SEPTEMBER 1977/$2

AIR FORCE

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Anniversary Issue

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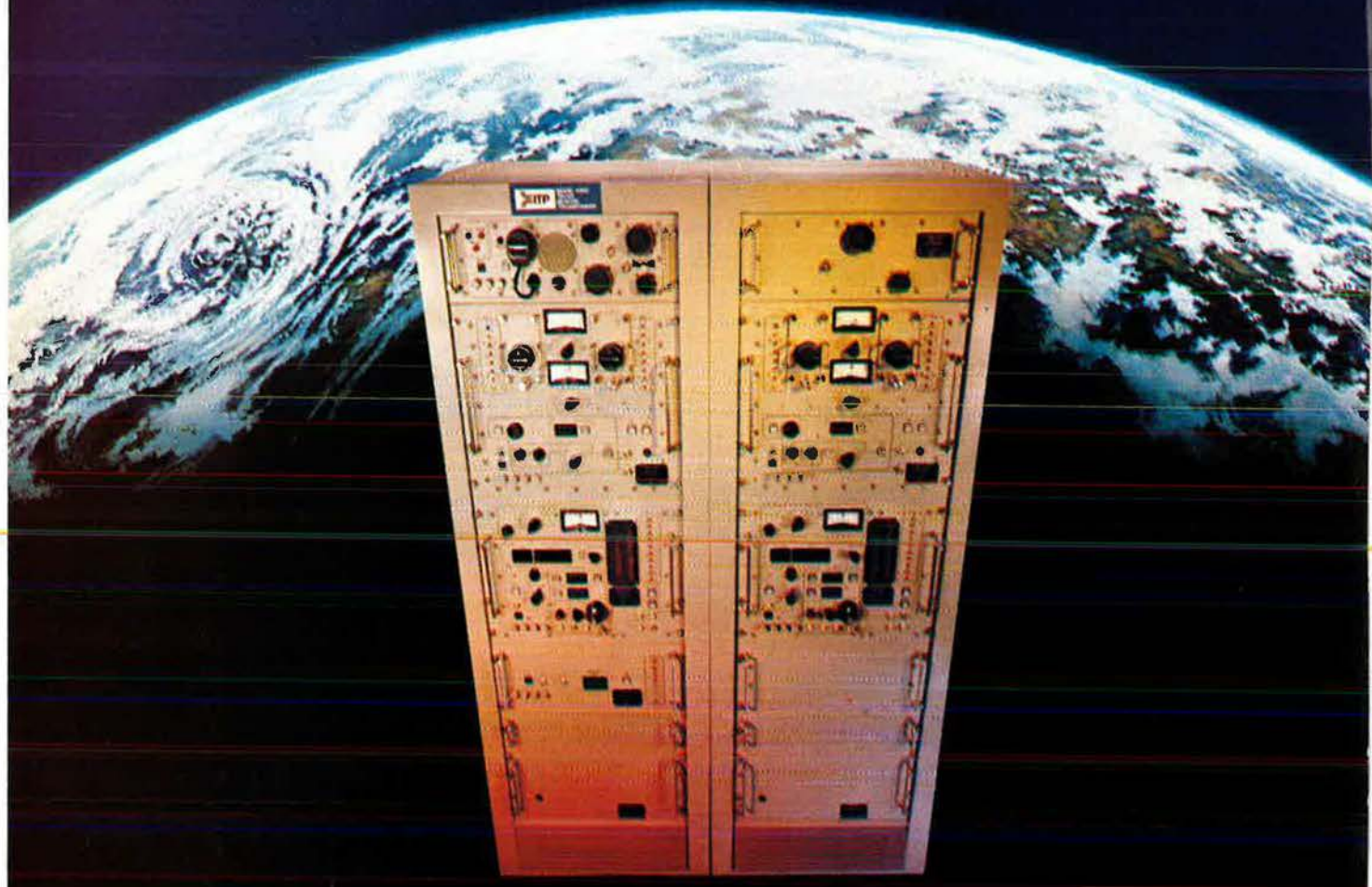

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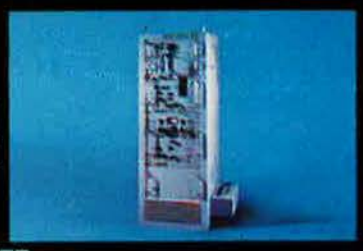

