USAF Regular and Reserve permanent promotions. Hopefully, under the single system, all officers and their families as well could comprehend the details.

This is far from the case today. Try explaining a "hip-pocket" ROPA (Reserve Officers Promotion Act) promotion to most young officers, for instance. They'll think you are kidding.

A "hip-pocket" ROPA promotion is the almost unbelievable arrangement under which an active-duty Reserve is "promoted" to a permanent Reservist (ROPA) grade higher than his active-duty grade. However, he is prohibited from assuming the higher rank or receiving the higher pay until he retires. Regulars, on the other hand, immediately receive the new rank

and pay when promoted permanently above their active-duty rank. Such inequities presumably would disappear under revamped promotion plans.

Similarly, try explaining to officers' wives the tie-in between permanent promotions and tenure, why Regulars can sustain more passovers than Reserves, the "30-and-5" and the "35-and-5" rules, and so on. Few wives have a handle on any of this, because the long-existing rules are so complex. And needlessly so.

Yet, despite some overtures toward reform during the past twenty years, the promotion system has not been changed or simplified. The same statutes constituting the base of the trouble remain on the books; some haven't been adjusted since their creation twenty-six years ago.

The services, until recently, have appeared to be resigned to operating indefinitely under the existing system. But changes are on the horizon; the Pentagon is taking a new approach. The Defense Department and the services, prodded by Congress, have been hard at work since late last year hammering out an exciting new legislative proposal.

DoD's Legislative Proposal

The DoD proposal provides for a single officer promotion system. Permanent rank would be abolished, and a promotion would always be a promotion. Dozens of permanent boards among the services would dissolve; man-

By Ed Gates
CONTRIBUTING EDITOR,
AIR FORCE MAGAZINE

power required to administer the array of unnecessary panels would be curtailed; and record keeping and associated paper work would be slashed.

There's more. The new project, called Defense Officer Personnel Management System, or DOPMS, would:

- Reshape the entire officer force so that all persons chosen to stay aboard beyond their eleventh year of service would hold Regular commissions. The sole exceptions would be certain Reserves, popularly known as "section" officers, assigned to administer Reserve programs.

- Eliminate the absolute tenure guarantees that Regular officers alone have enjoyed. Maximum service at twenty-six years, rather than the present twenty-eight, would be established for lieutenant colonels; the existing thirty-year ceiling would continue for colonels. However, for both grades, special boards would tap certain individuals—those deemed not to be pulling their weight—for retirement before the twenty-six- and thirty-year points.

- Provide, during the transition period to the new system, a cash bonus for those officers forced to retire early. (Precedent for this is the now-defunct Navy/Marine Corps "hump" bill, under which those services a decade ago retired early hundreds of field graders, giving each a \$2,000 bonus.)

- Provide a continuation bonus, perhaps up to \$5,000, to induce critically needed officers to remain in uniform.

- Open avenues to make major changes in ROPA provisions. ROPA, in effect, would become primarily an instrument to govern non-active-duty Reserve officer promotions and attrition.

Most importantly, the Pentagon's package contains new officer-grade ceiling tables. However, it is expected that promotion phase points will remain pretty much the same as at present (see chart, p. 52).

It's a big order, this new DOPMS package. Yet, some Pentagon authorities express confidence Congress will go along with it. That, of course, is an iffy assumption, when one recalls the services' long, dismal history of grade-ceiling woes.

The OGLA Ogre

Twenty years ago, Congress became concerned at the absence of specific congressional control over temporary officer promotions, so the lawmakers created the Officer Grade Limi-

tation Act (OGLA). It established a numerical ceiling, through a sliding-scale arrangement, on the number of officers each service could keep on active duty in the grades of O-4 and above.

OGLA provides that, as a service's total commissioned force rises, the proportion of officers in each field and star grade will decrease. And, in reverse, as total officer strength



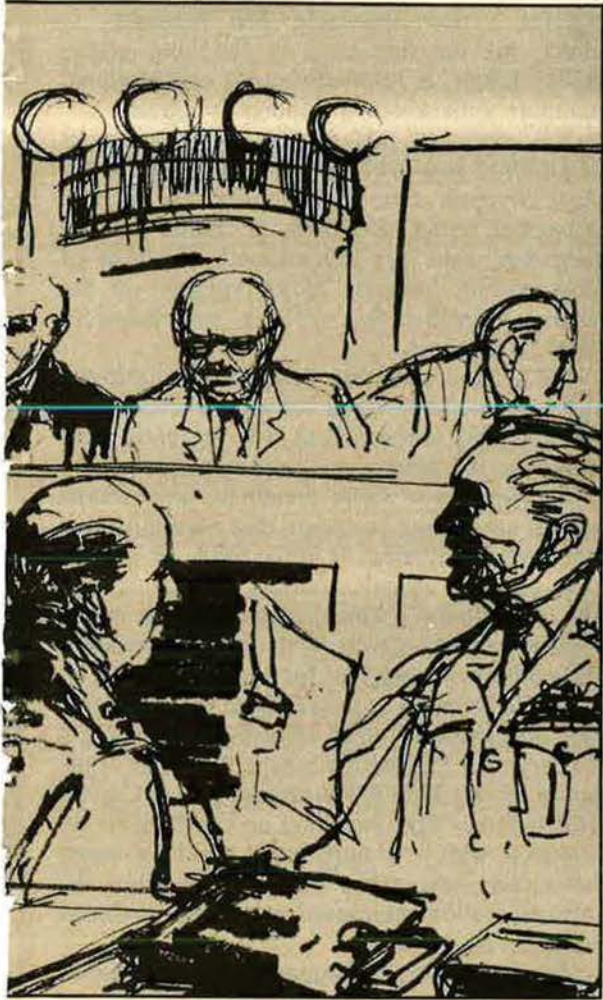
drops, the proportion of senior officers should increase. In other words, according to the rationale, a numerically small service requires a sizable senior officer structure, to facilitate rapid expansion of the total force in time of emergency.

One difficulty with OGLA, however, has been that in writing the legislation the House Armed Services Committee gave Army and Navy more generous grade ceilings than the Air Force.

The Committee held that the Air Force, being much younger than the other services, needed fewer O-5 and above billets because fewer of its officers had sufficient time to be nearing promotion to those grades.

Before long, though, Air Force had promoted close to its OGLA-approved grade ceilings. So USAF requested relief in the form of more liberal grade ceilings, which were approved.

But the grade-relief issue has plagued Air Force personnel planners, to say nothing of the entire USAF officer force, ever since. Con-



gress, time after time since OGLA became law, has declined to give Air Force permanent grade tables. The legislators on six separate occasions have granted only temporary relief, each time requiring Air Force to return a few years later.

This is one way the lawmakers maintain a measure of control over officer promotions. Another is the Senate's insistence on confirming (or rejecting) scores of promotion and appointment lists, many of little consequence.

The worst feature of Congress' rejection of permanent OGLA relief, however, is the way it has dragged its feet on each Pentagon extension request. Congress has generally delayed eventual approval of some form of temporary relief until the last possible moment before the

existing promotion authority expired or pending promotion lists were frozen.

Last fall was typical. The six-year period of temporary OGLA relief that Congress had approved in 1966 had actually expired, though Air Force had formally asked for an extension many months earlier. The Pentagon was desperately pushing for a relief measure; without it, the then-pending FY '73 temporary selection lists would be suspended. Wholesale RIFs and demotions were only an eyelash away.

Without relief last fall, turmoil and chaos throughout Air Force's officer corps seemed a virtual certainty.

The doom mounted when Sen. William Proxmire (D-Wis.) accelerated his attacks on service promotion policies. He particularly hit the services' so-called "grade creep," a term he copied from an earlier attack on military promotions by Rep. Otis Pike (D-N. Y.).

Senator Proxmire vowed to fight "to the end" the then-pending House-passed OGLA relief measure, which carried four more years of temporary relief authority, unless the Senate cut the extension to one year. The persistent anti-military solon also demanded that the Defense Department whip up, within six months, a proposed legislative solution to the officer-grade ceiling problem. He insisted that the Pentagon hammer out a uniform promotion and management program for all the services.

After a tense two weeks, in which RIF and demotion talk escalated, Senator Proxmire's demands were finally compromised. Temporary grade relief was extended through September 1974. And the Pentagon was ordered to send Congress, by late spring 1973, a legislative proposal revamping the grade structure and providing other new reforms.

This is the package slated to eliminate the cumbersome permanent promotion machinery, substitute the single promotion system for the many-pronged present one, initiate reforms in the treatment of non-Regulars, establish the all-Regular officer corps from the twelfth-year group on, and authorize the continuation and separation payments cited above.

All this comprises the aforementioned DOPMS.

Hurdles Ahead

Prior to the Proxmire explosion last fall, the Pentagon had been studying officer management reforms, though notable progress was not evident. But the donnybrook in the Senate last October prompted Defense and the services to accelerate their effort. After all, the late spring 1973 deadline for submitting new legislation was not far away.

Hopeful on DOPMS Deadline

At presstime, an all-service team under USAF Col. R. W. Hagauer was working feverishly to meet the congressionally imposed end of May deadline for sending the DOPMS plan to the Armed Services Committees. But many hurdles remained to be cleared in the intricate interservice project, including the all-important White House budget office. Pentagon officials were "hopeful" the deadline would be met. DOPMS would revamp basic officer promotions statutes, and establish permanent, standardized grade tables.

Promotion Comparison by Service

To Grade	Promotion Opportunity (% Selected)			Promotion Service Point (By Yr. of Svc.)		
	Army	Navy	USAF	Army	Navy	USAF
FY '66						
O-6	49	44	45	22	21	22
O-5	88	75	75	16	15	17-18
O-4	93	90	85	9	8	12-13
FY '73						
O-6	48	60	50	21	20-21	21
O-5	80	70	75	15	15	17
O-4	79	75	90	9-10	9	11

Air Force officers over the years generally have trailed their Army and Navy counterparts in promotion opportunity and in the timing of their advancements, though slight improvement has occurred recently, as this new chart reveals. A big reason for the traditional lag, of course, is that Air Force enjoys considerably higher retention. Less turnover curbs promotions. Under the permanent grade-ceiling tables USAF seeks via DOPMS, the existing promotion opportunity and promotion service points are expected to prevail. USAF, meantime, is stretching the phase points for making first lieutenant and captain from eighteen months to two years in each case.

Estimated Officer Strengths

(June 30, 1973)

	O-6	O-5	O-4	Total
Army	5,393	12,224	18,847	101,921
Navy	4,089	8,384	15,422	70,750
Air Force	6,128	14,336	22,152	115,122

Without the grade relief that exists under temporary legislation, Air Force would be allowed about 1,000 fewer colonels and some 4,500 fewer lieutenant colonels than are presently onboard. Thus, should temporary relief authority, which expires September 30, 1974, not be extended, new promotions would cease, and RIFs and demotions would take place. This is the threat USAF has endured every few years under the temporary extensions of OGLA. It explains why permanent grade relief, which would permit sound, long-range career planning, eliminate demotion and RIF possibilities, and simplify the promotion system generally, is considered urgent.

Air Force, of course, is pushing hard for permanent grade tables in the DOPMS package. Though they've been rebuffed many times before, USAF personnel officials are optimistic that this time permanent—not temporary—grade tables will receive congressional blessing.

These officials note that Congress, as a result of the Proxmire arm-twisting, is itself calling for a new approach. The Pentagon, in effect, for the first time in the long grade-ceiling hassle, is responding to a congressional mandate with which it apparently agrees.

Yet, does all this signify early enactment of DOPMS into law? Not by a long shot, in the view of some close observers of the military personnel scene. DOPMS, it should not be forgotten, calls for a mammoth overhaul of long-existing policies. Major surgery on the Officer Personnel Act (OPA), established in 1947, is required.

OPA for twenty-six years has constituted the legal underpinnings for career-officer promotions and attrition, and it is the basic legal authority for temporary promotions.

In some ways, OPA seemingly has become almost sacrosanct, a factor that normally does not invite tampering. It is the OPA, of course, that provides Regular officers the tenure and the "sanctuary" which, according to many officials and observers, permits numerous senior officers to vegetate for too many years.

While DOPMS as now drafted would correct this and institute other reforms, it should not be forgotten that omnibus-type personnel legislation of this kind has been ignored on Capitol Hill before. "Too sweeping an overhaul to get involved with," is apparently the view many lawmakers have taken in past years when the Administration sponsored wholesale revisions in officer statutes.

The old Bolté plan—named for Gen. Charles L. Bolté, USA (Ret.), who chaired a high-level interservice committee set up to study manning, promotion, and retirement—would have modernized and standardized the officer personnel laws of all the military services. The much-needed Bolté reforms simmered in the Pentagon for several years during the early 1960s while Defense and service officials spent tens of thousands of man-hours shaping up the details. Yet Bolté never even got to the congressional committee hearing stage, and the Pentagon dropped the project completely in 1966. The standardization Bolté would have provided is still missing.

A year or two later, to cite another example of congressional reluctance to revamp personnel laws, the Pentagon launched a monumental effort, headed by Navy Rear Adm. Lester E. Hubbell, to simplify the military-pay rules. The

hodgepodge of pay and allowances, which plagues finance clerks and confuses the troops and the public, was to be consolidated and put into understandable form. Many servicemen, the Pentagon contended, had no idea what their "salary" amounted to. This was to be corrected.

This effort was the so-called Hubbell study, which, like the Bolté project, dragged on and on. Hundreds of service officials participated in drawing up corrective legislation, but when Congress yawned over the prospect of tackling a large package of changes, Defense gave up and buried it.

Military pay and allowances remain as confusing as ever.

Congress, in short, has shown no disposition to take on Pentagon-drafted programs to revamp personnel statutes on a grand scale. And it will be interesting to see how the lawmakers react to still another personnel law revision proposal—the one to revise the military retirement system. Defense, of course, has been booming it within the services as a prelude to selling it to Congress.

Forecast: Cautious Optimism

The climate could be changing, however. The lawmakers' own demand for the DOPMS package could mean that Congress will act on it soon.

Still, one shouldn't bet on it. While Armed Services Committee hearings on DOPMS could be conducted this year, it seems unlikely that both the House and Senate will have taken up the package before 1974.

Some quarters believe it will take quite a

shove on Congress' part to move DOPMS or a reasonable facsimile thereof into completed legislation by September 30, 1974, the date the current temporary grade-ceiling authority expires.

Air Force sorely needs a program like the one provided in DOPMS, particularly the permanent grade tables and the promotion law reforms. It is only through permanent tables that Air Force can properly execute a long-range personnel plan that would give officers a clear picture of what they can expect over the years.

Otherwise, if the summer of 1974 rolls around and the Pentagon and Congress still have not gotten together on these issues, the trauma USAF has experienced six times in the past two decades surely will resurface. Promotions will be frozen. The specter of RIFs and demotions will reappear.

Air Force naturally will have contingency legislation, such as another temporary grade-relief plan, waiting in the wings should Congress again reject permanent grade relief. After all, temporary promotion authority is far better than none at all.

Meanwhile, the time to iron out any differences in the DOPMS plan is now. To snuff out any chance of still more turmoil in the Air Force officer corps, the new permanent grade tables accompanied by promotion reforms need to be approved by both the Administration and Congress well before the September 1974 deadline arrives.

Officers shouldn't have to wait any longer than that to enjoy a simplified promotion system that is already years overdue. ■

PLENTY OF AIR

After acquiring my navigator's wings, I chose bombardier training to obtain a dual rating and the chance to fly in B-29s. Such was not my fate, for I found myself a Bombardier Instructor at Deming Army Air Field in New Mexico.

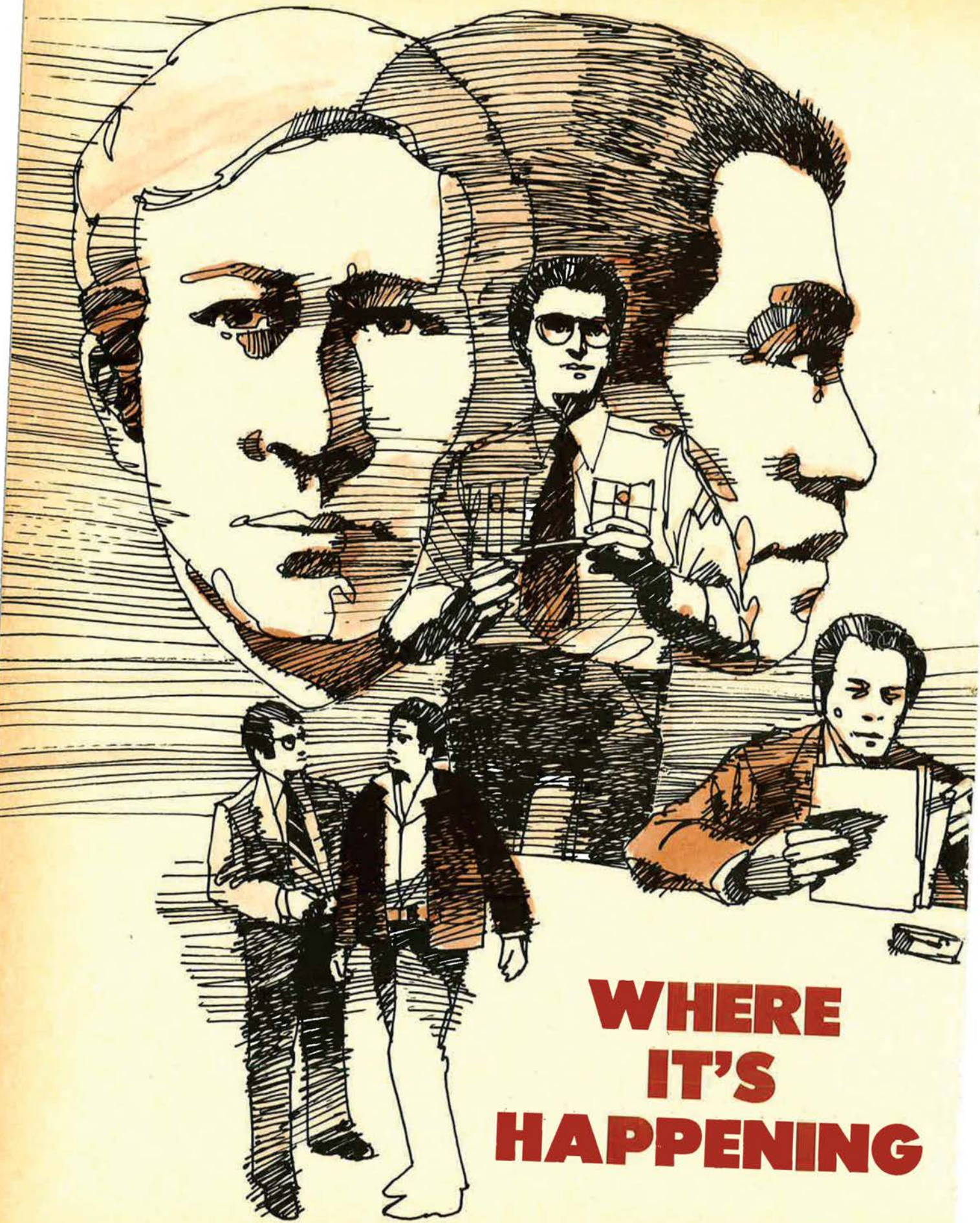
Due to the 4,300-foot elevation of the field, it was SOP on night training missions to wear oxygen masks once we left the traffic pattern on takeoff. During our climb to bombing altitude, it was customary for two cadets to be up front adjusting the bombsight while a third was in the rear preparing to take pictures of the bomb flashes on impact. On this particular night mission, I was surprised to discover that the cadet in the rear hadn't yet put on his oxygen mask after the two others had departed for the nose. I reminded him of the regulations.