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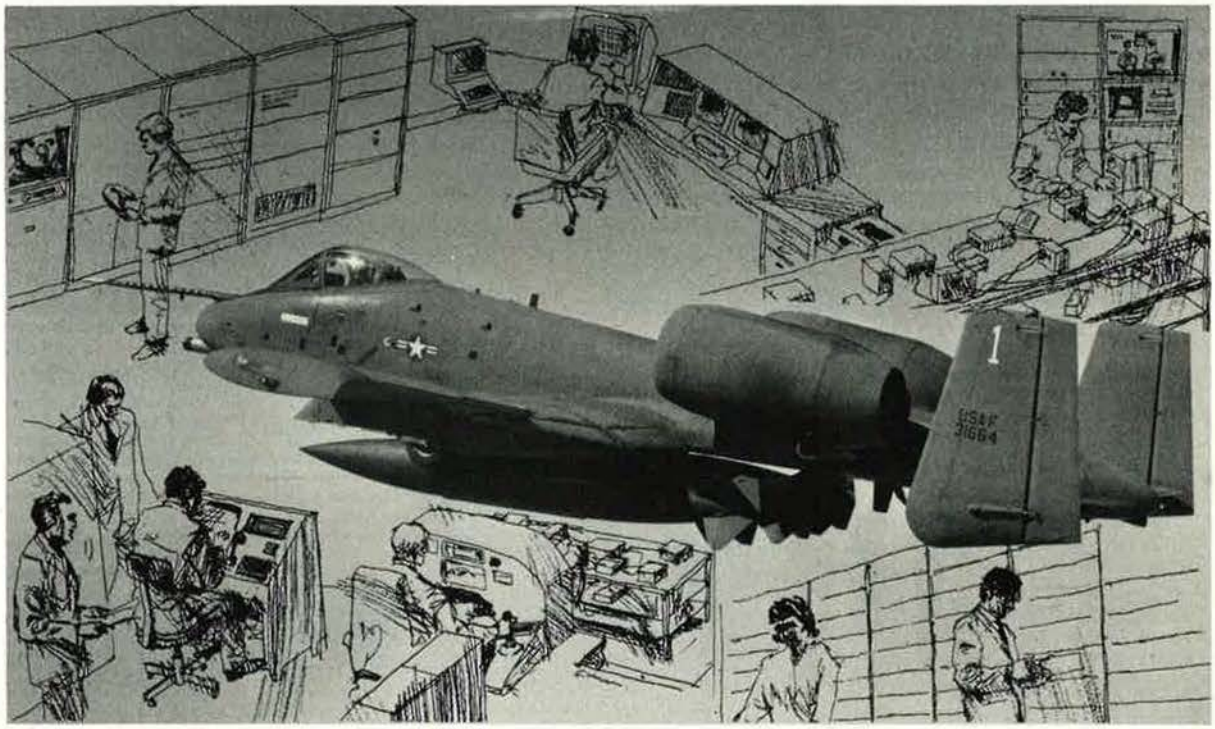

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to Moscow.

gnet and its ground transporter then were rolled the C-5's nose ramp and into the giant cargo mpartment.

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AIR FORCE MAGAZINE
PUBLISHED BY THE AIR FORCE ASSOCIATION

This Month

OUT THE COVER

Our cover, by artist Jack Pardue, celebrates both the seventieth anniversary of military aviation in the US and the thirtieth anniversary of the separate US Air Force. Readers will recognize young Hap Arnold and General Spaatz, an F-4 Phantom, an SR-71 pilot and his Blackbird, and a forty-eight-star flag, as it was in 1947.

Departments

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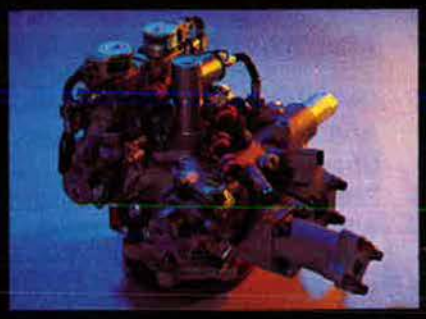

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AN EDITORIAL

After Thirty Years—A Look Around

By John F. Loosbrock, EDITOR

T IS traditional to wax nostalgic on anniversaries, be they of birthdays, weddings, or the beginnings of great rganizations. It is not only traditional; it is also fun, and e have succumbed to the temptation many times in ese pages. That's OK and we'll not overlook nostalgia is time, either, as we help the Air Force mark the irtieth anniversary of its founding as a separate and equal US military service on September 18, 1947.

In the huge framework of recorded history, thirty years but a blink of the archivist's eye. But in terms of the fficial existence of the Air Force, thirty years is what ere is. Thirty years represents it all if one doesn't count e forty years of gestation that led to the epochal event. ctually, the formal founding of the Air Force was not so uch a birthday as a christening, a legitimizing of a y-blow already born, as they say, on the wrong side of e Army blanket.

Be that as it may. That story has been told many times nd we'll not repeat it here except to note that infants orn of rebellious and unconventional circumstances ten grow up to be, perhaps in compensation, the most spectable and conformist of citizens. The analogy, we bmit, is not amiss in the case of the Air Force.

Having dismissed so briefly the long, arduous, and ten glorious struggle of those who dreamed and orked for the recognition of airpower as a new and cisive dimension of organized military strength we will ok almost as briefly at the great events that have rmed the Air Force as we know it today.

The new Air Force of 1947 was but a feeble shadow the mighty Army Air Forces that, independent in all t name, had made its case in blood and battle and ghty deeds across the skies of the entire world. It sn't much of a fighting force that Carl A. "Tooey" aatz, the first Chief, and Stuart Symington, the first cretary, inherited. The spirit was there and willing ough but there was very little flesh, and what there s assuredly was weak.

f the Soviets had had the sense to lie doggo, the need a new and modern Air Force might never have be- ne provable until it was too late. But the prowling and wling of the Russian bear, one might say, put the Force in business and has kept it there in one way another ever since, in cold wars and in hot.

The Berlin Airlift in 1948–49 was the opening gambit, in ich Air Force responsiveness to nonshooting crises s established once and for all. The cold war heated up, erupting eventually into a full-scale conflict in Korea that set a pattern for inconclusiveness new to American history. All the while, the Air Force was making major adjustments in equipment and weapons, with the transition from piston aircraft to jets proven in Korean skies, the shattering impact of nuclear and then thermonuclear weapons mated to intercontinental ballistic missiles, and a sweeping transformation in strategic philosophy from a war-waging, war-winning kind of thinking to the war-preventing concept of deterrence—which was fine as long as it was monopolistic in nature but which imposes severe strains on the US military posture today.

The pattern of inconclusiveness reasserted itself in the drawn-out, embittering Southeast Asia experience, where political restraints so hobbled the Air Force's ability to do its job that the ability itself came under unjust fire.

A thirty-year thumbnail, for which we make no apologies for omissions. The specifics have been chronicled in the pages of this magazine in depth and detail. What is notable is not the high points nor the low of these first thirty years. The fact to mark is that the Air Force—and indeed the nation—stands at a crossroads where critical decisions, many yet to be made, will start us all in a new direction. The next thirty months are likely to be more critical than have been the past thirty years.

One such decision is already behind us—the cancellation of production of the B-1. Others hang in the balance—the development of the cruise missile and its systematized mating to a proper launch vehicle; the MX strategic missile program and its implications for the future of the land-based ballistic missile as an essential leg of the strategic triad; the future of the triad concept itself; and, not least, the future of the NATO Alliance as a viable bulwark against a Soviet takeover in Western Europe.

Most critical of all, and the base from which the considerations outlined above will take their shapes, is the formulation of the philosophical framework and the molding of the national will from which the nation will take its future directions.

The B-1 decision is more important as an indicator, we submit, than in its specific ramifications. To us it appears as the tip of the iceberg, with ominous undertones that are only beginning to surface.

The Air Force slogan in its twenty-fifth anniversary year was "Pride in the Past; Faith in the Future." It takes a bit of editing to make it appropriate as this thirtieth year draws to a close. ■