Once we were at bombing altitude, I checked all the cadets again to make sure everything was in order, but did a "double-take" when I looked to the rear and discovered a bare-faced cadet sitting with camera in hand. Needless to say, the intercom was filled with several well-chosen words to impress upon him that he was still not following instructions.

"But, Sir," he replied, "I've got the camera hatch open, and I'm getting plenty of air."

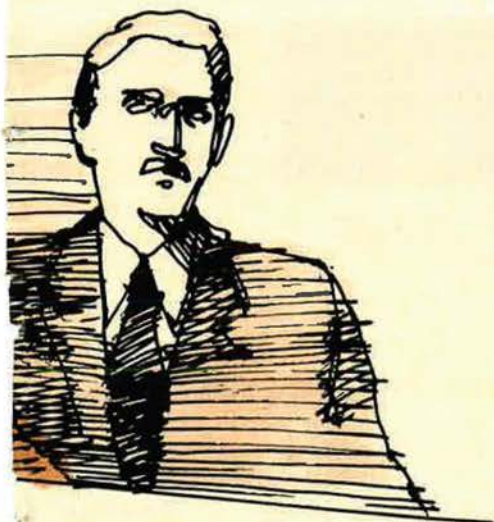
—CONTRIBUTED BY ROBERT H. LAMB

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



**WHERE
IT'S
HAPPENING**

The armed forces—belatedly, some say, but clearly ahead of other complex institutions in American society—are changing their attitudes about race. AIR FORCE Magazine presents an inside look at what's going on at DoD's Race Relations institute at Patrick AFB, Fla....



By Maj. Robert W. Hunter, USAF

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

I'VE GOT knowledge and some techniques to help me teach, but I wonder if I have the right 'soul.'"

The words are those of a student approaching graduation from the Defense Race Relations Institute (DRRI) at Patrick AFB, Fla.

I recently visited DRRI, talked with faculty, staff, and students, participated in classes, and rapped in the barracks in the evenings.

More than anxiety, the opening statement above represents a newly developed sensitivity so typical of all the students I met who were about to return to their home bases and take on the job of conducting the eighteen hours of race relations training now required for all members of the armed forces.

From the moment I walked up to the distinctively styled entrance to the Institute, directed by Air Force Col. Russell S. Ryland, I knew I was in for a unique experience. The newly remodeled building itself and its interior done in bright oranges, yellows, and browns, testified to a new tone and direction with regard to human quality—sort of a physical representation of DoD's human goals.

I went there not expecting to be so totally caught up in the experience. As one who had studied race relations and taught college courses in group dynamics, I thought I pretty much knew where minorities "were coming from." I was wrong. Not because I'm white and over thirty. I was wrong like others were wrong; blacks, for example, who came thinking they had the corner on understanding minority problems because they had "been there." They found, as I did, that there is a lot to learn about what it might be like, for example, to be one of about four million military members over the years who had come from Appalachia: service members who may never have *seen* a black, nor had running water; whose dialect can be traced to Anglo-Saxon times, and is in reality a sort of Scottish-flavored Elizabethan English.

It took faculty members like Army Sgt. Robert F. Gregg to get it across. Sergeant Gregg is from West Virginia. He's a college graduate, a rarity in the mountain valley he left. He spoke with humor and warmth. There was pathos in his presentation when he told a group, "There's something secure about living between mountains. . . . I'm 'place-fixed.' It's hard to explain; kind of a physical presence. I get lonely when I'm away."

If there was something to learn about

"mountain folk," there also was something to learn about whites, Asian-Americans, La Raza, the Chicano, the Puertorriqueno, and the American Indian.

The school is getting it all together in such courses as "La Raza—Education, Family and Migrants"; "The Indian: Contemporary Thought"; "Asian-Americans—Contemporary Situations"; or courses in "Afro-American History" and "New White Consciousness."

ferences," where students were tuning in on the myths of racism. Everyone cherished some myth—the inherent intellectual inferiority of the black, the passivity of the Latino, irresponsibility of the Indian, the sexual superiority of black men.

RACE INSTITUTE BEGINNINGS

The origins of the Defense Race Relations Institute school go back to 1969 when an Inter-Service Task Force on Race Relations, chaired by then Air Force Col. Lucius Theus (now a brigadier general), was formed. In July 1970, the Theus Committee recommended a mandatory education program. That concept was tested in October by 100 armed forces personnel, and it was concluded that a mandatory program was essential and instructor personnel must be trained. An implementation committee went to work between November 1970 and January 1971 to develop concepts. They reported in February to Deputy Secretary of Defense David Packard, who approved the concept to be implemented under the direction of his Assistant Secretary for Manpower and Reserve Affairs. By June 1971, Mr. Packard issued his directive on the conduct of a DoD Race Relations Education Program and established DRRRI as the training agency for race relations instructors. The first class began in November 1971.



A marathon weekend in Miami's inner city hits students hard with the realities of poverty and neglect when they rap with minorities.

I had some stereotypes of my own before I got there, but I was wrong again.

There was no preponderance of young critics of the "system," or non-reg afro haircuts, and no militants—in the violent sense of the term. There were men and women who are militant, but militant in that they "give a damn" about what happens to people in the services; militant in the sense that they are holding DoD to its word about human goals and equal opportunity; militant in their dedication. I was surprised to see a Jesuit priest in the class, a chaplain, and really surprised when I heard that the son of a former governor of Alabama had volunteered to instruct in race relations.

Exploding Some Myths

My second day found me sitting in an early morning lecture on "Race and Individual Dif-

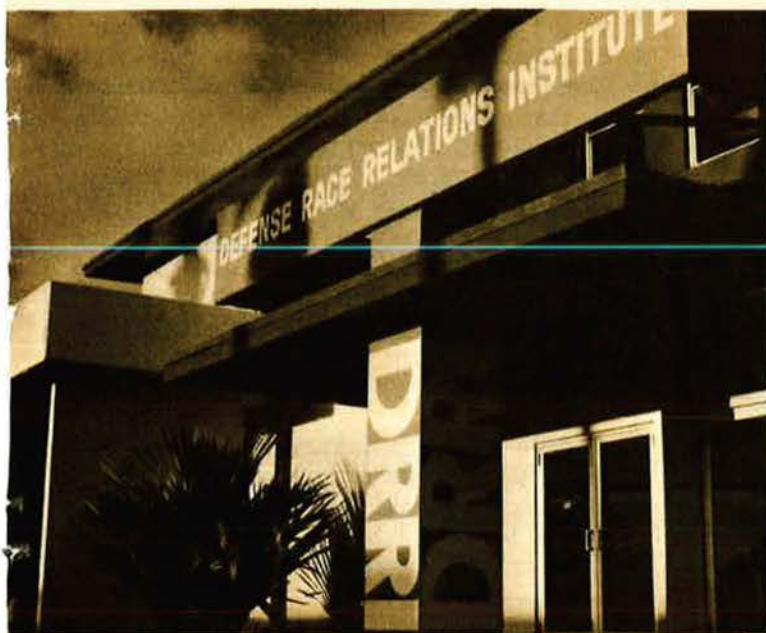
Perhaps the most startling method of bringing home the unconscious way in which people accept myths was when one instructor, in a casual discussion, elicited ready agreement that "women can't think logically . . . they're too emotional . . . women can't lead like men." As the discussion went along, in all good humor, the instructor subtly shifted gears and, almost imperceptibly at first, began to apply these same attributes to blacks as opposed to whites. Talk about a reaction from the blacks! Then, suddenly, the light began to dawn, and one by one those who had been so ready to subscribe to the innate inferiority of women got the point. It was a lesson that will not soon be forgotten.

Later that morning, I took part in a small group discussion concerning the myths of race. (Most instruction is done in small group seminars.) I was deeply moved by the obvious

honesty of the group, each one trying to achieve understanding for the others by sharing personal experiences and feelings. This particular discussion drifted into the topic of racial and interracial sex. It was a highly charged discussion with no holds barred. I asked why

that twenty-one percent indicated on entrance to DRRI that they did not know of DRRI and were *ordered* to come.

This frustrates the faculty and angers the serious students. "I get the idea that many commanders are simply looking for 'firemen,'



A newly designed building; a new approach to racial behavior. Both represent DoD's concern for a workable cure to racism.



Most instruction is done in small group seminars, with everyone actively involved. Feelings are not hidden in this environment.

they were getting so "heavy." One participant shot back an answer: "Because people are heavy, and when I leave here, I want to know 'where people are coming from.'"

I found no better method of bringing about understanding, empathy, awareness, or sensitivity than to get all the feelings out in the open. This group was doing just that.

Credibility Gaps: Policy and Actions

One overriding issue associated with race relations is the credibility gap many students believe exists between DoD policy pronouncements and the actions and feelings of commanders and supervisors on their bases, posts, and ships around the world. They see students at DRRI who did not volunteer to come, but were "hey-you volunteers." In fact, data on the class previous to the one I visited showed

guys who can come here, learn to speak 'racialese,' and go back to administer to those who are racially disturbed," one Air Force sergeant told me. "Commanders see this race education business as a gadfly—a fad that will pass," another offered. An Air Force computer specialist turned race relations instructor told me, "On my base the commander's okay, but the civilian employees, the senior NCOs, the middle managers—those are the roadblocks."

Most students felt that it takes more than lip service. "What it's going to take is the guts to come down hard on anybody who isn't with the program. Fire 'em, discipline 'em. Don't slap wrists! We've got to make this thing work before it's too late. A lot of people think that if there's no riot, everything's cool. That's naïve."

Whether this fear about command support

is real may be less important than the fact that they *perceive* it to be real.

They've heard words before. Now they want support from senior leaders. They look on DRRI as *one* concrete supporting action.

In fact, however, field support is improving. DoD and each of the services are demonstrating hard, visible actions to make the program a credible one. And, as each new class reports to DRRI, the credibility gap narrows. The students are beginning to see the results of actions and not just words. One might expect



Role playing, where the shoe is on the other foot, is an effective way to awaken sensitivity to problems and to foster the empathy so much needed by those who will teach in units around the world.

their perceptions of support to also change over time.

The question of status was on the minds of many staff members I spoke with. They see it as all important that graduates be accorded the same status as graduates of an Air University course—that their work be considered just as important to the Air Force mission.

Attacking Institutional Racism

As I talked, listened, and watched, I asked what is the toughest idea to get across. There was general agreement that it is the idea of “institutional racism.”

Institutional racism is more than overt discriminatory acts. It is also the inability to perceive how one's own views are a product of the way the majority has learned to deal with issues involving minorities.

I could grasp that. I saw it operative in the report by the Task Force on the Administration of Military Justice in the Armed Forces (see “*The Bulletin Board*,” February '73 issue). And I have seen it in the tendency of some to deny established facts about minority needs. However, I got a look at other examples when I visited a base-level race relations course, where I sat in on its twelfth hour of instruction.

One staff sergeant in the base's class told me, “I don't see where all of this will do any good. I don't have a problem. It's the blacks that have the problem. Besides, in the military, we got regulations to handle any problems.” In a base classroom discussion of the Kerner Commission Report (on urban riots), the riot at Travis AFB, Calif., also was brought up. The students were reluctant to admit that it was a racial incident. They wanted to relegate race to a subordinate role in that confrontation. The difference between their sensitivity and awareness and that of DRRI students—even the “hey-you volunteers”—was dramatic.

In spite of the awareness of the DRRI students in this their fourth week of seven, I learned that the real eye-opener awaited them. In what has become the high point of the curriculum, an intensive fifty-hour weekend was upcoming. Students would travel to Miami to see, taste, smell, and feel life in the inner city; in the barrios of the Cubano and Puerto-riqueno; the poverty of the migrant farm worker—the same kind of conditions so recently publicized on national television. In this grueling session the students would learn, I was told, just who's “ripping off” whom.

Even those who came from ghettos would see a side of life they most likely had not seen before. They'd rap with former servicemen who were prisoners in the Dade County Jail, and participate in a structured “game” called “Star Power,” in which the deck is stacked against minorities, regardless of the strategy used. All of this would tend to bring into practical focus the concepts they had studied.

After this inner-city experience, I was told, student participants usually lower their expectancies of how well people can “raise themselves by their bootstraps.” They often make more realistic appraisals of situations and are helped in understanding how difficult it is, after a history of neglect, to integrate groups into a complex organization like the military. It is an experience I would like to have shared.

The Armed Forces—A Unique Opportunity

One question I had thrown at me before going to DRRI was, “How can you in the military expect to change people's behavior

when they are a product of society at large?" Implied in that question was the belief that if discrimination exists in society, the armed forces are not going to get rid of it in their ranks.

My answer was that the armed forces are a *controlled* society, that they are uniquely able to at least require certain forms of behavior from their members. Hopefully, if behavior changes, attitudes will eventually follow, at least to a significant degree in a significant percentage of people.

It seems to be happening at Patrick AFB. All of the civilians I spoke to from the surrounding community testified that "things have changed." They noted a decrease in offensive ethnic jokes in clubs and service organizations, as just one example. I could actually "feel" that change myself. Mention DRRI, and the reaction usually was one of optimism. Behavior was changing attitudes.

DRRI's research and evaluation staff, headed by Dr. Richard O. Hope, a black Ph.D. on leave from Brooklyn College of City University of New York and his assistant, Mrs. Virginia R. Doscher, are tracking change further. In fact, the entire research and evaluation effort itself represents change. It is perhaps one of the few instances in government when research has been tied to a program from the beginning.

Dr. Hope, up to now, has been deeply involved in evaluation of student development and curriculum effectiveness. "We are only now getting at the other half of the job—field performance. We need to get evaluations from commands to see if we're meeting *their* needs."

The real test of how well DRRI is doing will come when the services share information on assessments of conditions on their bases.

And the way for that to happen has now been paved. A DoD policy decision gives DRRI the responsibility to act as a repository for all research efforts being undertaken by the services. Thus, serious researchers will be able to have access to many forms of data on military racial situations, and the services will be able to use DRRI's library of data to assist them in their on-going efforts.

Evidence of Change

DRRI research is turning up evidence of behavior change. First of all, it is finding that, as the level of awareness develops, minorities want to know more about others, blacks about whites, and so on.

The research staff is using, among other instruments, what is known in sociology as "unobtrusive measures" to get at behavior change. For example, students will be asked for information about minorities that is not generally known or taught at the school. Then,

after a class has finished at the school, student awareness is measured again. The assumption is that any increase in scores is a function of the students' own efforts and the difference in scores indicates the level of interaction among students. Also, as a result of data collected on the first four classes and control groups, if one compares persons who have had no race relations training (the control group) with DRRI students, the difference in scored reactions to racially prejudiced statements changes from double in pretesting to *four times* as much at the end of training.

Even more exciting are some preliminary results of experimental field tests. At first, no statistically significant differences could be found among change-of-behavior measurements after eighteen hours of race relations training on bases throughout the services. However, after following for a six-month period those who had had the eighteen hours of training, statistically significant differences *did* show up. The hypothesis for further testing is that the eighteen hours serves primarily as a catalyst for awareness, and, over time, behavior *is* modified.

Does all this mean that the military can eradicate racism overnight or even with eighteen hours of training? Of course not. But it is encouraging that some change is taking place.

The DRRI staff of about thirty military and nineteen civilians is determined to meet the goal established by the DoD Race Relations Board—having 1,500 instructors in place by July 31, 1973. Working with about 275 students per class in what I observed to be a total commitment of one's energy is *not* easy. Practice teaching, sociology, social psychology, cultural anthropology, perception of the "self" in social interaction, psychological defense mechanisms, attitude, behavior, stereotypes—all this and more must be assimilated if it is to be useful to the student when he reaches out to those in the classes he will be instructing at his home station. Yes, it is a lot to expect, but it *is* expected.

DRRI is doing its part. The DRRI students are doing their part. I wonder how many others are willing to do theirs? ■

THE VALUE OF STRATEGIC BOMBING— A CONTINUING DEBATE

For a quarter of a century, critics of airpower—many of whom appear not to have read the U.S. Strategic Bombing Survey (USSBS)—have misquoted, quoted out of context, or distorted the findings of the Survey to “prove” that strategic airpower “always fails.” The USSBS documents aren’t readily available; hence, airpower supporters find it difficult to refute these charges. Here, for the benefit of airpower advocates (and, hopefully, of detractors, too), a leading authority on USSBS tells . . .

WHAT THE BOMBING SURVEY REALLY SAYS

By Maj. David MacIsaac, USAF

ASSOCIATE PROFESSOR OF HISTORY, USAF ACADEMY

“Bombing surveys after World War II showed that in industrial countries output expanded and morale rose as the bombs fell.”

—I. F. Stone, *The New York Review of Books*, January 25, 1973.

IF YOU think the sentence quoted above is far out, then turn to pages 161–162 of David Halberstam’s *The Best and the Brightest* (see USAF Gen. T. R. Milton’s review in our “Airman’s Bookshelf,” April ’73 issue) and read about “the U.S. Strategic Bombing Survey . . . , which proved conclusively that the strategic bombing had not worked; on the contrary, it had intensified the will of the German population to resist. . . .” These are two recent examples of the misreading, misuse, and/or misrepresentation of the findings of the USSBS that critics of our involvement in Indochina are feeding an unwary public. For these critics, the implications are simple: (1) strategic bombing in World War II was ineffective and wasteful, and (2) bombing in Indochina *therefore* was unwise, unprofitable, and futile. This is worse than gen-

eralizing from particulars; it’s more like arguing that one apple plus one orange equal two lemons.

Air Force people who find history irrelevant to current events far outnumber those of us who think the others have a screw loose for thinking as they do. Nonetheless, they are and probably always will be a commanding majority. One price the service pays for this attitude is the ability of the Stones and Halberstams to get us at a disadvantage on what should be our own ground.

The U.S. Strategic Bombing Survey

Early in 1944, a group of officers working with Gen. Muir S. “Santy” Fairchild in Washington, D. C., set in motion an idea that was to culminate later that year in the establishment by President Roosevelt of a Presidential Commission to investigate the effects of strategic bombing in the war against Germany. An impartial, civilian-dominated commission, the airmen argued, should direct such an evaluation, to assure that the findings would not be taken as self-serving arguments construed by the Army Air Forces. Gen. “Hap” Arnold cleared the idea with Gen. “Tooney” Spaatz, the theater air commander, and then with his own colleagues on the Joint Chiefs of Staff. Finally, in October, the President obtained the agreement of Franklin D’Olier, President of the Prudential Insurance Co., to act as Chairman of the commission.

Before the war in Europe was over, well over 1,000 people (a third of them, including most of the decision-makers, were civilians—experts in structural damage, economic planning, manufacturing, transportation, psychology, etc.) were assigned to the Survey. The quality of men who formed the Survey’s top echelon is revealed clearly by their illustrious careers both before and after: Henry C. Alexander, D’Olier’s Deputy, later President of the Morgan Guaranty Trust Co.; Paul H. Nitze, later Secretary of the Navy and Deputy Secretary of Defense, recently a principal negotiator in the SALT talks; George W. Ball, later Under Secretary of State and Ambassador to the United Nations; J. Kenneth Galbraith, internationally known economic philosopher and former Ambassador to India.

Divided into teams essentially on the basis of particular industries, the USSBS set to work both in England and on the Continent well before hostilities ended. Many were shot at; five were killed in the line of duty; in several instances Survey teams liberated targets in advance of the ground forces. They measured effects, interviewed survivors at the highest (e.g., Speer and Goering) and lowest levels, impounded records, and even tangled with the Russians in Berlin. Returning to England and later Washington, they sifted and cross-checked

evidence, argued occasionally among themselves, but eventually came to a consensus: "Allied air power was decisive in the war in Western Europe." To be sure, the Chairman's report noted instances where airpower might have been applied more effectively (against synthetic-rubber production and the electrical power net, to cite two examples), but the final report stated emphatically:

"Nevertheless, it was decisive. Its power and superiority made possible the success of the [Normandy] invasion. It brought the economy which sustained the enemy's armed forces to virtual collapse [even if it is true that in the prevailing circumstances] the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied [ground] forces."

When I. E. Stone says that "bombing surveys after World War II showed that . . . morale rose," and when Halberstam asserts that strategic bombing "intensified the will of the German population to resist," they are both, at the very least, badly informed. USSBS European Report No. 64b, *The Effects of Strategic Bombing on German Morale*, stated clearly that "Bombing seriously depressed the morale of German civilians," and that "Bombing did not stiffen morale." The quoted remarks of both Stone and Halberstam are buried amid arguments about bombing in North Vietnam. Neither writer seems to recognize that in the process of proceeding from conclusions to supporting evidence, he has succeeded admirably in either ignoring or misrepresenting the very evidence he would call to our attention.

The Chairman's report on the effects of strategic bombing in Japan had no such qualifications as did the report on Europe:

Based on a detailed investigation of all the facts, and supported by the testimony of the surviving Japanese leaders involved, it is the Survey's opinion that certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated. . . . By July 1945, the weight of our air attack had as yet reached only a fraction of its planned proportion. Japan's industrial potential had been fatally reduced, her civilian population had lost its confidence in victory and was approaching the limit of its endurance, and her leaders, convinced of the inevitability of defeat, were preparing to accept surrender. The only remaining problem was the timing and terms of that surrender.

And, if this statement does not in itself say enough about the specific issue of morale ef-

The author, Maj. David MacIsaac, a distinguished AFROTC graduate of Trinity College, Conn., holds an M.A. from Yale and a Ph.D. from Duke University. A member of Phi Beta Kappa, he was a Woodrow Wilson Fellow at Yale. His doctoral dissertation was on the Strategic Bombing Survey. He has served with SAC and, except for a two-year AFIT tour and a year as an adviser to the DCS/Training of the VNAF, has been a member of the Air Force Academy Department of History since 1964. Major MacIsaac is a frequent contributor to AIR FORCE Magazine.

fects, the interested reader can either go further in the same report (pp. 20-22), or sample USSBS Pacific Report No. 14, *The Effects of Strategic Bombing on Japanese Morale*.

Muddied Waters

World War II was scarcely over before those who, in military historian Noble Frankland's memorable phrase, prefer to feel rather than to know about strategic bombing, began to muddy the waters. First in the lists was British Adm. Sir Gerald Dickens with his *Bombing and Strategy: The Fallacy of Total War* (London: Sampton, Low, Marston, 1947), criticizing the very idea of strategic bombing as a legitimate means in war. Another Englishman, the renowned military historian, theorist, and critic, Maj. Gen. J. F. C. Fuller, added fuel to the fire in his *The Second World War* (New York: Hawthorne, 1969, first published in London, 1948), and *The Conduct of War, 1789-1961* (New Brunswick, N. J.: Rutgers Univ. Press, 1961). General Fuller roundly castigated strategic bombing—his target was the area bombing policy of RAF Bomber Command—as contributing to a dehumanization of warfare that he traced to the decline of aristocracy and the effects on warfare of general conscription, introduced by the French *levée en masse* of 1793. Concerned to show that strategic bombing up to the spring of 1944 was "an extravagant failure," he cited statistics compiled by the USSBS and questioned whether the resources that went into strategic bombing might have been better or differently invested (in landing craft, transport aircraft, anti-submarine aircraft, etc.).

In our own country, the so-called B-36 vs.



Toyama, Japan, after a B-29 incendiary raid on aluminum plants. "By July 1945, Japan's leaders . . . were preparing to accept surrender."



On May 12, 1944, strikes on oil refineries like this at Hamburg began. "On that day, the technological war was decided," Albert Speer wrote.

supercarrier controversy of 1949 sparked similar attacks, of which Marshall Andrew's *Disaster Through Air Power* (New York: Rinehart, 1950) enjoyed a brief notoriety. These and subsequent critics, when they did review the evidence, generally fell back on one of two devices: (1) rather like Fuller, they cited statistics applicable to the early years of the war, before the weight of the bomber offensive could make itself felt, and then drew conclusions (morals?) that they applied to the entire war; or (2) they cited comments from various of the USSBS reports on particular target systems (aircraft factories, oil, chemicals, etc.), suggesting that better target selection could well have produced more striking results more quickly. [Ed. note: For a grotesque example involving both devices, see the author's "New Look at Old Lessons" in the September '70 issue of this magazine.]

As to the first technique, what almost all critics fail to acknowledge is that of all the bombs dropped over Europe in World War II by the USAAF and RAF (2,770,540 tons), only 17.48 percent were expended prior to January 1, 1944, and only 27.7 percent prior to July 1, 1944. In other words, almost three-quarters (72.3 percent) of the bombs were dropped in the closing ten months of the war (July 1944 to April 1945) when the bombers were finally cut loose in force to drive home the attack on Germany. (The comparable figures on Germany alone are 1,419,604 tons, 18.2 percent, 29.8 percent, and 70.2 percent.)

Output expanded as the bombs fell, Mr. Stone tells us. Presumably, he is referring to

the continual expansion of German aircraft production from 1939 to September 1944 when it peaked out—even though it was first attacked in early 1943. The bombing surveys he so glibly quotes, however, remind us that of the entire effort in 1944 (1,593,736 tons) only 38,220 tons could be directed against that industry. This represented a mere 3.9 percent of the USAAF effort and 0.5 percent of the RAF effort. What we are *not* told is how target priorities established by the Combined Chiefs of Staff and Gen. Dwight D. Eisenhower (relating to Overlord, V-1, and V-2 sites, etc.) prevented the air commanders from pressing the attack against aircraft production and aviation fuel sources. When General Spaatz at length prevailed upon General Eisenhower in May of 1944 to allow at least an occasional attack against the synthetic oil refineries in Germany, the results for Germany were catastrophic. "I shall never forget the date May 12," Albert Speer was later to write in his memoirs.

On that day the technological war was decided. Until then we had managed to produce approximately as many weapons as the armed forces needed, in spite of their considerable losses. But with the attack of 935 daylight bombers of the American Eighth Air Force upon several fuel plants in central and eastern Germany, a new era in the air war began. It meant the end of German armaments production. (*Inside the Third Reich*. New York: Macmillan, 1970, p. 346.)

Any attempt to suggest that "output expanded" during the *last* ten months of the war

—in *any* industry—runs smack up against all the available evidence.

The second technique of occasional critics—quoting selective comments from various USSBS reports—can be grossly misleading. Of the 208 reports completed on Germany, only Nos. 1, 2, and 3 purport to speak for the Survey as a whole; all the others are, in fact, supporting documents, prepared by specialists in discrete fields, and not subject to comparison and cross-checking by the Survey's board of directors. Therefore, instances can be shown where specialists (in synthetic-rubber production, for example) expressed amazement that particular targets in their own area of expertise were either so long "ignored" or not hit at all. No one with knowledge of the campaigns has ever denied that this sort of thing occurred. To expect it not to have happened in what was, after all, an improvised air war, is surely to rate the judgment and clairvoyance of the bomber commanders on an impossible scale.

The Problem Today

The real problem our service faces with the Stones and Halberstams is less their misrepresentation of the World War II evidence than it is their real intent—to criticize (when not condemning) the Air Force role in Indochina over the past decade. This, I would submit, they are free to do if the spirit so moves them. But we must not let them get away with drawing comparisons between the two wars on some presumed basis that the two have enough in common to warrant comparison.

For openers, and to cite the obvious, there are some very real differences between total and

limited war—and, hence, in the goals, objectives, and restrictions applicable to airpower. Take, for example, the effects of bombing over North Vietnam. At no time (except perhaps for a week or so last December) were the North Vietnamese ever subjected to anything even approaching what the Germans and Japanese had to contend with in World War II.

Or turn the question around and look at it from the viewpoint of the aircrews and air commanders. Over Germany and Japan no impediment whatsoever was placed in the way of attaining the first priority in an air offensive—air superiority. In Indochina, certain enemy airfields and AAA sites were ruled out of bounds from the beginning. In World War II, target selection was in the hands of experienced air commanders (or at least the theater commander). In World War II, air tactics were decided by airmen. Whether the measure is of goals, objectives, targets, or tactics, it's difficult to see what was comparable in the two wars beyond the basic facts that airmen and aircraft were involved in both.

The restrictions imposed on air activity in Vietnam will not be quarreled with here, nor need they be. But their very existence must be acknowledged. And with the acknowledging comes the awareness that the air war in Indochina was unique, requiring justification or attack on its own terms. This will not eliminate controversy, but it will surely legitimize it. At the same time, it will protect the hard-earned record of World War II from being sullied by those who usually have something else in mind to start with anyway. ■

FAST BURNER

The afternoon had turned cold after the commissioning exercises at Randolph Field, Tex., which necessitated the wearing of the short khaki mackinaw. Coming out of the Officers' Club after due and proper recognition of becoming a brand-new second lieutenant in the Army Air Corps, I slipped into my mackinaw and headed out toward the parking lot. As I got out into the sunlight, my eyes caught a glint of silver, and I was horrified to discover that I had slipped into the Base Commander's coat by mistake.

Quickly turning back, I started running toward the club, but who should suddenly loom up in my path but the big, burly, barrel-chested Commandant of Cadets, Maj. James S. Stowell, Jr. I stopped dead in my tracks as he eyed me in utter disbelief. Suddenly snapping into a smart salute, he bellowed, "Mister Bamberger, for the raunchiest cadet that ever came through Randolph, you certainly are making spectacular progress!"

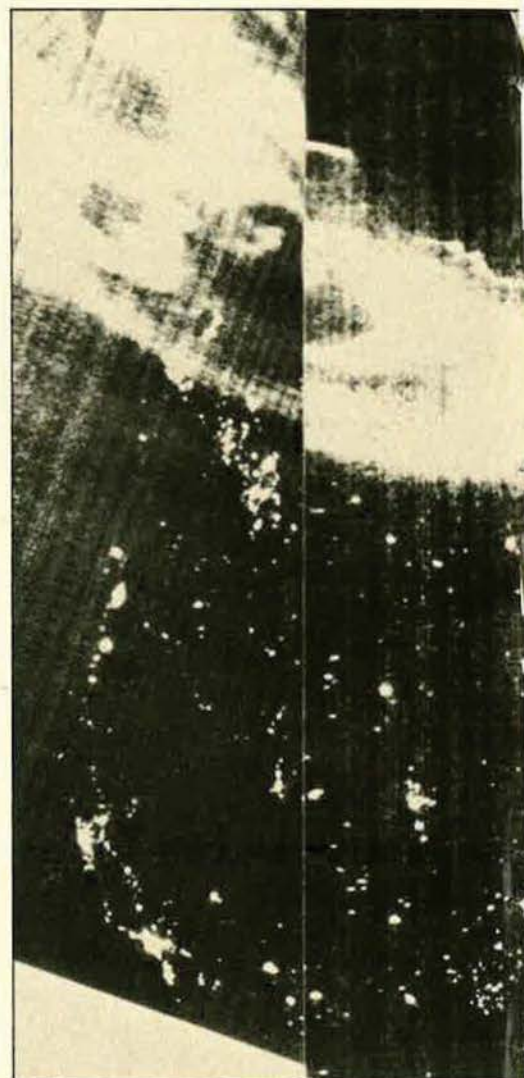
—CONTRIBUTED BY COL. FRED E. BAMBERGER, JR., USAFR (RET.)

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

The Under Secretary of the Air Force, a physicist with wide experience in the application of advanced technology, describes USAF's Data Acquisition and Processing Program—a meteorological system that combines satellite-borne sensors and high-speed processing facilities. Beyond its multitude of civil uses, the program is providing operational commanders a vastly expanded range of weather data for mission planning . . .

A NEW LOOK FROM USAF'S WEATHER SATELLITES

By the Hon. John L. McLucas
UNDER SECRETARY OF THE AIR FORCE



THE nation is now in the middle of its second decade of space exploration. There have been many great achievements in this effort. We have landed men on the moon and learned more about our solar system and its origins, as well as about the earth itself. We have also benefited greatly from the application of space technology to the solution of civil and national defense problems. Such success would not have been possible without the closest cooperation between the many agencies that share responsibilities for the nation's space efforts.

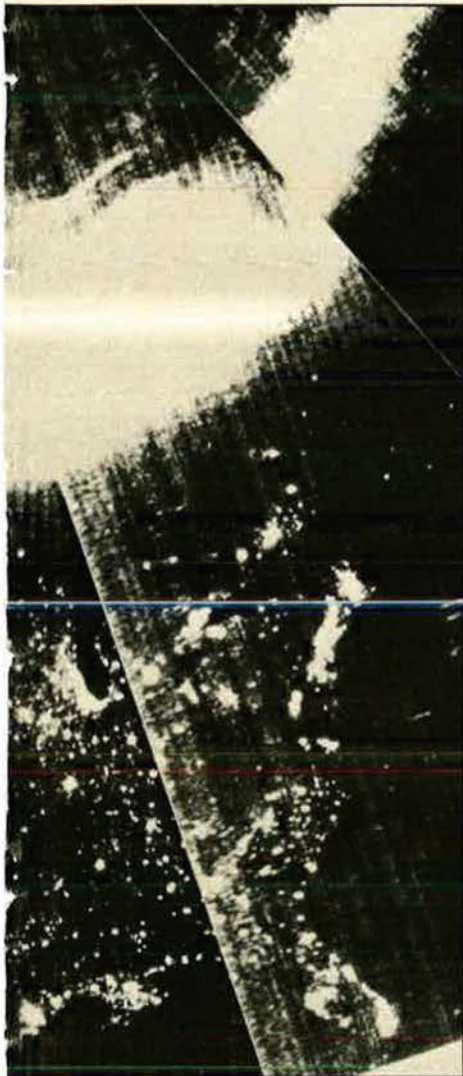
Space programs of the Department of Defense are designed to meet military requirements. This does not mean that our space programs pose a threat to others; indeed, their purpose is to help stabilize deterrence through such measures as providing better warning and communications. Other Defense Department space programs enhance navigation and

weather-analysis capabilities. Many of these programs also contribute to scientific progress and help meet the needs of the civilian society.