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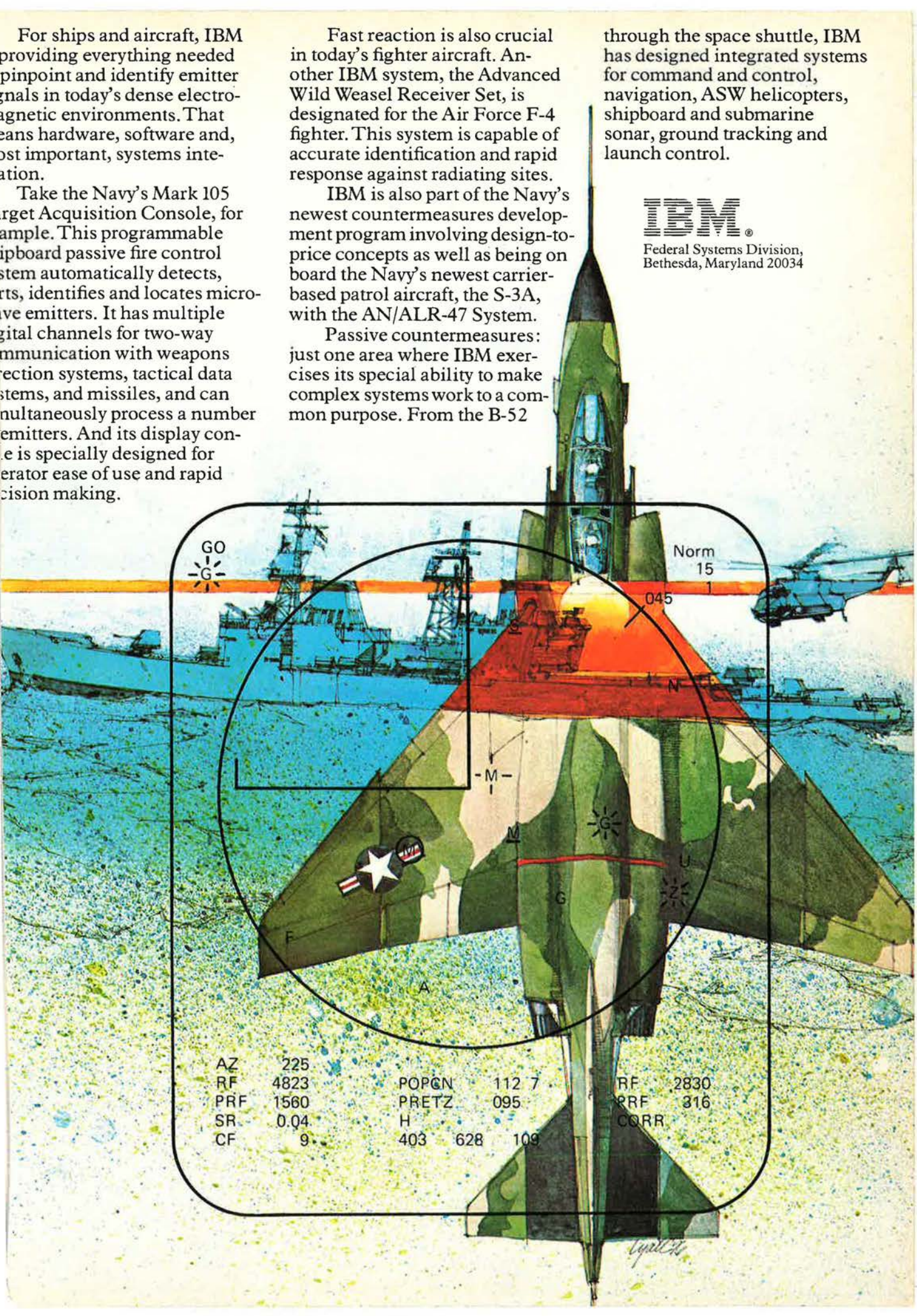
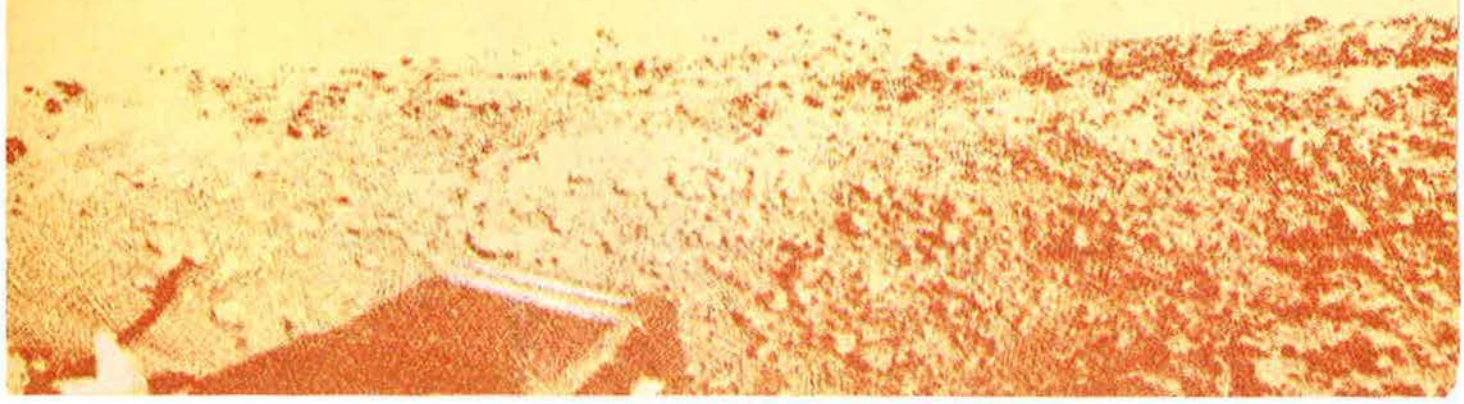
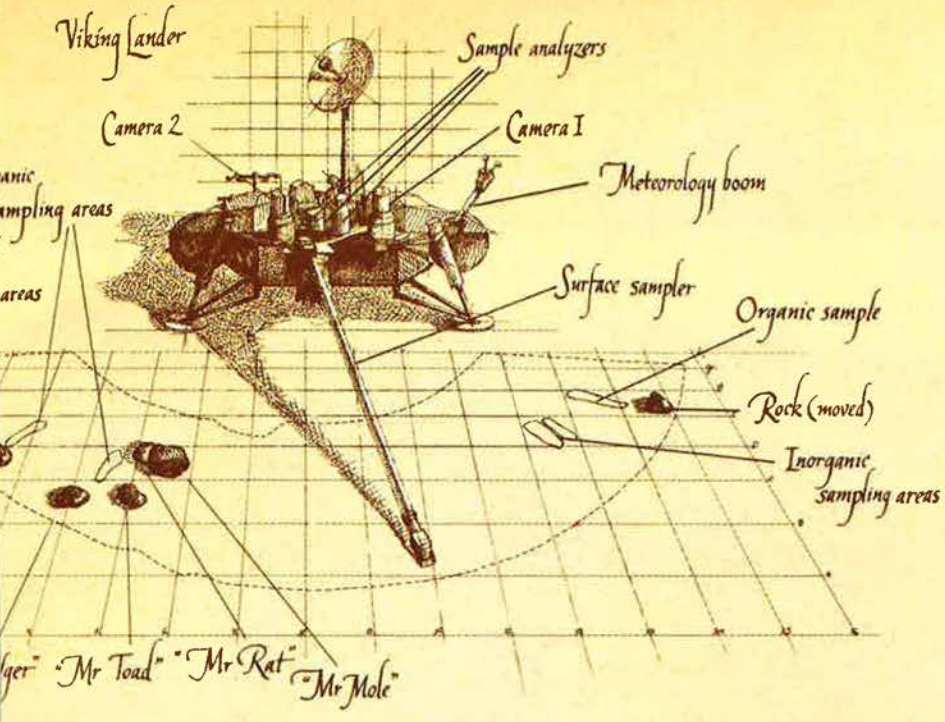
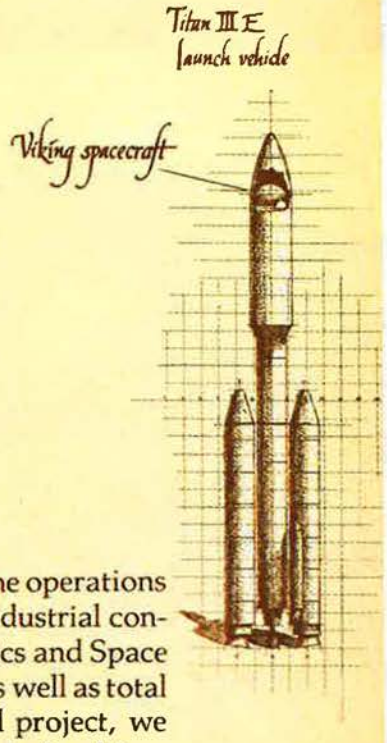


What does it take to put an exploratory system out there?

An extraordinary system down here.







very day for the last year two incredible sci-ntific laboratories have been taking the full easure of our celestial neighbor—the planet lars—some 240 million miles from earth.

These wonderful, durable and hard-working ikings have been on their own for nearly two ears—first, on an 11-month, 480 million mile oyage around the Sun to a perfect, pinpoint nding on the hostile surface of Mars, then de-vering a steady stream of scientific data back Earth. So precise was the design and con-ruction of the Viking landers and their instru-ents that their planned 90-day life on Mars is ow into the second year.

Seventy samples of Mars soil and rock—five nts of material—have been examined by the king instruments. The cameras have returned 239 photos in color, black and white, infrared d stereoscope. Weather recordings and seis-ological data have been gathered daily. And e list of scientific discoveries is not yet ended.

The success of the Viking landers was hieved by an extraordinary management stem that was responsible for the design, the engineering, the production and the operations of the Vikings. As the principal industrial contractor to the National Aeronautics and Space Administration for the landers, as well as total systems integrator on the overall project, we had but one objective in mind: to land two automated, scientific laboratories on the planet Mars and to return the valuable information asked for by the team of 70 scientists.

Today on Mars the Vikings are fulfilling a centuries-old dream of man to explore another planet. Here on Earth, Martin Marietta Aerospace has the experience and success to help man in his further exploration of the universe.