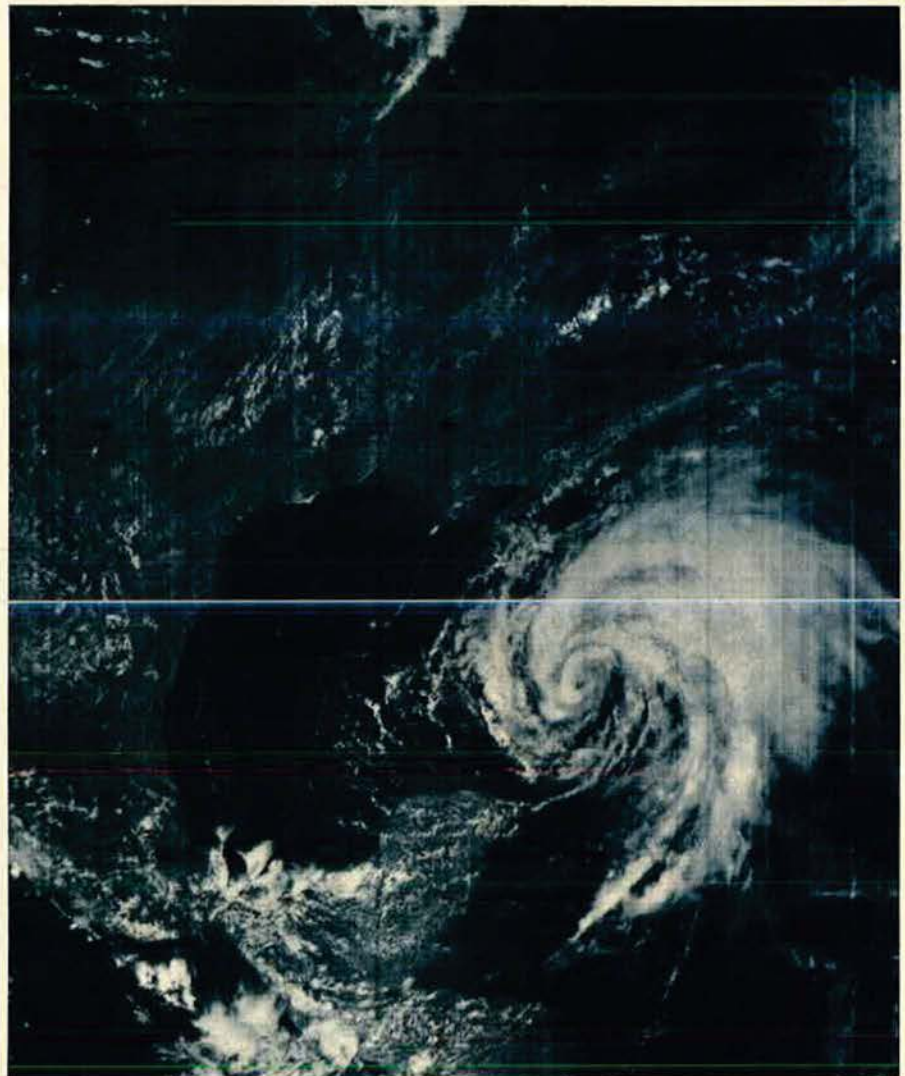
The Air Force recently made available to the public the data from an advanced Air Force meteorological system, known as the Data Acquisition and Processing Program. This system consists of an integrated combination of satellite infrared and visual sensors, communications, and ground processing facilities. The infrared sensors are used to provide pictures of the earth and its atmosphere, showing temperature differences rather than brightness levels.

Both the infrared and visual pictures may be obtained with either two-nautical-mile or one-third-nautical-mile resolutions. In the latter case, it is possible to distinguish clouds as small as 2,000 feet in diameter. In addition to these pictorial products, there is another sensor that furnishes data for vertical temperature profiles

This spectacular satellite photo, a composite of the US at night, was taken with no reflected moonlight and with the aurora borealis sweeping the skies over Canada. Florida is at lower right.



This one-third-nautical-mile-resolution satellite photograph shows last year's Hurricane Agnes in the Gulf of Mexico, off the west coast of Florida.



of the atmosphere. Thus, temperature versus altitude distributions, which are important forecasting aids, can be obtained in areas of the world where conventional weather observations are not available.

Satellites carrying these sensors are placed in orbits around the earth, passing over the North and South Poles. As the earth rotates under satellites in polar orbits, it is always the same local sun time (either day or night) directly beneath their orbital path. Satellites currently in orbit are providing worldwide data sensed near 7:00 a.m., noon, 7:00 p.m., and midnight in local times.

Processing the Data

Since weather phenomena change rapidly, the processing support of the Air Force weather system has been designed to provide data to

the operational user within a matter of minutes after it has been collected in space. In the United States, information transmitted from the space sensors is received in ground stations and simultaneously relayed through high-speed, high-capacity data transmission links to the Air Force Global Weather Central at Offutt AFB, Neb.

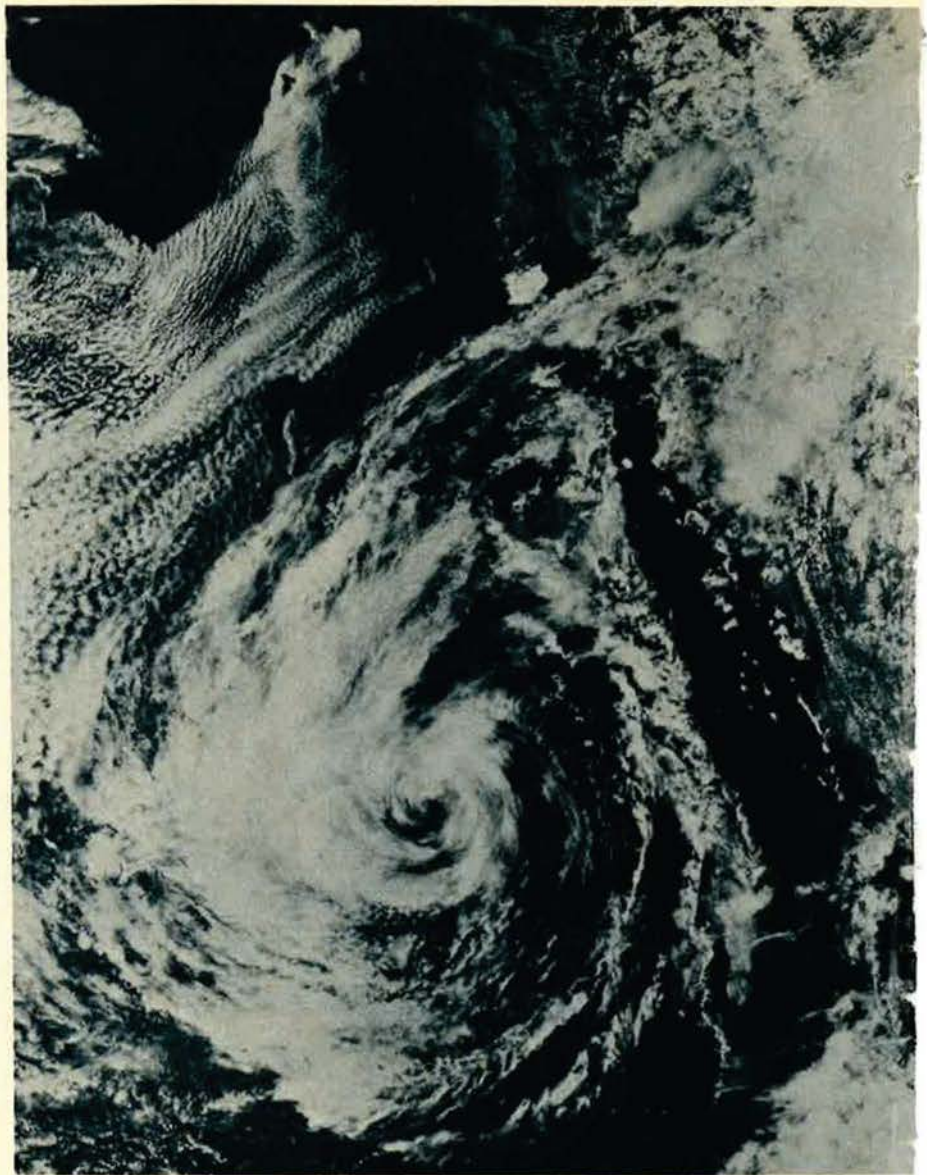
At this central point, the system converts picture images to a digital format that is then machine-processed and utilized in weather analyses distributed to military units around the world. This process enables computers to handle literally hundreds of thousands of observations and to make many analyses and predictions routinely and automatically, often without any need for humans to interpret the data.

Satellite products are combined with conventionally collected information to provide the most complete weather description possible;

A one-third nautical-mile-resolution satellite picture of a tropical storm off the west coast of the Baja California peninsula.



The author, Dr. John L. McLucas, a World War II Navy operations officer, has been Under Secretary of the Air Force since March 1969. Previously he had been President of HRB-Singer, Inc.; Deputy Director of Defense Research and Engineering; NATO's Assistant Secretary General for Scientific Affairs; and President of the MITRE Corp. Dr. McLucas has served with several advisory groups, including the Air Force Scientific Advisory Board. He is the holder of ten US Government Office patents.



however, the system can provide a limited portrayal of weather based solely on its space-sensor data. We have a mobile, air-transportable van that permits direct regional readout, on the spot, by military commanders located anywhere in the world. Several of these vans are deployed with our forces around the world, including one aboard a Navy ship.

In a conflict situation, commanders of air units need to have very current data on weather conditions along the route to and in the target area if they are to carry out a successful strike mission. For example, they must know cloud patterns and especially the altitude of cloud tops in potential in-flight refueling areas so that visual hookups can be arranged. Closer in to the target, cloud-height information is necessary to plan flight altitudes that will allow sufficient clear air space for the visual detection of surface-to-air missiles. And for the target itself,

detailed weather data must be used to plan the best tactics for a successful strike. Much of this information is also needed for peacetime operations and training.

In March 1973, the Air Force announced that its weather-satellite data would be given to the National Oceanic and Atmospheric Administration (NOAA) and its National Weather Service facilities at Suitland, Md. There have already been meetings between NOAA and Air Force officials to arrange for communications lines. Providing these lines will have the effect of tripling the data on cloud formations and atmospheric soundings available for scientific research and routine use.

NOAA also operates a weather satellite that provides visual and infrared data, including complete coverage of the globe twice daily—with two-nautical-mile resolution. When Air Force observations are added, the world is ef-

fectively covered every four hours. This higher frequency of global observations permits more thorough analysis and better forecasting. It also allows us to improve the effectiveness of other weather-reconnaissance techniques. For example, aircraft can be sent to collect data on storms at the stage of their development producing the greatest scientific and operational benefit.

Studying Auroral Phenomena

There is a military requirement to be able to detect low-level clouds during hours of darkness or minimum light. Infrared sensors are not always able to distinguish such clouds from the earth itself because the temperature difference is so small. To provide this capability, the Air Force system was equipped with visual sensors that can detect very low levels of illumination.

In addition to detecting these low-level clouds, the sensitivity of the system has permitted taking the first pictures from space of the aurora borealis. Similar phenomena over the South Pole, known as the aurora australis, have also been sensed. Such pictures as these have the potential to add immensely to our knowledge of ionospheric processes.

The visible aurora usually occurs in an oval band between sixty-five degrees and seventy-five degrees of latitude, centered on the magnetic pole. Scientists studying the auroral oval have noted that the detailed structure and position of the oval strongly influence radio and radar transmissions in the polar area. Changes in high-altitude atmospheric density, which increase the drag on orbiting satellites, are also correlated with auroral phenomena. Research is under way to investigate these correlations and to provide techniques for minimizing the effects of auroral disturbances on communications and radar transmissions.

Variations in auroral phenomena have also been linked to large-scale weather patterns in the mid-latitudes by Dr. Walter O. Roberts of

the University Corporation for Atmospheric Research. Air Force weather-satellite pictures of the aurora should be of great help in testing various hypotheses concerning this kind of correlation.

Other Civil Uses

Another interesting possibility for the civil use of the low-light capability is in the detection of forest fires in remote areas. In fact, this system has already picked up light from fires used to burn off grain fields and from burning gas above oil wells.

Civil aviation could well benefit from techniques developed by the Air Force to display cloud top height. In this case, infrared sensors are used to detect cloud top temperatures. When a sufficient number of these soundings have been recorded and then compared to known temperature vs. altitude profiles, it is possible to portray a contour of the cloud height in a given area. Such a picture should help in the planning of flight routes for civil aircraft.

The availability of military-satellite data to the scientific community will also greatly assist in the planning and operation of large-scale atmospheric research programs, such as those carried out in cooperation with other nations under the aegis of the World Meteorological Organization.

We believe that the Data Acquisition and Processing Program is a meteorological tool of great usefulness and potential. It produces images not available from any other weather systems. And its data can routinely be digitized and computer-processed. When data from Air Force space sensors are combined with conventionally collected information, we have an excellent base for better understanding weather phenomena. ■

A ROSE BY ANY OTHER NAME . . .

As Military Affairs Reporter for KOA Radio-Television in Denver, I covered the Air Force Academy on a regular basis, including the times when cadet cheating was in the news. As a result, I developed a hefty file which I titled "AFA Cheating Scandal." During the second such affair, I attended a news conference at the Academy and happened to leave the "Cheating Scandal" file at the Academy Information Office. When it was returned to me by special messenger the next day, my rough, handwritten title had been covered with a label on which was neatly typed, "USAFA Cribbing Incident."

—CONTRIBUTED BY MAJ. BARRY C. TRADER, USAF

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

MIA/POW Action Report

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

On Behalf of USAF's Ex-POWs

Air Force POW returnees are currently undergoing a comprehensive program to bring them up to date on happenings in the "outside world" during their captivity.

The program—unofficially dubbed "Re-Blueing"—kicked off at Maxwell AFB, Ala., in April with a wide curriculum covering three general areas of information: international affairs, domestic affairs, and military affairs. The returnees attend the two-week program in groups of approximately sixty at a time.

Instruction is not confined to lectures by experts in various fields but includes panel discussions and the use of film and other training aids "to offer maximum exposure" to the some 235 Air Force returnees who attend the classes. The data presented covers a period from 1965 to the present.

To familiarize the men with weapon systems that became operational in the recent past, the Air Force has on hand static displays of the F/FB-111, F-4E, C-5, and C-130 gunship.

The subject matter of Re-Blueing is impressively broad-gauge. For example, covered in international affairs is everything from President Nixon's visits to Moscow and Peking to the election of a Communist president in Chile. Domestic affairs include such topics as drug abuse, women's lib, race relations, and pollution and environment. (In response to a special request, copies of AIR FORCE Magazine for December 1972—"The Military Balance"—were furnished for course use.—THE EDITORS)

Of special interest for the men returned from internment in Southeast Asia is the review and assessment of significant air operations in SEA, including Linebacker I and II. (See AIR FORCE Magazine's editorial for April and p. 34 of this issue.)

As part of Re-Blueing, the Air Force has in the works a program for requalification flight training of the returned USAF POWs.

Air Training Command, possibly beginning in August, will conduct

the updated flight training of those medically cleared returnees who elect to continue their careers as rated personnel.

Pilots will be retrained at Randolph AFB, Tex., by the 12th Flying Training Wing, the usual mission of which is to train instructor pilots. Navigators will go to Mather AFB, Calif., where the 3535th Navigator Training Wing trains all Air Force navigators. Helicopter crewmen will retrain at Hill AFB, Utah.

"Requalification training is designed to bring the returned pilot to a level of proficiency comparable to other USAF pilots and, where appropriate, to a qualifying level to enter advanced training units. Navigators will receive training to redevelop navigator skills to enable them to assume normal aircrew duties," the Air Force said.

The training will be tailored to each individual and will depend on the length of time away from flying units, the extent of past flying experience, and the man's next assignment, USAF said.

It is anticipated that pilot training may take up to twenty weeks, depending on the individual, with navigators perhaps retraining four to six weeks. The program is expected to continue indefinitely, as

a result of convalescent leave and other variables such as an individual's physical condition.

Many of the returned senior officers will subsequently go back to school—to the Air War College and other military institutions of higher education.

* * *

As this is written, Sunday, May 13, had been set aside as "Air Force Recognition and Remembrance Day," to honor all those "who have made great sacrifices in Southeast Asia," the Air Force said.

To make that day a special experience of meaning and significance for the Air Force community, Air Force commanders throughout the world were requested to encourage participation in formal ceremonies, religious services, and related activities.

The Office of the Chief of Chaplains of the Air Force noted "the need of the Air Force family to share joy and gratitude for the return of the prisoners of war and to remember in prayer and hope those who are missing in action and their families, as well as to commemorate the sacrifices of those killed in action and their families."

* * *

For its part, the League of Families is continuing its poster campaign to emphasize the MIA issue. The League noted that, as a result of the debriefings of the returned POWs, only one change in status has occurred, and new information on fewer than 100 men still listed as missing has turned up. Information about men missing in Laos continues to be sparse; the returnees captured there were interned elsewhere, and, thus, there is no knowledge about any camps that may have existed in that area of SEA.

North Vietnam has informed US officials that it has maintained several cemeteries for Americans who died in captivity or were killed in action. US officials expect to be informed of the identities of the men buried there and to arrange for the recovery of their remains. ■



—Wide World Photos

USAF's Lt. Col. John A. Dramesi, of Philadelphia, Pa., unfurls the flag he stitched by hand while a captive of the North Vietnamese. The officer was shot down and taken prisoner on April 2, 1967.

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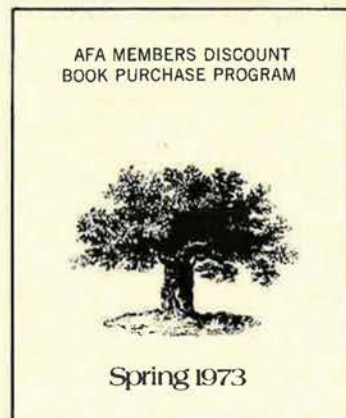
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Airman's Bookshelf

Apollo-13

Thirteen: The Flight that Failed, by Henry S. F. Cooper, Jr. Dial Press, New York, N. Y., 1973. 199 pages. \$5.95.

In the space business, failure—the kind that veers close to disaster—can be more interesting than success. The *New Yorker* magazine's able aerospace correspondent, Henry S. F. Cooper, has proved this thesis with a coolly written account of the ill-fated Apollo-13 mission of 1970, which was aborted by an oxygen-tank explosion and which, but for the resourcefulness of ground control and the patience and stamina of the astronauts aboard the damaged moon-bound craft, might have been a fatal mission.

With painstaking detail that reads like total recall, Mr. Cooper recounts the efforts of ground-control personnel to determine precisely what happened aboard Apollo-13—the explosion of an oxygen tank seemed unthinkable until it became clear that it really happened—and the decisions from afar that guided the astronauts around the moon and back to safe reentry and splash-down.

Most of the action in Cooper's story takes place on earth at mission control. With a striking command of the technical language involved, Cooper describes the unspoken agonies of the men on the ground who had to make the decisions—the first hard decision, once disaster was recognized, was to abort an enormously costly mission—that appeared to offer the threatened astronauts a chance to survive. No sense of panic among the mission-control people is evident in Cooper's account. But the sense among the men on the ground that three lives hung in the balance and that there was no margin for error is clearly conveyed.

The drama was, of course, not all on the ground. The three astronauts who were forced to take refuge, for most of their perilous mission, in the lunar module, clearly suffered physical and mental anguish. Mr. Cooper also focuses on their plight

and reactions. He describes with taste their very human responses to lack of sleep, unremitting cold, and the unnerving recognition that fatigue-induced errors in following ground control's instructions might cost them their lives.

The author, who has written earlier books on the overall Apollo program and the search for moon rocks, has achieved with *Thirteen: The Flight that Failed* a reportorial tour de force of the space age. Perhaps the most important contribution of Mr. Cooper's book is its portrayal of the importance of man and his analytical powers in an era of supposedly automated decision-making. Although the book recounts the saving of three astronauts, it has a larger theme: man helping man.

—Reviewed by William Leavitt,
a former Senior Editor of
AIR FORCE Magazine.

Prelude to Invasion

Codeword BARBAROSSA, by Barton Whaley. The MIT Press, Cambridge, Mass., 1973. 375 pages with appendices, bibliography, and index. \$10.00.

During the early morning darkness of June 22, 1941, more than 120 German divisions struck eastward into the Soviet Union, beginning the greatest land battle in military history. The Nazi mechanized units advanced against scattered opposition and achieved great victories until delayed at Smolensk and finally stopped before the gates of Moscow in early December.

In *Codeword BARBAROSSA*, Barton Whaley has attempted to explain how the Germans were able to obtain almost total surprise prior to the start of the campaign. His main thesis argues that the Germans, through a planned campaign of deception, deliberately led Stalin to the wrong conclusions. Through calculated leaks to Soviet intelligence operatives, Hitler led Stalin to expect a gradual diplomatic crisis to be followed by a German ultimatum prior to the start of hostilities. Stalin planned to be recep-

tive to any German demands in hopes of winning additional time before the start of the war. Few experts predicted a massive blow without warning.

With the conquest of France completed in June 1940, formal contingency planning for Barbarossa began in late July of that year, parallel with planning for Operation Sea Lion against Great Britain. There was no absence of warnings about Hitler's plans for the East. Mr. Whaley meticulously traces a series of eighty-four warnings, clues, and leaks during the eleven-month period prior to the outbreak of the campaign. He proves that it wasn't just Stalin who was duped by the Germans, but also the intelligence services of the US, Great Britain, Italy, and Japan.

Largely using previously published western language sources, the author escorts us to the spy capitals of the world. Spy fans will delight in the fascinating work of Richard Sorge in Tokyo and Samuel Woods in Berlin, among others, in obtaining detailed high-level intelligence about the upcoming German campaign. Unfortunately, these correct warnings were lost in the mass of data on future German intentions. Other analysts explained the German buildup in the East as either a feint to draw attention from the impending Operation Sea Lion in the West or as a response to the Soviet buildups on its western frontier.

Confronted with warnings arriving from every corner of the globe, Stalin failed to bring his armies to full alert. Fearful of provoking Germany and confident of his ability to win more time after a German ultimatum, he failed to act. The early rout of his armed forces and the loss of hundreds of thousands of square miles of Soviet territory were the price of his stubbornness.

Codeword BARBAROSSA is more a well-organized compilation than a major new revelation about Hitler's plans. In an effort to prove his thesis, Mr. Whaley portrays German leadership as goal-oriented. He accepts the controversial and probably false idea that Operation Sea Lion was merely a skillful deception

to conceal the real German objective to the East. In the process, he ignores the confusion, shifting objectives, and the lack of any long-range planning that characterized Nazi leadership in 1940-41.

Mr. Whaley effectively demonstrates the problems of intelligence analysts in sifting out enemy intentions from the mass of available data. He destroys the myth of a monolithic and infallible Soviet intelligence system. At this stage of the war, Stalin's system was neither efficient nor effective, and the Russian people paid the price. From the lessons of *Codeword BARBAROSSA*, we learn to understand the complexities of the intelligence dilemma and are better prepared to analyze crisis situations in the future.

—Reviewed by Maj. Peter B. Lane, Department of History, US Air Force Academy.

The Emerging Balance of Power In Asia

East Asia and the World System, Part I: The Superpowers and the Context, Adelphi Paper No. 91, 33 pages. *East Asia and the World System, Part II: The Regional Powers*, Adelphi Paper No. 92, 42 pages. The International Institute for Strategic Studies, London, 1973. \$1.00 each.

In 1969, while still a professor, Henry Kissinger wrote a brief essay in which he argued that the international structure of power was characterized by *military* bipolarity and *political* multipolarity. As Special Assistant to the President for National Security Affairs, and one of the principal architects of American foreign policy, he participated in the development of a number of policies—the Nixon Doctrine, détente with the Soviet Union, and the rapprochement with China—that were a clear recognition of and accommodation with this reality. Indeed, each of the policies noted above is crucial in any analysis of the bilevel balance of power in East Asia.

Superpower bipolarity (US and the USSR) and pentagonal multipolarity (the US, USSR, Western Europe, the People's Republic of China, and Japan) not only have different implications in various regional contexts, but they are extraordinarily complicated. Nowhere

is this more evident than in East Asia, where a number of important interests of all the powers (Europe, to a lesser degree) converge.

Analyzing the balance of power in Asia is understandably difficult. Nevertheless, the International Institute for Strategic Studies has produced two valuable Adelphi Papers (outgrowths of its annual conference) that address the issue on two levels: the interaction between world and East Asian politics, and regional issues in Asia. Since both papers are a collection of articles, it is impossible to do justice to the richness and diversity of emphases contained therein.

Taken as a whole, the papers address a wide range of issues and relationships. To explain the present and the projected policies of both the major and minor powers, the authors analyzed a number of external and internal variables. The scholarly and systematic approach of Professor Wayne Wilcox is especially noteworthy in this regard. One oversight, however, is the meager attention given to the implications of the energy crisis and the major powers' need for resources from the area.

On balance, the two papers provide stimulating reading because of the intellectual depth that pervades the coverage of a wide range of complicated issues. They should prove to be worthwhile for all those interested in the political, economic, and strategic relationships involving both the major powers and the regional actors in East Asia.

—Reviewed by Capt. Bard E. O'Neill, Department of Political Science, US Air Force Academy.

New Books in Brief

Admirals, Generals, and American Foreign Policy, 1898-1914, by Richard D. Challener. After the Spanish-American War, the United States had to grapple seriously with new issues—among them the role of military men and military power in protecting and advancing America's position in the world. Mr. Challener has examined civil-military relationships in the period 1898-1914 to answer several questions, among them: how the President and State Department used the military services in execution of foreign policy; whether military and diplomatic policy were coordinated; and how effectively the United

States managed to reconcile force and diplomacy. Princeton University Press, Princeton, N. J., 1973. 433 pages with bibliography and index. \$16.00.

Hitler: The Last Ten Days, by Gerhard Boldt. Assigned to be aide-de-camp to General Guderian, Hitler's Chief of Army General Staff, Gerhard Boldt was given the unenviable task of coordinating reports coming in from the military front that, by April 1945, had moved into Berlin itself. Here is a unique eyewitness account of the end of the Reich, of Hitler's last desperate days, which included his wedding to Eva Braun, his longtime mistress, and his last meetings with the remnants of the German High Command. Coward, McCann & Geoghegan, New York, N. Y., 1973. 224 pages with index. \$6.95.

The Latin American Scene of the Seventies: A Basic Fact Book, by Irving B. Reed, Jaime Suchlicki, and Dodd L. Harvey. This monograph presents, in ready-reference form, basic information regarding key situations, developments, and trends in each of the twenty-four Latin American and Caribbean countries. (French, Dutch, English, and US dependencies have not been included.) Its objective is to provide an aid to better understanding of the increasingly important and complex role of Latin America in world affairs, with particular emphasis on information that is indicative of the rapid rate of change in most of these countries, both domestically and in external relationships. Center for Advanced International Studies, University of Miami, 1730 Rhode Island Ave., N. W., Washington, D. C. 20036, 1972. 220 pages with appendices. \$4.95 paperback; \$5.95 hardback.

Soaring: The Sport of Flying Sailplanes, by William T. Carter. Mr. Carter was an instructor in the Cadet Soaring Program, USAF Academy, from 1967 to 1970. He attained an altitude of 31,250 feet above Pikes Peak in a Schweizer I-26 in December 1968. A guide to soaring for beginners and a clear explanation of soaring aerodynamics for the layman, the book is part of the Air Force Academy Series. Macmillan, New York, N. Y., 1973. 151 pages with glossary and index. \$5.95.

—BY CATHERINE BRATZ

The Bulletin Board

By Maj. Robert W. Hunter, USAF

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

Stability for the Officer Force

The following explanation of TOPLINE—the Total Objective Plan for Line Officers—comes from Air Force personnel sources who emphasize that this method of force management involves more than just stable promotions; it provides long-range goals for career stability, visibility, and equity.

The issue of career/force management is not yet fully understood by many. This explanation is up to date and should answer many questions.

Examination of the officer force before TOPLINE shows that fluctuations in requirements have led to "humps" and "valleys." These humps slowed promotions and increased the number of rated officers in nonflying slots. The result has been dissatisfaction with long-range career opportunities and partial blockage of career progression for many officers.

How can TOPLINE smooth out the disruptive cycle of humps and

valleys and still maintain the flexibility needed to meet changing requirements? In the plan, basic objectives for structuring the force are outlined. A prime consideration is the control of officers entering and leaving the force in order to dampen the free-flow cycles of the past. An essential element is the definition of the annual minimum training rate for each element (pilot, navigator, support) of the force. This is the first step in structuring a career force that will continue to meet mission requirements.

Regular Commissions

The next phase of structuring is to define the numbers of officers in each element who will be selected for Regular commissions. This guarantees that each officer, rated or nonrated, will have a reasonable chance of becoming a Regular officer with equitable career progression. These opportunities are tailored to meet Regular officer needs throughout the force. Officers

will continue to be selected for Regular commissions on a competitive and best-qualified basis to meet the needs of the force.

Not all career-minded officers can be selected for Regular appointments. Those remaining will have the opportunity to compete for career Reserve status and a full Air Force career. However, not everyone can be offered career Reserve status. Why not?

Chiefs vs. Indians

To answer this question, one must realize that training rates will continue to fluctuate within limits even under TOPLINE. As personnel requirements and losses change, the Air Force must continue to train sufficient officers in each element to meet both short-term and long-range needs. It is not necessary or desired, however, to keep everyone for a twenty- or thirty-year career. The force must be balanced between "chiefs" and "Indians." The force is structured with this in mind.



Air Force Secretary Robert C. Seamans, Jr., left, the guest of honor at a recent banquet sponsored by the Nation's Capital Chapter, visits with, from left, Congressman Melvin Price (D-Ill.), Congressman Elford A. Cederberg (R-Mich.), and Chapter President Tom Turner.



Col. Harrison M. Ward, Jr., left, Commandant, NCO Academy, ADC, congratulates MSgt. Starling D. Hardee, USAF Academy, recipient of the Commandant's Award. AFA President Martin M. Ostrow, keynote speaker at the graduation of the Academy's Class 73-5 on February 15, is at right.

The Air Force also must be selective in bringing officers into the career force in order to ensure that a professional, competitive, and highly motivated officer force is maintained. To achieve these goals, TOPLINE provides for selectively determining those officers who will be offered career Reserve status. As more officers enter the service with established dates of separation, this "selection-in" process, in conjunction with the Regular augmentation program, will allow the Air Force to structure the career force in both the Regular and Reserve components. With this structuring, career visibility is maintained and progress toward the objective force is furthered.

The structuring of the Regular and career Reserve force pays dividends to the individual when he enters the career force. The first dividend is in the area of promotions. The TOPLINE promotion objective is to maintain the following promotion phase points and opportunities: to major—eleventh year at ninety percent opportunity; to lieutenant colonel—seventeenth year at seventy-five percent opportunity; to colonel—twenty-first year at fifty percent opportunity.

Achievement of these promotion objectives is highly dependent on the stabilization of the career force within limits through Regular and career Reserve force structuring. Moreover, TOPLINE provides equitable promotion flow for all elements of the force for the first time. Based on the best qualified selection method, the same percentages of rated and nonrated officers may not be promoted in any one year; but, in the long run, the opportunity for promotion equity is assured.

Promotions in the Past

How does this compare to the way the promotion system has worked in the past? Previously, an individual's chance of promotion depended greatly on when he entered the service in relation to the humps and valleys in the force. If he entered behind a "hump" when the next higher grades were already filled, the officer would fall behind in his chance or time to be promoted. The fortunate individual who found himself behind a valley in the force would conversely experience accelerated promotion and higher opportunity. If the force were allowed to free flow as in the



Col. (Brig. Gen. selectee) John S. Pustay recently assumed duty as Executive Assistant to the Secretary of the Air Force. Colonel Pustay is a graduate of the US Naval Academy and has a Ph.D. from the School of International Studies, University of Denver.

past, these cycles would be perpetuated; and the promotion program would be less clear and understandable. The TOPLINE objective force will maintain the highly visible and stable promotion patterns necessary to attract and retain the high caliber of officers needed.

A second dividend from the TOPLINE objective force is a concise program for the assignment of rated officers to support duties. This program is better known as the Rated Supplement and is designed to meet requirements on several fronts. Although the Air Force has always had this supple-

ment of rated officers, TOPLINE policy provides for better management of this resource in order to meet Air Force needs and to reinforce the career goals of Air Force officers. This will improve the career progression of both rated and nonrated officers over what they have experienced in the past.

The prime reason for the supplement is to fill the expanded requirement for rated officers in an armed conflict. The long lead time (about two years) required to train combat-ready aircrews makes it essential that sufficient capability be maintained in the Air Force to counter hostilities should they arise.

The supplement also allows the rated officer to gain valuable experience in support duties in order to broaden his potential to be assigned to a variety of managerial positions. This career broadening also provides the opportunity to pursue advanced education both in the academic and professional military fields.

TOPLINE envisions that most of the officers in the Supplement will have fewer than thirteen years of service. This places the majority of rated officers in the Supplement while they are captains and junior majors. The beneficial effects of this management action are twofold. First, it causes the minimum disruption of the nonrated officer's career progression as the rated officers in his career field will be fairly junior in rank. They will be Indians—not chiefs—and the nonrated officers will have ample opportunity for advancement to high-level jobs. Second, the rated officer upon completion of his Supplement tour (or during a conflict) will be able to move back into the rated



Maj. Gen. John W. Hoff, Commander, Central Air Force Reserve Region, presents the badge of Chief Flight Surgeon, the highest Air Force medical rating, to Col. George W. Frimpter, USAFR, during ceremonies at Ellington AFB, Tex.

The Bulletin Board

structure without outranking the supervisors who were there previously.

This, essentially, explains the characteristics of the TOPLINE Objective Force, but how do we get there?

Grade Legislation

The first transition problem is being able to maintain promotion phase points and opportunity. The Air Force sought passage of permanent grade legislation in 1972 that would allow for stabilized promotions during the transition to the Objective Force. The legislation that was passed, however, granted only temporary relief in grade limitations until September 1974. Furthermore, the authorizations are approximately as required in the grade of colonel and lieutenant colonel, but fall about fifteen percent below those required for major. The present legislation also jeopardizes our ability to maintain stable promotions with a decreasing force size. Permanent grade legislation is still a high priority issue under TOPLINE.