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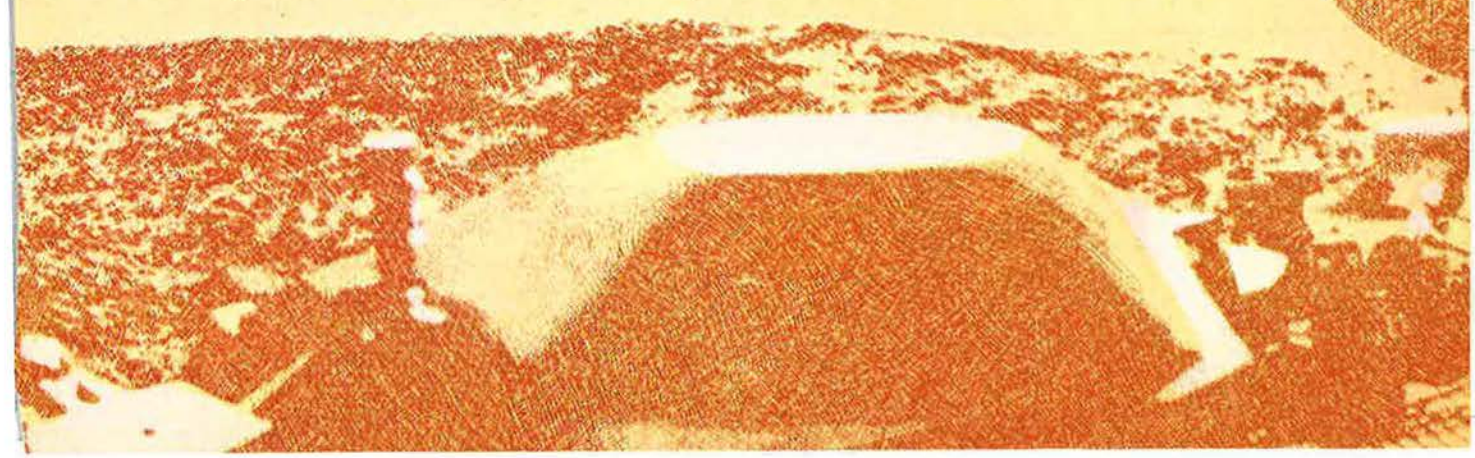
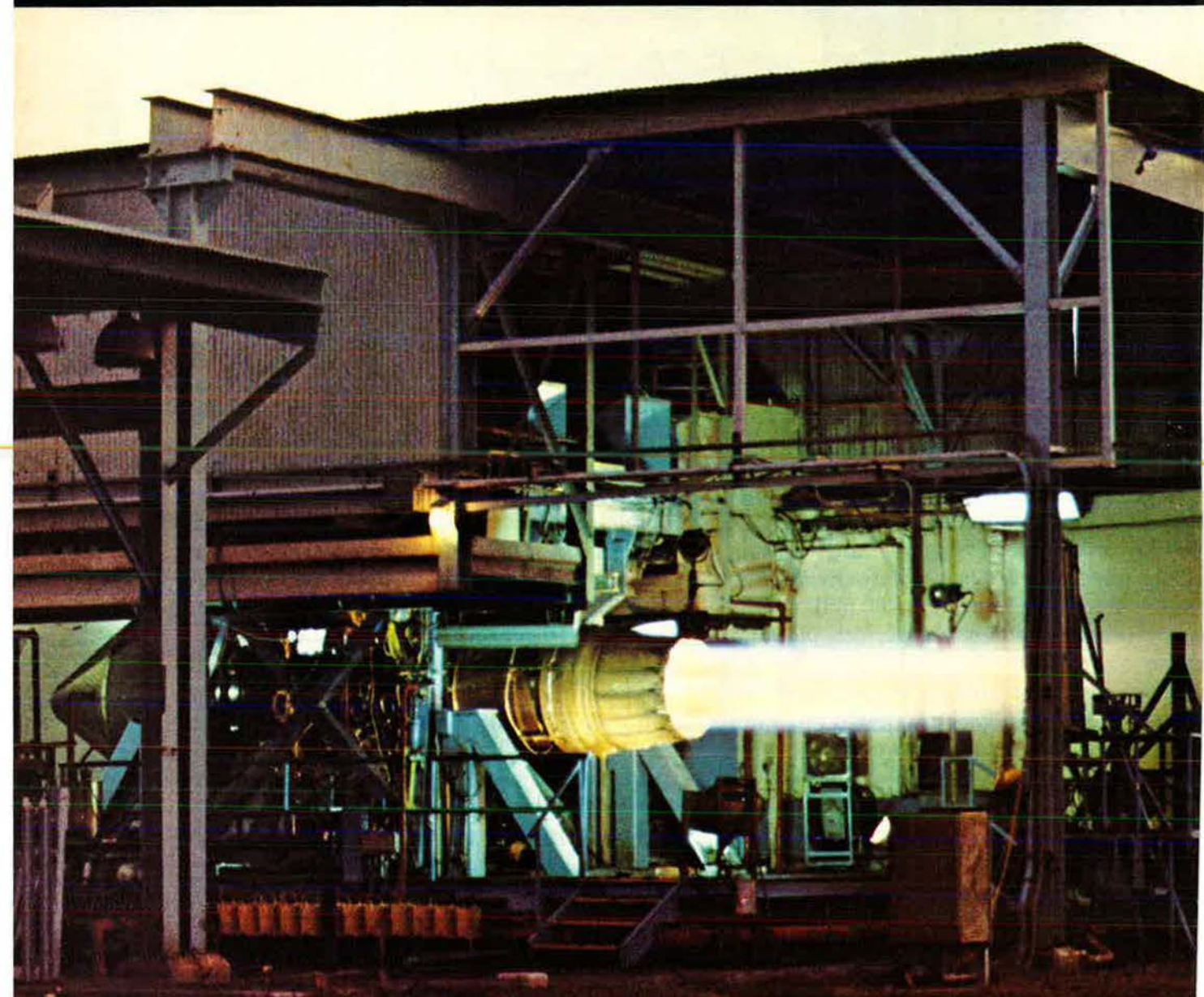


The F100 engine.
Its accelerated mission testing makes it 1981 in 1977.



The F100 engine has passed the toughest qualification testing of any aircraft engine ever. Now, in special ground tests, we are running it four years ahead of operational Air Force F100 engines. And the correlation between service engine wear and our program results is excellent. This continuing test program will help us detect potential problems early and prevent them from occurring later.

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UNITED TECHNOLOGIES

The Wayward Press

COVERING THE B-1 CANCELLATION

Joseph C. Harsch, a veteran newspaperman who now writes commentaries for the *Christian Science Monitor*, says the most interesting thing about President Carter's decision to abort production of the USAF B-1 bomber was that it came as a surprise to the press and the diplomatic corps. He has not met a single newspaperman, or diplomat, who expected to see the airplane abruptly killed. Mr. Harsch draws his own conclusions from this, but somehow misses the obvious possibility that diplomats believe too much of what they read in newspapers.