A second problem during the



Suzanne Schisgall helps out by dramatizing an exhibit of the National Committee for Employer Support of the Guard and Reserve during a recent convention of the American Association of School Administrators, in Atlantic City, N. J. (see also pp. 76-77).

transition is fluctuating personnel requirements and a changing force size. Although the current objective force is based on an officer strength of 115,000, TOPLINE provides a range of larger and smaller forces. While future force strengths are expected to fall in this range, the rapidity of strength changes may not be manageable with TOPLINE actions. Changes that occur at an excessive rate can produce highly undesirable force management actions such as a stop loss (in a rapid force expansion), or an involuntary force reduction (in a rapidly decreasing force). Both

actions have adverse impacts on the individuals involved, and they would be implemented only as a last resort.

The third major problem lies in Supplement manning or the movement of rated officers into support jobs. Past management of this program has led to skepticism from both rated and nonrated officers. The rated officer expresses the concern that a Supplement tour will make it difficult for him to return to a rated or flying job. The non-rated officer's concern centers around high-ranking rated officers who move into his career field and block his career progression. Both these problems have existed in the past but can be solved during the transition to the Objective Force.

The present officer force further aggravates the problem. Unfortunately, there are deficits of rated officers in those years when they should move into support duties and large surpluses in those years when fewer are needed for the Supplement. Ideally, in the Objective Force, sixty-five percent of the Supplement would have less than thirteen years' service. There presently are only thirty-two percent in this younger category. As the larger year groups, which currently have less than five years of service, become eligible, the Supplement will provide the opportunity for the career broadening needed to progress to jobs with greater management responsibility.

This, in brief, describes what TOPLINE is, what the goals are, and how they will be met.



On February 22-23, AFA's Military Manpower, Airmen, Junior Officer, and Organizational Advisory Councils held meetings to discuss problems affecting their particular interests. On February 23, the members of the Airmen Council joined the Organizational Advisory Council for a discussion of areas in which airmen and AFA can be mutually supporting. The photo was taken during this discussion period.

NEWS BRIEFS

Coed AFROTC

This past school year 1,427 women enrolled in AFROTC at the 166 colleges and universities offering the coed program. Enrolled

were 902 freshmen, 337 sophomores, 153 juniors, and thirty-five seniors.

Junior Officer Councils

Junior Officer Council (JOC)

activities as outlined in AFM 35-16 are being revised and expanded. JOCs will be required to commit themselves *in writing* to develop local objectives tied to objectives in AFM 35-16. Also, each JOC will develop procedures to track and

Ed Gates . . . Speaking of People

THE ADVANTAGES OF GOING REGULAR

Every new Air Force officer, unless he is convinced that a military career is not for him, should point toward a Regular commission. This means working hard from the beginning to establish credentials that just can't be ignored by boards considering officers for Regular status.

Air Force is limited by law to 69,429 Regular officers. This means that some 50,000 members of the commissioned force must serve in non-Regular status. The latter play an important role in USAF's overall game plan. During their early years of service, they are promoted, assigned, and otherwise treated like the handful of new officers USAF brings on board in Regular status—the Academy graduates.

The other services, unlike the Air Force, bring many more of their new officers in as Regulars. So, in the Air Force, the majority of newcomers compete for Regular commissions on the basis of their active-duty performance.

The Regular commission is important to officers planning to stay beyond their required service. That Regular Air Force ticket virtually assures the holder of job security (twenty-eight to thirty years of service), a good chance at exciting work, and reasonably high rank. And, if a young Regular changes his mind about an Air Force career, he can resign without prejudice.

With few exceptions, non-Regular Air Force officers are limited to twenty years of service. And the threat of being forced out before attaining retirement surfaces too often.

Actually, in recent years, reductions in force (RIFs) have been more apparent than real; Air Force has accepted enough voluntary early-outs to keep personnel strength within approved levels. But during extended periods of declining manpower, such as at present, it becomes a different ball game.

One management problem prevalent under current law is that there is no way, other than under "show-cause" provisions, to fire a marginal Regular officer. There is a possibility that this rule may be changed in the near future, but until it is, non Regulars alone are vulnerable.

Air Force non-Regular officers suffered heavy RIFs in 1949, 1953, and 1958. These actions caused such turmoil that officialdom vowed it wouldn't happen again, if at all possible. And, indeed, for the past fifteen years straight, RIFs have been pretty much limited to the relatively few officers suffering promotion passovers. Non-Regulars, of course, suffer more promotion failures than Regulars. This should not be considered surprising or unfair, however, because the whole point behind Regular officer selections is to choose the best qualified. The surprise would occur if non-Regular officers did as well as Regulars, promotion-wise.

Most billets in professional schools and in the ad-

vanced degree programs also—understandably—are reserved for Regular officers. With non-Regulars limited to twenty years of service, the government would receive insufficient return on the taxpayers' investment in such schooling, if non-Regulars were enrolled in these programs.

Probably the most satisfying aspect of a Regular commission is the built-in job security. Like a college faculty member who has passed his trial period, the Regular officer enjoys almost iron-clad tenure. It's assured in the statutes. A twenty-eight-year career and lieutenant colonel's rank are almost a cinch, while his odds on making colonel and serving thirty years are good—about fifty percent. And the new Regular always has a shot at a general's stars.

The typical career non-Regular officer must constantly concern himself with hanging in for eighteen years of service. That's the "sanctuary." Once there, he is automatically carried for two more years, thereby qualifying for the forced retirement that hits almost all Air Force non-Regulars at the twenty-year service point. About the only time Air Force allows longer service is when the person who has long enlisted service has not yet completed ten years of commissioned time. The average non-Regular officer retires as a major, officials at Hq. USAF say.

What about the man who fails to make the sanctuary? This is big trouble. He's perhaps too old to make a success at a new career in civilian life. And his \$15,000 readjustment pay under existing law (subject of course to a heavy tax bite), won't go far in reestablishing himself and his family.

He can, of course, enlist as an E-4 with the idea of serving out the final three, four, or whatever years' service are needed to complete twenty and retire in his Reserve grade. But that can be a thorny route, full of trauma and perhaps hardship for himself and his family. While the permission to enlist may be viewed as a nice gesture by the government, it represents questionable personnel management.

Though the present Regular/Reserve officer system is far from perfect, it exists. Chances of early significant changes in the law are uncertain, although the Pentagon has been working on a broad officer personnel legislative proposal (see also p. 49). It would allow the services to force out noneffective Regular officers and strengthen management of the officer force in many ways. Congressional approval could come eventually, although it appears unlikely this year.

Meantime, the strong existing case for "going Regular" points up the importance of the series of Regular commissioning boards the Air Force conducts each year. These panels allow each officer several chances to compete for that ticket to a long and rewarding career. But the record that will impress these boards is best started the day active duty begins.

The Bulletin Board

report progress of local objectives and reflect the procedures in their charter. Further, each JOC will report objectives to MPC through MAJCOMs. Lastly, JOC minutes' format will change. The new manual should be out next month.

Wash-and-Wear Trousers

Base exchanges now have the new shade 1577 Air Force trousers, made of a dacron/cotton-blend permanent press, wash-and-wear fabric. The price is about nine dollars as contrasted to about sixteen dollars for the dry-clean-only dacron and wool type.

Senior NCOs Unchanged

Air Force announced recently that it would make **no changes in uniform insignia or titles for the top three NCO grades** (see "The

Bulletin Board," March '73). Commands found the proposals unacceptable. Most thought the proposed changes would detract from the NCOs' ability to identify with young airmen. Further, the proposed title of "superintendent" was considered too awkward a form of address, with no military connotation.

Retirement Law

The Utah Legislature has passed an **Individual Income Tax Act of 1973**, which is of special interest to military personnel and retirees living, or planning to live, in Utah. It provides a state exemption of \$4,800 on retirement income. For more information contact the Chamber of Commerce, 19 East 2d South, Salt Lake City, Utah 84106.

Airmen Career Booklets

The Military Personnel Center (MPC) has announced **twenty-six more titles for its "Airmen Career Progression Pattern Pamphlets."** Three are already in the field. These career progression guides

in the Air Force Pamphlet 39 series cover all major aspects of each specialty from number of short tours to be expected in one's career, to years of service currently held by airmen for promotion to each grade. Each airman will get his individual copy.

New College Opportunity

A new catalog identifies **seventy-seven community and junior colleges offering courses at military installations worldwide**. The cooperating institutions joined DoD and the American Association of Community and Junior Colleges in publishing the book. These colleges pledge: liberal entrance requirements, programs on base and other convenient locations, tutorial programs, other academic assistance, liberal residency requirements, and a transfer policy that is generous in recognizing traditional and non-traditional learning obtained from other institutions. Now, service members who are being transferred can check the catalog for participating colleges near their new assignments. ■

HERE'S HOW TO HELP . . .

The Air Force Association has worked with the National Committee for Employer Support of the Guard and Reserve since the Committee was formed. Last September, AFA's annual Convention was the scene of a seminar devoted to the Committee and its new efforts. That panel presentation was reported on in AIR FORCE Magazine (see November '72 issue, pp 82-86). A resolution was also passed at

that Convention making it a matter of record that AFA was lending its full support to the efforts of the Committee. It is with this same interest and belief in the goals of the National Committee for Employer Support of the Guard and Reserve that AFA offers herewith an opportunity for those involved in the problem to participate.

On the facing page is a message for employers, and below is a

pledge coupon employers may sign and return to the Committee. We hope our readers who may employ current or potential members of a Reserve component will read the message and sign and return the pledge. Mail it to the National Committee, which will then send you your official "Statement of Support," signed by the Secretary of Defense and the National Chairman.

**Mr. J. M. Roche, Chairman
National Committee for Employer Support
of The Guard and Reserve
400 Army Navy Drive
Arlington, Va. 22202**

Dear Mr. Roche:

We are happy to join you and other American employers in pledging continued encouragement and support to the National Guard and Reserve Forces of the United States.

Please send our copy of the "Statement of Support" so we can sign and display it.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

NUMBER OF EMPLOYEES _____

SIGNATURE _____

DATE _____

HANG IT!



Statement of Support for the Guard and Reserve

We recognize the National Guard and Reserve as essential to the strength of our nation and the maintenance of world peace. They require and deserve the interest and support of the American business community, as well as every segment of our society.

In the highest American tradition, these Guard and Reserve forces are manned by civilians. Their voluntary service takes them from their homes, their families and their occupations. On weekends, and at other times, they train to prepare themselves to answer their country's call to active service in the United States armed forces.

If these volunteer forces are to continue to serve our nation, a broader public understanding is required of the total force concept of national security—and the essential role of the Guard and Reserve within it.

The Guard and Reserve need the patriotic cooperation of American employers in facilitating the participation of their eligible employees in Guard and Reserve programs, without impediment or penalty.

We therefore join other members of the American business community in agreement that:

1. Our employees' job and career opportunities will not be limited or reduced because of their service in the Guard or Reserve;
2. Our employees will be granted leaves of absence for military training in the Guard or Reserve without sacrifice of vacation time; and
3. This agreement and the resultant company policies will be made known throughout the organization and announced in company publications and through other existing means of communication.

Secretary of Defense

Chairman
National Committee for Employer Support
of the Guard and Reserve

Title

Employer

, 19

That's what you do with the things you cherish . . . your degree, that diploma, family pictures, your first buck. All these are probably hung up somewhere because you're proud of them. This piece of paper is something to be proud of too. Hang it—hang it up with those other precious things.

It represents a feeling, a stand, a commitment. All for America. For the things you believe in. The atmosphere you work and play in. Freedom.

The words on the statement are self explanatory, the feelings are not. They are tied up in history—the history of our country, of your town. Ever since Lexington and Concord our country has thrived and survived because of her citizen soldiers, sailors, and airmen. They're the ones we count on for a lot of things. Things like fighting to keep our freedom, helping us in disasters. They even hand us a bargain to boot. Thirty percent of our defense posture is made up of Guard and Reserve forces and they do it all on less than five percent of the budget. That's a bargain in anybody's book.

As a businessman and employer, share your feelings of pride and thanks for those who are ready to lay it all on the line for what you believe.

Send for the statement, sign it, and hang it!

**National Committee for
Employer Support of the
Guard and Reserve**

400 Army Navy Drive,
Arlington, Virginia 22202

Letter from Europe

By Stefan Geisenheyner

EDITOR FOR EUROPE, AIR FORCE MAGAZINE

Blowpipe Missile Accepted for British Forces

Combat readiness of modern infantry forces on the battlefield depends on dispersal in small units, camouflage, lightweight antitank weapons, and some measure of anti-aircraft capability.

The infantry needs a small, lightweight, man-portable, short-range anti-aircraft missile. Such a weapon must be storable and cheap and also have IFF (identification, friend or foe) capability. The weapon must be safe and simple to operate because the infantryman's basic job is ground fighting and not anti-aircraft defense.

The missile system must be effective against fighter-bombers, helicopters, and observation aircraft up to a distance of two miles and altitudes to 5,000 feet. Against fast low-flying aircraft, it must be capable of head-on shots.

The Blowpipe missile system, developed and constructed by Britain's Short Brothers & Harland, is an answer to these demands.

From the outset, it was decided to use radio guidance, a field in which the British company has extensive experience. The firm's highly effective Seacat and Tiger-cat missiles are, without doubt, unique in their class and are in service throughout the world. Utilizing radio guidance in conjunction with visual acquisition and tracking, they are easy to operate, and training gunners poses no particular problem. The missiles are, however, typical products of their period—the late 1950s and early 1960s. At that time, integrated and subminiature electronic circuits were in their infancy. The missiles and their flight-direction gear, therefore, are relatively large and not suitable as man-carried weapons.

However, by using the experience gained in building Seacat, Shorts designed in the middle sixties a new, lighter weapon, based on the older concept. It was to be-



The man-portable Blowpipe, with IFF capability, is an answer to the infantryman's need for a small, lightweight, short-range anti-aircraft missile.



The missile is guided to the target by a thumb-operated switch, with steering commands transmitted over a radio link.

come the man-portable Blowpipe, using basically the type of electronic building blocks that went into Seacat, but now highly miniaturized.

The completely man-portable system consists of two parts: a hermetically sealed, weatherproof launching tube containing the missile, and a separate aiming unit that clips to the tube. The former is fifty-five inches long and weighs thirty-one pounds. The reusable aiming unit, which detaches after firing, weighs sixteen pounds, including batteries and IFF interrogator.

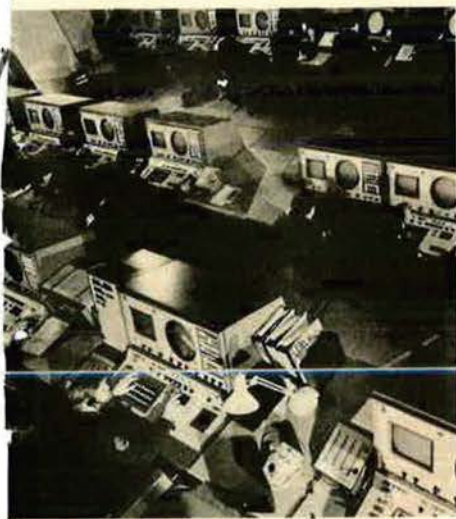
The guidance technique and operation of Blowpipe is simple. After the aiming unit has been clipped to the missile tube, the weapon is ready to fire. Pulling a trigger activates the system. During firing, the weapon is pointed at the target, which is tracked with the help of a monocular sight. For the first several seconds of its flight, the missile is automatically steered into the gunner's line of sight. It is then guided to the target by means of a thumb-operated switch, with steering commands transmitted over a radio link.

Design emphasis was put on proper IFF capability to prevent inadvertent destruction of friendly aircraft. It is almost impossible for an infantryman in a battle situation to distinguish between friendly and enemy aircraft, especially during fast, low-level flight and in the head-on position. The IFF system blocks the firing of Blowpipe if a friendly aircraft is tracked.

The Blowpipe program was initiated by Shorts in 1966 as a private venture. It was chosen for further development by the British Ministry of Defense during an evaluation of three similar systems. After exhaustive testing and continued development, it was announced in May 1972 that Blowpipe had been accepted for final trials by the British Army and Royal Marines.

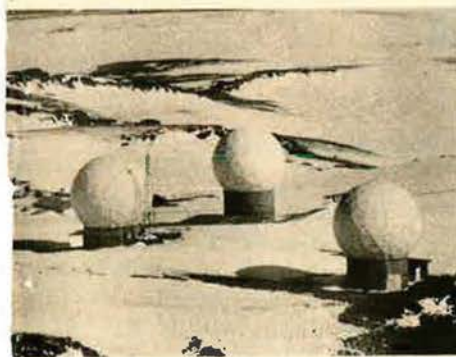
Blowpipe has an inherent capability against any type of target because it is not dependent on infrared or other emissions for guidance. It can be used against trucks, light ships, and even tanks if the proper warhead is provided. How effective such infantry weapons can be was demonstrated in Vietnam by the Soviet-built, shoulder-

fired SA-7 Strela ("Arrow") missile. Helicopters that up to the North Vietnamese offensive of 1972 could fly with impunity at altitudes above small arms range were driven higher by the IR-guided SA-7, and thus were brought into the operational range of other air-defense weapons. This resulted in the downing of a sizable number of rotor-



—NATO Photo

A NADGE Operational Control Center, manned on a twenty-four-hour basis under joint command.



—NATO Photo

A NADGE site in Turkey, part of a chain of surveillance stations in NATO's early-warning network.

craft before some makeshift countermeasures could be devised.

NATO's Early-Warning System

The acronym NADGE holds a special meaning for NATO and the Europeans. It stands for NATO air defense ground environment. NADGE is an early-warning network that stretches from northernmost Norway to the mountainous

plateaus of eastern Turkey in an unbroken chain of surveillance stations. With justifiable pride, NATO points out that this system is one of the few operational military endeavors that is a truly international undertaking, manned on a twenty-four-hour basis under joint command.

The system has been based on an electronic network of high-capacity, high-speed computers and advanced radars, and includes existing older facilities that have been thoroughly modernized. Eighty-four stations are operational, located in Norway, Denmark, Germany, the Netherlands, Belgium, France, Italy, Greece, and Turkey. For purely strategic reasons, the British Isles are not part of the chain, but Great Britain has its own warning network that meets NADGE standards and is electronically linked with the Continental net.

The NADGE project was originally part of a NATO infrastructure program, but, because of its \$300 million price tag, steps were taken to ensure that each participating nation received an appropriate share of the work.

A consortium of six companies known as NADGECO supplied the basic equipment. Thomson-CFS of France was responsible for the tridimensional radars, Telefunken of Germany for their construction under French license, Marconi of Britain built the height-finding radars, the Dutch company Signaalapparaten the gap-filler radars, Selenia of Italy designed and constructed the console equipment, and Hughes Aircraft supplied the computers. Many subcontractors built auxiliary equipment, and the actual construction of the radar sites was evenly distributed among the partners.

The scale of the project can be judged by the fact that the consortium's written proposals ran close to 80,000 pages. Five thousand major items had to be procured, and the construction of 200 buildings, partly at remote sites, posed special difficulties. Some sites in Norway are fully automatic and were built only with the use of helicopters that also help maintain the sites.

Some older stations that had been part of the national radar nets, such as USAF's 412L system in Germany, were integrated into NADGE, modernized, and linked with the central command points. The eighty-four NADGE sta-

tions range from simple monitoring posts designed to pick up enemy aircraft to sophisticated control centers. The latter are responsible for interception in their sectors. Specially constructed centers representing about twenty percent of the network link the control stations and monitor their performance. Thirty-five main radar posts are equipped with such advanced radar gear as tridimensional Thomson-CSF radar and Hughes H3118 computers. They are located at the most sensitive points of the defense chain.

The radars pick up a target, process data into the computers, and simultaneously feed the operator the data he needs on the spotted aircraft. If special information is required, such as altitude, speed, course, or IFF signature, it is displayed on demand. At intercept command the computer selects the most suitable weapon system—the type of aircraft or missile—works out an intercept course, flight plan, and mission profile. After the intruder is intercepted, the computer calculates the proper return course based on the fuel situation of the interceptor, or indicates an alternate airfield.

Duplication is built into the NADGE system to allow for survivability if battle damage occurs, and to offset electronic countermeasures if stations are jammed. For instance, if one station becomes inoperative, command and control is passed from this sector to another as the situation demands. Surveillance reaches far beyond the Iron Curtain, thus providing adequate warning time.

In its daily round-the-clock operation, the entire NADGE system is supervised by SHAPE, Allied Headquarters for Europe. However, each NATO nation is responsible for its own geographic area, known as a NADGE sector. The defense weapons and forces remain under national control. Still, NADGE observations are channeled directly to NATO Headquarters, which is responsible for the decisions that an emergency exists and the activation of allied defenses.

With NADGE, a system came into being that USAF Gen. Lauris Norstad, former Supreme Allied Commander, Europe, had requested in the 1950s when he warned: "Except as part of a whole, there is no air defense of any single nation in Europe." ■



Lt. Gen. Alvan C. Gillem II, AU Commander (left), is greeted on arrival by outgoing AAS National Commander Larry Tackett.

Angels listen intently to a presentation by Brig. Gen. Jeanne M. Holm, one of many meetings for the women during the conclave.



Arnold Air Society, Angel Flight Conclave

Since 1948, members of AFROTC's Arnold Air Society from college campuses throughout the nation—joined in 1955 by the Angel Flights—have met for their annual conclave. This year, in Salt Lake City, the cadets, Angels, and Air Force blue made it . . .



A Perfect Blend

By Maj. Robert W. Hunter, USAF CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

FROM Hawaii. From Puerto Rico. From Texas, California, Massachusetts, and Michigan. From all over the country they poured into Salt Lake City, Utah.

They were the cadets of Air Force ROTC's Arnold Air Society and the women of the Angel Flight convening in national conclave for their silver anniversary. They came by military airlift—although airlift support was down this year. They came in car caravans—many driving all night. They came in chartered buses—some carrying three spare drivers for the trip. That was how eager these men and women were to be a part of the tremendous excitement that marks these gatherings. One cadet was heard to remark, "If we can get to Salt Lake City this time of year, and with diminished airlift

support, we can get anywhere, and I'll be at next year's conclave—somehow! A national conclave is a must for the Society."

And so the conclave began, not with the handful that many had feared, but with more than 1,700 college students bent on serious business—and, of course, some fun.

Hosted by the Bernard F. Fisher Squadron of Brigham Young University, the students enjoyed a Polynesian dinner with entertainment by the Asian Club of Brigham Young University, a chance to tackle the skiing at Snowbird, and capped their stay with an awards banquet and formal ball during which next year's "Little General" was announced from among Angel Flight contestants.

While the week saw serious busi-

ness meetings, caucuses, and administrative details being attended to, the full meaning of commitment to the AFROTC program and the US Air Force came during the two awards banquets. There, feelings of respect and pride were evident as awards were announced.

Martin M. Ostrow, AFA President and master of ceremonies for the first dinner, presided.

Joe Higgins, the "Dodge Safety Sheriff," former AFA Chapter President, and "Toastmaster General of the Air Force," was presented the Paul T. Johns Award.

The Eugene M. Zuckert Award went to USAF's three aces of the Vietnam War: Capts. Charles B. DeBellevue, Jeffrey Feinstein, and Richard S. "Steve" Ritchie. (Captain Ritchie received his award dur-



Business sessions drew large crowds of cadets during an exhausting week in which issues were discussed and elections held.

AFA Executive Director James H. Straubel addresses cadets during a business session. AFA has been an active sponsor of Arnold Air Society and Angel Flight activities over the years. Mr. Straubel spoke of the AFA/USAF partnership.



Mrs. Sara Ciccoli (left), AAS and Angel Flight Executive Secretary, chats with Capt. and Mrs. "Steve" Ritchie during the conclave's final banquet.

ing the cadet awards banquet on the final night.)

A member of the US crew of the forthcoming US/Soviet space rendezvous—Donald "Deke" K. Slayton—was presented the John Fitzgerald Kennedy Award.

Maj. Michael Carns, Aide to USAF's Chief of Staff, received the Lt. Theodore C. Marrs Award.

Gen. John W. Vogt, Jr., was recipient of the Gen. H. H. Arnold Award, Arnold Air Society's highest honor. In the Society's choice, although the General could not be present to accept in person, was recognized the responsibility shouldered by the Seventh Air Force Commander, who directed the final phases of the air war in Vietnam.

With an after-dinner address by Gen. John C. Meyer, CINCSAC, and the reading of a telegram from the President of the United States, the banquet was adjourned after a full and busy day.

On the final night, as formally dressed cadets and Angels gathered in the Salt Palace with Cadet Ben Davidian of the University of Utah

as master of ceremonies, a year of work and dedication came to an end.

Brigham Young University's ROTC singing group, the "Footprints," started things rolling. Their enthusiasm set the tone for the evening. Cadets and Angels registered happiness as cadet and unit awards were announced for accomplishments throughout the year.

Mississippi State University walked off with top honors as the best Arnold Air Society Squadron, and received the Maryland Cup. Oklahoma State University's Angel Flight took top honors and the Purdue Cup as the best of the Angels. Finally, a special expression of affection, so freely given only by youth, was made known to Mrs. Sara Ciccoli as she was honored in her

final conclave, as the Arnold Air Society and Angel Flight's Executive Secretary. That honor was more than doubled as her late husband, Lt. Col. Louis J. Ciccoli, USAF (Ret.), was posthumously named as the coming year's Honorary National Commander of Arnold Air and the Angel Flight.

Then, with the exuberance born of victories, prizes won, and hard work completed, students danced into the morning. Suddenly—to too soon for many to savor as they might have wished—it was over.

But preparations were already under way for next year's conclave in Houston. No one who saw these outstanding young Americans in action at Salt Lake City can doubt that next year's conclave will be another resounding success. ■

THE WHITE HOUSE
WASHINGTON
March 9, 1973

Dear Ray:

For many years it has been my pleasure to applaud the recipient of the Bronze Eagle Award. This year I am deeply touched by the decision of the Iron Gate Chapter of the Air Force Association to confer this coveted honor on me.

The last months have seen the culmination of a long effort to end a tragic and divisive conflict. It is an exhilarating and challenging experience to lead a nation into an era of newfound peace, but it is also a time of public praise for all of those who gave their support to the long-sought accomplishment of our objectives in Southeast Asia.

In expressing my appreciation for your recognition, I want to pass on the message it conveys to the brave men and women of the Air Force without whose perseverance my own endeavors could never have been realized.

I also join you in saluting the leaders of our manned space program who have used the fullness of our nation's scientific resources, not only to pioneer the exploration of space, but to serve all mankind by their achievement.

My warmest regards go out to you and to all who attend your Annual Dinner.

Sincerely,



Mr. J. Raymond Bell
General Chairman
Tenth National Air Force Salute
New York, New York

Memorable Tenth National Salute

On Friday evening, March 23, AFA's Iron Gate Chapter presented its Tenth National Air Force Salute at the Americana Hotel in New York City. More than 1,200 aerospace and civic leaders attended, including the Air Force Secretary and Chief of Staff and many dignitaries from the White House, Congress, and several government agencies. These National Salutes have raised almost three quarters of a million dollars for Air Force charities. Here are some photographic highlights of the evening.



Sen. Barry Goldwater, an ardent annual attendee and this year's honorary cochairman, with Sen. Henry "Scoop" Jackson, presents the Bronze Eagle Award to Air Force Secretary Robert C. Seamans, Jr., who accepted on behalf of the President of the United States. A copy of Mr. Nixon's message is reproduced on this page and was among the many highlights contributing to a memorable evening.



Former USAF Prisoner of War Maj. Robert Biss, left, stands by as former USAF POW Maj. Charles Greene presents the Iron Gate Chapter's Appreciation Award to Bill Bailey, Overseas National Airlines President and the 1974 Chairman of the Air Force Salute. Looking on is J. Raymond Bell, three-time National Salute Chairman and a 1972 recipient of AFA's "Man of the Year" Award and USAF's Exceptional Service Award.



Martin M. Ostrow, AFA's National President, presents the Iron Gate Chapter's Bronze Eagle Award to the "dedicated professionals of the US Manned Space Program." On hand for the award are, from left, Astronauts Col. William A. Anders (Ret.); Col. Donn Eisele (Ret.); Ostrow; Col. Edwin E. Aldrin, Jr. (Ret.); Dr. Harrison H. Schmitt; Brig. Gen. Thomas P. Stafford; Capt. Ronald E. Evans, USN; and Capt. Eugene A. Cernan, USN. Also present but not shown was Col. Frank Borman (Ret.).



The Women's Committee, always a strong contributor to the success of the National Air Force Salute, was chaired for the third consecutive year by Anna Chennault. She is shown presenting a gift for valuable services to Mrs. Barry Goldwater, who was a member of her committee, along with Jeanne Viner, at left. On the right are Congressman and Mrs. Barry Goldwater, Jr. Also present was Mrs. John D. Eisenhower, who served on the Women's Committee along with Ambassador Louise Gore.



Mrs. Robert C. Seamans, Jr., left, wife of the AF Secretary; J. Gilbert Nettleton, former Iron Gate Chapter President and former Air Force Salute Chairman; and Mrs. John D. Ryan, wife of the Air Force Chief of Staff, prepare to draw for three prizes: a Gruen digital wristwatch, a Magnavox Home Entertainment Center, and a Pan American World Airways round trip to Europe for two.

By Don Steele
AFA AFFAIRS EDITOR

THE FRONT RANGE CHAPTER, COLO. . . .

cited for consistent and effective programming support of the mission of AFA, most recently exemplified in its dinner honoring the Denver area Women in the Air Force.

Women in the Air Force in the Denver, Colo., area were guests of honor at a dinner sponsored by AFA's **Front Range Chapter** on April 12.

The dinner, the first of its kind to be sponsored by an AFA unit, was held in the operations hangar at **Buckley Air National Guard Base**. The hangar was decorated for the occasion by volunteers from one of the student squadrons at Lowry AFB. More than 300 leaders of the Air Force, the community, and AFA attended the dinner to honor the some 300 WAF present.

In keeping with the theme of the evening—"Red Roses for a Blue Lady"—each of the WAF guests received a red paper rose. During the social hour, the **Shades of Blue** band from the **Air Force Academy** provided background music. An F-100 and other ANG aircraft were on display on the flight line.

After a buffet dinner, prepared and served by personnel from the Lowry AFB Officers' Club, **Ann. Angela R. Powell**, 3439th Student Squadron, accentuated the theme by singing "Red Roses for a Blue Lady," and her own composition entitled "I'm in the Air Force." Chapter President **James C. Hall** then introduced the master of ceremonies, **Joe Higgins**, an honorary major general in the Air National Guard and the "Toastmaster General of the Air Force." Joe is better known to TV viewers as the "Dodge Safety Sheriff," and to members of AFA as a Past President of the **Los Angeles Chapter** and a popular master of ceremonies at numerous AFA national, state, and Chapter-sponsored programs.

Col. Billie Bobbitt, Director of the Women in the Air Force, was the evening's guest speaker. In her address, Colonel Bobbitt related what WAF have done in the past, what they are doing now, and what they are striving for in the future.

She also spoke about the career fields and base locations being opened to women and how the numbers of enlisted women in the Air Force will increase in the future.

Among the many distinguished military guests on hand to honor the WAF were **Col. Bernard**

Fisher, the first Air Force member to receive the Medal of Honor for Vietnam service; **Maj. Gen. Alton D. Slay**, Commander, Lowry Technical Training Center; **Maj. Gen. Otis Moore**, Commander, 14th Aerospace Force; **Maj. Gen. John S. Samuel**, USAF (Ret.), former



Front Range Chapter President James Hall, left, and AFA's Director of Field Organization Don Steele, right, listen as "Dodge Safety Sheriff" Joe Higgins makes a point with Col. Billie Bobbitt, Director, Women in the Air Force. Colonel Bobbitt was the guest speaker, and Joe was the master of ceremonies at the Chapter's recent dinner honoring Denver area Women in the Air Force.



Participants in the recent Northeast Regional Meeting in Allentown, Pa., included, from left, New York AFA President Gerald Hasler; AFA Board Chairman and guest speaker Joe L. Shosid; Vice President for AFA's Northeast Region James P. Grazioso; Iron Gate Chapter President Herbert O. Fisher; and AFA National Director James W. Wright.

This Is AFA

The Air Force Association is an independent, nonprofit, airpower organization with no personal, political, or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.

Membership

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

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

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

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

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

Objectives

• The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind.



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AFA News

LTTC Commander; **Brig. Gen. Larry Killpack**, Commander, Air Force Accounting and Finance Center; **Brig. Gen. Walter Williams**, Commander, 140th Tactical Fighter Wing, Colorado ANG; **Brig. Gen. Edwin Wittbrodt**, USAF (Ret.), former Commander, AFAFC; **Brig. Gen. Mortimer I. Gordon**, USAFR; **Capt. Wally Schirra**, USN (Ret.), one of the original seven astronauts; **Lt. Col. Ted Harris**, the last POW repatriated from Korea; and **Maj. R. A. Horinek** and **Capt. Don Spoon**, both former POWs recently returned from Vietnam.

Distinguished civilian guests included Aurora Mayor **Paul Beck**; State Representative **Floyd Pettie**, Colorado Springs; Colorado AFA President **Roy Haug**; **John Zipp**, consultant to AFA's Civilian Personnel Council; and **Noel A. Bullock**, a member of AFA's Civil Air Patrol Committee.

In closing the program, Mr. Higgins requested a moment of silent prayer in behalf of the MIAs and their wives and families.

The Tucson Chapter's Thirteenth Annual Air Force Appreciation Luncheon was held at the Pioneer International Hotel on March 16. More than 400 persons, including leaders of the Air Force, the community, and AFA, attended the luncheon, which annually serves as the kickoff event for **Aerospace and Arizona Days**, an open house at Davis-Monthan AFB.

AFA President **Martin M. Ostrow** briefly reviewed the background of the US space program and told of some of its "technological fallout that already has had a direct, important impact on the way we live, from medical advances to better means for detecting and curbing pollution." Following his remarks, Mr. Ostrow introduced the featured speaker, Apollo-16 Astronaut **Charles M. Duke, Jr.**, an Air Force colonel.

In his address, Colonel Duke said that the continuation of the space program could alleviate worldwide shortages of food and energy. He said that technology acquired from the Apollo flights may make it



Head-table guests at the Tucson, Ariz., Chapter's recent Air Force Appreciation Luncheon included, from left, Chapter President Ed Jewett; Col. Charles M. Duke, Jr., Apollo-16 astronaut and the featured speaker; AFA President Martin M. Ostrow; Col. Raymond L. Horvath, Davis-Monthan AFB Commander; and Arizona AFA President William P. Chandler.

possible to set up a space station capable of transmitting solar energy to earth antennas and then converting this power to electricity. Also, it may be possible to create a satellite network capable of photographing the crops of the world and relaying information about harvests and yields to some central network that could predict and plan worldwide food sources.

Colonel Duke said he had promised himself he would use the most scientific terms at his command to describe the lunar surface to geologists at the Houston Space Center, but failed: "Before I'd been

there [on the moon] twenty minutes, I'll bet I used 'fantastic' 900 times. I acted like my five-year-old does at Christmas."