The Carter B-1 announcement was made on June 30. It is not necessary to go back more than one day to pick up the flavor. That was the day Rep. Joseph Addabbo (D-N. Y.) offered an amendment to delete B-1 funding from the defense budget. He lost, 243 to 178. The Boston *Globe* reported this was "amid indications that President Carter is leaning in the same direction." The Washington *Star* listened to some senators who breakfasted in the White House and heard "new predictions that the President would keep the bomber in production." The Washington *Post* said the House had "eased the path for possible presidential approval" of B-1 production. It added that Mr. Carter was expected to back off from his campaign attitude that the bomber was a "wasteful" weapon. Along with the *Globe*, the *Post* said House Speaker Tip O'Neill, who should know more about what a Democratic President thinks than any of his colleagues, favored production of the B-1 and viewed it as a good bargaining chip in the SALT talks. The New York *Times* reported that the Addabbo amendment vote "buoyed proponents of the B-1 bomber. It went on to find "indications that President Carter would support some production of the B-1, possibly 150 bombers." On the morning of June 30, there were no press dissenters from the opinion of the Washington *Post* that the Carter announcement was awaited that day "amid increasing speculation that he will reverse a campaign promise and approve at least limited production of the controversial and costly aircraft."

Like the diplomats who read newspapers, most other people were astounded when President Carter announced his decision. In a chorus, the press proclaimed on July 1 that the sudden death of the B-1 was a "surprise." "Surprise" was in the first or second paragraph of almost every account. Who was surprised? Not the press. All the factions who had taken part in the B-1 debate were surprised. Big newspapers carried separate stories on the reaction, quoting partisans. The Air Force was surprised. Rockwell International was surprised. Congress was surprised. Even the National Campaign to Stop the B-1 Bomber was surprised. To top it all, the Russians were surprised.

Only Mr. Harsch, in the *Christian Science Monitor*, detected any astonishment in the press corps, and he did not disclose it until July 12. So far as the Russians are concerned, they were reported to be angry, as well as surprised. It is reasonable to expect their intelligence experts, from now on, will put less reliance on what their agents say appeared in US newspapers.

Back on the editorial pages, which is where newspapers are supposed to show their real colors, if this has not already been done in the news columns, things were more lively and more accurate. Editorial opinions, like those of the rest of America, had been divided on the subject of the B-1 before the surprise of June 30. The Los Angeles *Times* wanted the airplane built and said "a decision to proceed . . . would be sound." The New York *Times* was equally vehement on the other side. Using some of the mistakes from its own news columns, the newspaper found indications that Mr. Carter "intends to approve continued production of the plane on a reduced basis." The editorial rejected this alternative and said the President "will prove himself a statesman by a clean decision to abandon the program."

After July 1, the same range of editorial judgment continued. The Chicago *Tribune* was "disappointed." "The government has a duty to the country and to posterity to keep in touch with every development," the newspaper said, "and be ready to revive the B-1 should new evidence make it seem advisable." The Boston *Globe* hoped for more promise in the future. It said Mr. Carter had "refocused attention on the whole question of spending priorities within the Defense Department and the budget generally."

The editors of the Washington *Star* rejoiced over "President Carter's wise and plucky decision to halt production of the B-1 bomber." The pro-B-1 Los Angeles *Times* accepted the idea that the cruise missile approach may be more cost-effective than a new bomber program. The most troubling aspect, it said, was that the decision "will make it more difficult to reach a meaningful new arms-control agreement with the Soviet Union." The Philadelphia *Bulletin* had the same thought in mind, pointing out that the President said he might return to the B-1 if the arms-limitation talks collapse. "We hope Russia will see to it that this is not necessary," the *Bulletin* said. The Dallas *Morning News* said that Jimmy Carter keeps the wrong campaign promises. The editors would have preferred to see him carry out his "praiseworthy pledge to work toward deregulating natural gas prices."

In a few instances, serious military correspondents came up with reports on what the decision means to US strategic planning, and some of the doubts that persist about the cruise missile. In the Washington *Star*, Vernon A. Guidry, Jr., pointed out that the new weapon has never been tested against the Russian defense systems. He reported that while the components of the cruise missile have been proven, skeptics insist the cruise missile must be flown to convince them it is not vulnerable. Drew Middleton, highly respected military expert on the New York *Times*, wrote that reliance on the cruise missile has "failed to still doubts within the defense community over the weapon's effectiveness." He quoted some Air Force officers on deficiencies they already see in the new system.

It is this kind of reporting that will keep us informed and contribute fewer surprises to upset diplomats, newspapermen, and all the rest of us. At the moment, there is a new wave of confusion looming over the issue of the enhanced radiation (neutron) bomb, and it is the press, says an editorial in the Los Angeles *Times*, that is basically responsible for the confusion. Most of the material already in print on the neutron bomb proves that the press knows as little about it as it did about the approaching B-1 decision.