Both Arizona Gov. **Jack Williams** and Tucson Mayor **Lew Murphy** spoke briefly, praising the military contribution to the security and economy of the state and city. Mayor Murphy received thunderous applause after he read a resolution expressing appreciation for Davis-Monthan AFB and for the exemplary manner in which the commanders and military personnel have conducted themselves in the community, and opposing any action that



During a recent South Central Regional Meeting in Jackson, Miss., the Mississippi AFA elected new officers for the coming year. Alexander E. Harris, left, Vice President for AFA's South Central Region, turns the State AFA charter over to the newly elected officers. They are, from left, Dr. William E. Riecker, Jr., Secretary-Treasurer; William A. Browne, President; and Richard G. Wilkinson, Vice President. AFA National Director Jack Gilstrap is at the right.

AFA News

might be construed as a potential impairment or obstruction to the viability or integrity of Davis-Monthan AFB or its mission. The resolution was later adopted unanimously by the Tucson City Council.

Representing Davis-Monthan were the following commanders: **Brig. Gen. James S. Murphy**, 12th Air Division; **Col. Fred A. Haeffner**, 355th TAC Fighter Wing; **Col. Raymond L. Horvath**, 803d Communications Security Group; **Col. Jack K. Massie**, Military Aircraft Storage and Disposition Center; **Col. Edward C. Parker, Jr.**, USAF Hospital; **Col. Eugene D. Scott**, 390th Strategic Missile Wing; and **Col. Donald S. White**, 100th Strategic Missile Wing.

Among the AFA leaders present were AFA National Director **Hugh W. Stewart** and Arizona AFA President **William P. Chandler**.

Chapter President **Ed Jewett** presided. Cochairmen of the luncheon committee were **Richard R. Mitchell** and **Leo E. Jordan**.

Delegates to the **Ohio AFA's 1973 Convention**, held in Columbus on March 31, elected **Robert L. Hunter** to succeed **Robert H. Maltby** as the State AFA's President for the coming year.

Also elected: **Gerard W. Kaufhold**, Executive Vice President; **Edward Nett**, **Melvin Gerhold**, and **Dale B. Hornung**, Regional Vice Presidents; **Charles B. Spencer**, Secretary; and **Kenneth E. Banks, Jr.**, Treasurer.

Col. Carl F. Arantz, Jr., Aeronautical Systems Division, Wright-Patterson AFB, Ohio, was the guest speaker at the convention banquet. Colonel Arantz spoke on "Advancements in Military Aircraft."

During the program, **Mark Sloan**, curator of the Air Force Museum at Wright-Patterson AFB until his retirement last June, received the State AFA's **Aerospace Power Award** for his long devotion to establishment of the museum. **Edward Nett**, President of the **Wright Memorial Chapter**, was named the Ohio AFA's "Man of the Year" and **Mrs. Nett** received the State AFA's "Patient Wife Award."



At the Ohio AFA's recent convention in Columbus, **Bernard D. Osborne**, left, Vice President for AFA's Great Lakes Region, presented the AFA Chapter of the Month Citation to Columbus Chapter President **Don Wilson**, center, as Ohio AFA President **Robert H. Maltby** looks on at the right.

Among the more than 150 members and guests who attended the banquet were **Bernard D. Osborne**, Vice President for AFA's **Great Lakes Region**; and AFA National Director **Jack Withers**.

IN SYMPATHY . . . AFA extends its deepest sympathy to the family and friends of **Joseph Dudick**, who died suddenly on March 28. At the time of his death, Joe was President of the **Mifflin County Chapter** in Lewistown, Pa.

CONGRATULATIONS TO . . . **Howard Markey**, AFA National Director and a former AFA National President, and **Stuart Haynsworth**, a Past President of the **Texas AFA**, both of whom were recently promoted to the rank of major general in the Air Force Reserve.

Congratulations also to **William D. Flaskamp**, Vice President for AFA's **North Central Region**, who was recently promoted to the rank of brigadier general in the Air National Guard.

CROSS COUNTRY . . . **Lloyd Grimm**, Chief Federal Marshal from Omaha, Neb., was hit in the chest by a burst of gunfire at Wounded Knee, S. D., on March 26. Lloyd, a former Vice President for AFA's **Midwest Region** and a Past President of the **Nebraska AFA**, was wounded shortly after he arrived to

participate in a roadblock near the settlement. He was treated at the Pine Ridge Hospital, then flown to Fitzsimmons General Hospital in Denver, Colo. Lloyd is now undergoing treatment and exercise at the Craig Rehabilitation Hospital in Englewood to restore the use of the lower portion of his body. For those of you who might want to drop Lloyd a card, his address is: **Lloyd Grimm**, Craig Rehabilitation Hospital, 3425 S. Clarkson, Englewood, Colo. 80110.

COMING EVENTS . . . AFA's Annual Dinner honoring the **Outstanding Squadron at the Air Force Academy**, The Broadmoor, Colorado Springs, Colo., June 2 . . . **New York AFA Convention**, The Treadway Inn, Niagara Falls, June 8-9 . . . **Michigan AFA Convention**, Holiday Inn, Gaylord, June 9 . . . **Virginia AFA Convention**, Harrisonburg, June 16 . . . **Wisconsin AFA Convention**, Marriott Motor Inn, Brookfield, June 16 . . . **Pennsylvania AFA Convention**, The Viking Motor Inn, Pittsburgh, June 22-23 . . . **Utah AFA Convention**, Ramada Inn, Ogden, June 22-23 . . . **Texas AFA Convention**, Menger Hotel, San Antonio, June 29-30 . . . **AFA's Twenty-seventh National Convention and Aerospace Development Briefings**, Sheraton-Park Hotel, Washington, D. C., September 16-20. ■



During a recent banquet sponsored by AFA's Savannah, Ga., Chapter, the guest speaker, **Col. Raymond B. Mabrey**, Commander, Georgia Wing, Civil Air Patrol, presented the "Billy Mitchell Award" to the four CAP Cadet Warrant Officers shown here. They are, from left, back row, **Leviticus Lewis**, **Colonel Mabrey**, and **Mark Knight**; front row, **Wayne Johnson** and **Michael Parker**.

PLAN NOW...
...TO ATTEND

AFA'S ANNUAL CONVENTION AND AEROSPACE BRIEFINGS AND DISPLAYS

AFA's National Convention (TENTATIVE SCHEDULE OF EVENTS)

SUNDAY, SEPTEMBER 16

12:00 n.n. Registration Desk Open

MONDAY, SEPTEMBER 17

8:00 p.m. Registration Desk Open
10:00 a.m. Opening Ceremony & Awards
1:00 p.m. 1st AFA Business Session

TUESDAY, SEPTEMBER 18

8:00 a.m. Registration Desk Open
8:30 a.m. 2nd AFA Business Session
9:00 a.m. Briefings & Displays Open
11:45 a.m. Briefing Participants' Luncheon
11:45 a.m. USAF Chief of Staff Reception
12:30 p.m. USAF Chief of Staff Luncheon
2:30 p.m. Air Force Symposium
6:00 p.m. AFA Annual Reception

WEDNESDAY, SEPTEMBER 19

8:00 a.m. Registration Desk Open
9:00 a.m. Briefings & Displays Open
11:45 a.m. Briefing Participants' Luncheon
11:45 a.m. USAF Secretary's Reception
12:30 p.m. USAF Secretary's Luncheon
2:30 p.m. AF Reserve and Air National Guard Seminar
4:00 p.m. Briefing Participants' Reception
7:00 p.m. USAF Anniversary Reception
8:00 p.m. USAF Anniversary Dinner-Dance

THURSDAY, SEPTEMBER 20

9:00 a.m. Briefings & Displays
11:45 a.m. Briefing Participants' Luncheon
4:00 p.m. Briefing Participants' Reception

AFA's 1973 Annual National Convention and Aerospace Briefings and Displays will be held at the Sheraton-Park and Shoreham Hotels, September 17-20. Accommodations are limited at the Shoreham Hotel and will be used primarily by other organizations meeting in conjunction with AFA's 1973 National Convention.

All reservation requests for rooms and suites at the Sheraton-Park Hotel should be sent to: Reservations Office, Sheraton-Park Hotel, 2660 Woodley Road, N.W., Washington, D.C., 20008. Be sure to refer to AFA's Annual National Convention when requesting your reservations. Otherwise, your reservation requests will not be accepted by the Sheraton-Park.

AFA's Annual National Convention activities will include luncheons for the Secretary of the Air Force and the Air Force Chief of Staff and the Air Force Anniversary Reception and Dinner-Dance. The National Convention will also include AFA's Business Sessions, an Air Force Symposium, an Air Force Reserve and Air National Guard Seminar, and several other events, including the Presidents' Reception, the Annual Outstanding Airmen Dinner, and the Chief Executives' Reception and Buffet Dinner.

With the increased attendance expected at this year's Annual National Convention and Aerospace Briefings and Displays, we urge you to make your reservations at the Sheraton-Park Hotel as soon as possible.



September 17, 18, 19, 20
Washington, D.C.

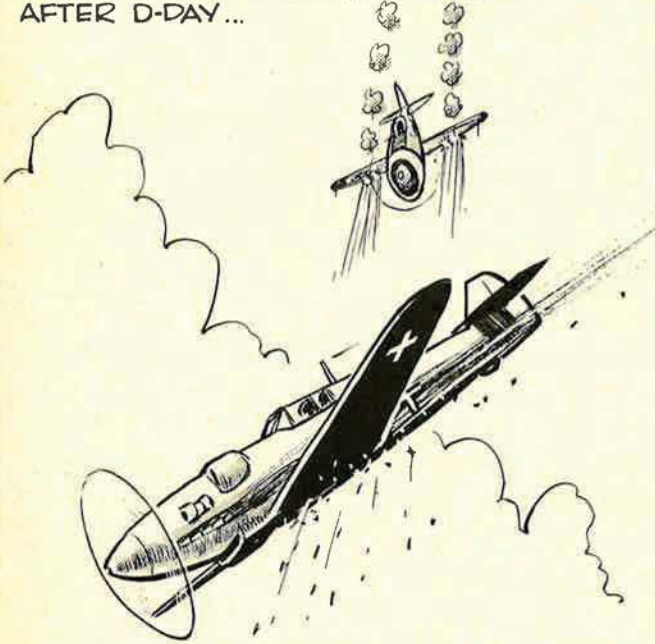


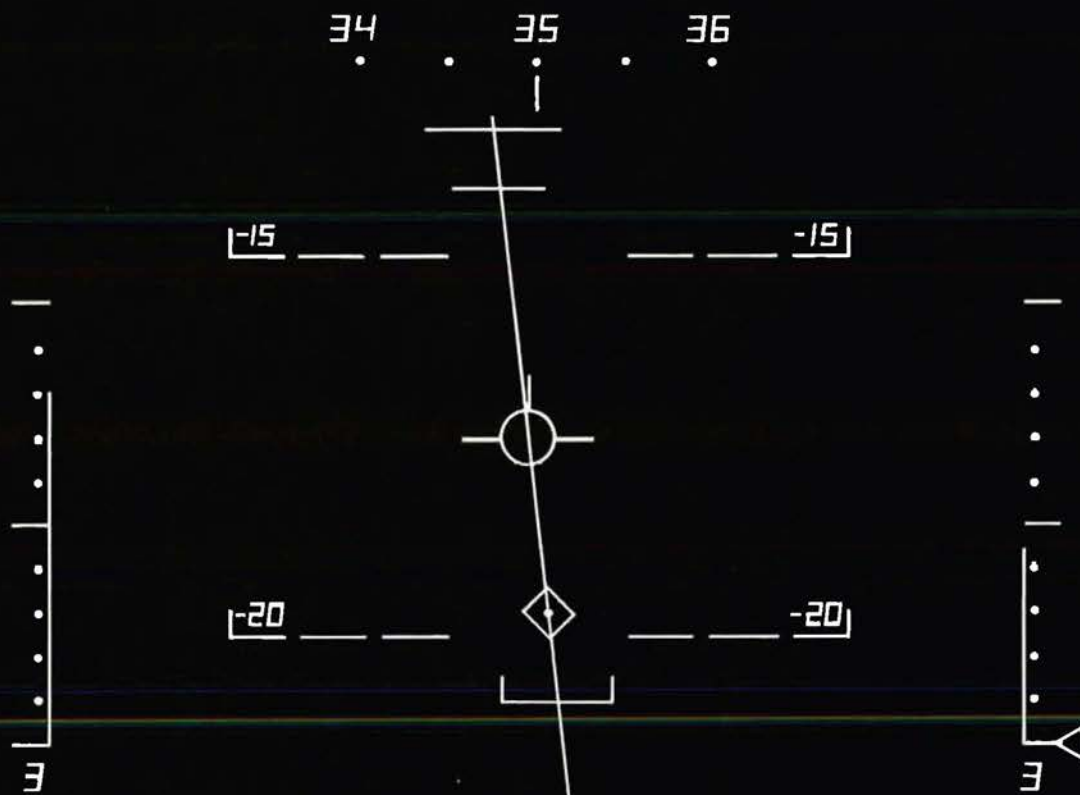
Bob Stevens'

"There I Was..."

Although your record's quite impressive,
Your arrogance now seems excessive.
When tallying this morning's score,
One's as good as sixty-four!

ONE DAY OVER FRANCE SHORTLY
AFTER D-DAY...





The A-7 makes ground movement after dark a nightmare.

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The A-7 is equipped with the most advanced navigation weapon delivery systems in service. The Head-Up Display, shown above, gives the pilot eye-level information required for weapons delivery.

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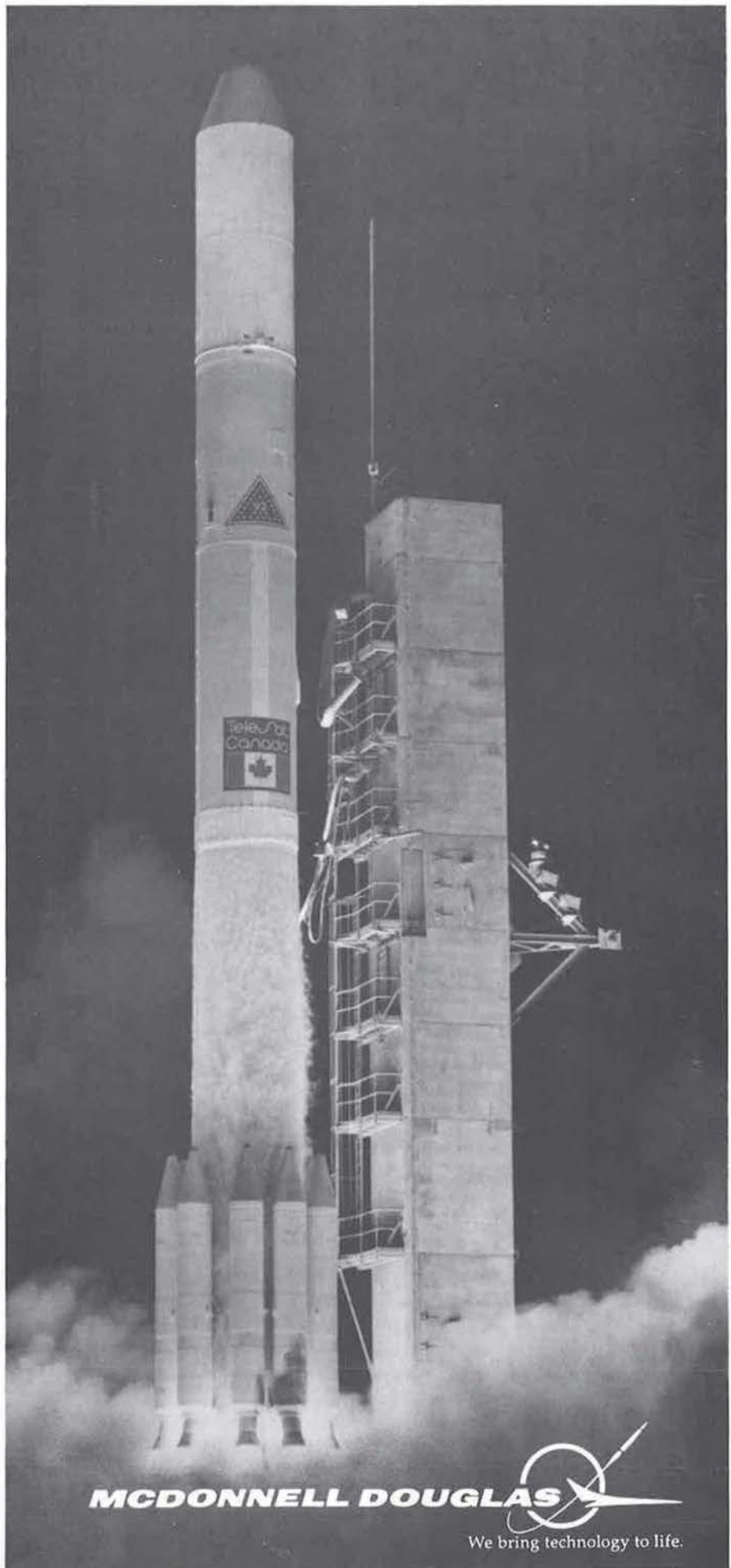
Delta has been effectively going about its business of launching satellites for over 12 years. During that period, it has been continually improved through orderly, evolutionary changes to satisfy ever-increasing mission requirements with reliability.

Today, Delta can launch 15 times the payload weight it could in 1960. It has a new inertial guidance system. And it's now available with a 2.44 meter diameter fairing and with up to 9 strap-on solid rockets for even greater payload flexibility.

Delta has successfully orbited 87 of 94 low Earth orbit, synchronous orbit and space probe missions. It has in fact launched more scientific and civil applications satellites than any other system in the Free World. Already used by ESRO, the United Kingdom, Canada and NATO, Delta has more international launches scheduled through 1975.

Delta is available today, as it will be through the decade, to answer the payload planner's request for a low-cost, reliable, and flexible space transportation system. Delta will do the job better.

Delta Straight Eight
launching Canadian ANIK Satellite
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