—CLAUDE WITZE

AIR FORCE Magazine Senior Editor Claude Witze, whose column "Airpower in the News" normally appears in this space, is recovering from surgery. He had completed this "Wayward Press" item before entering the hospital. "Airpower in the News" will resume when Mr. Witze returns to duty.

—THE EDITORS

Airmail

Comments on an Interview

With reference to the Speer-Eaker-Metcalf interview in the April issue and the letter from Prof. R. A. Beaumont in the June issue, the following comments pertain:

Professor Beaumont opened up an old controversy in his final paragraph by correctly stating, with the advantage of hindsight, that the "key to electric power systems, *i.e.,* generating stations," were strangely omitted from General Eaker's comments and "were as large a target as some of the factory systems attacked by 'precision bombing' approach."

In fact, the omission of the targeting and bombing of the Nazi electric power system was a major error that was initiated in 1942, when the said system was eased to No. 4 priority, and "cast in concrete" on May 18, 1943, by the Combined Bomber Offensive (CBO) Target Priority List's relegation of electric power, power plants, and switching stations to position No. 13. These decreases in priority were the real oddity that long preceded Eaker's omission of comments on the generating stations, particularly since the War Plans Division plan of 1941 had placed electric power in No. 2 priority.

The American view of this targeting error is contained in definitive documents such as *The United States Strategic Bombing Survey* "Over-all Report (European War Report #2), and "German Electrical Utilities Industry Report (European Report #205)," the so-called "Coffin Report," *The Contribution of Airpower to the Defeat of Germany,* particularly Appendix K, p. 8, and Maj. Gen. H. S. Hansell's 1972 book, *The Air Plan That Defeated Hitler,* reviewed by General Eaker in the May 1973 issue of AIR FORCE, particularly Appendix III.

The German view of this matter was contained in USSBS interview No. 56 with Goering of June 29, 1945, and with Speer of July 25, 1945, wherein both opined that the electric power stations (not only transformers, but power-generating stations) "had been highly vulnerable to air attack." In 1945 interviews with USSTAF and USSBS personnel, Speer brought out many aspects not covered in detail during the 1976 interview; *e.g.,* that a loss of only forty percent of Nazi electric power capacity would have been "dangerous" and a loss of sixty percent "would have caused the collapse of the war economy."

Further, in a February 23, 1944, report to Berlin's National Load Dispatcher, a Doctor Carl stated, "After putting this interdistrict grid [transformer points between districts such as Braieweiler and Kelsterbach stations] out of operation, the intradistrict power supply could be paralyzed by individual attacks on fifty-six of the most important generating stations, whereby two-thirds of the entire German power production could be eliminated."

As a corollary error, it apparently was not realized by the Committee of Operations Analysts (COA) in England that "Of the 13,300,000 kw nominal capacity in the integrated system, forty-six percent was in hard-coal-burning plants, thirty-three percent in brown-coal burning plants, and twenty-one percent in waterpower plants" (USSBS #2, p. 83). These data point up the omission error and overemphasis upon waterpower plants made by the COA in the early 1940s and carried over into the October 21, 1976, Speer interview by General Eaker.

Also not known to the COA was the postwar revelation that "by 1944 many vital industries were rationed at thirty percent below their electrical needs" (Hansell, p. 286). And that while the national capacity had been augmented from 1941 to a 1944 total theoretical installed capacity of 22,000,000 kw, this actual "increase in existing plant capacity was small and was hardly felt" (ibid.) and the 13.3 million kw were derived from the integrated grid system.

General Hansell concluded that about 70,000 tons of HE would have assured destruction of "two-thirds of Germany's electric power capacity by normally successful daylight precision bombing," using probability methodology (based upon the recorded Eighth Air Force circular probable error for 1943 and 1944 of 820 feet, and its average circular error of 878 feet).

He further concluded, "The tonnage actually dropped *exclusive of the oil targets* (Hansell's itals) between 1 March and 15 May 1944 was adequate to have destroyed the German electric power system *before the invasion* (Hansell's itals) and still have left fifteen days in May for attack on transportation in France to the extent of 48,000 tons for direct attack on the railroads." By contrast, USSBS #2 noted that "of a total tonnage of 1,235,609 tons dropped by the RAF only 432 tons or 0.04%, were dropped on identifiable German electric utilities, and of a total of 688,010 tons dropped by the Eighth Air Force, only 31 tons, or 0.05%, were on electric utilities."

Also, the record now shows that the key power-generating stations were not too small for the high-altitude daylight bombers, as demonstrated by attacks on other targets of similar size. The average dimensions for the key coal-burning stations were 1,000 feet by 1,000 feet and included all key components. Our bombardiers placed seventy-eight percent within 1,000 feet of aiming point on a 1,000-by-1,555-foot target from 24,500 feet and with an intervalometer release.

Maj. R. H. Hodges, AFRE
Pelham, N. Y.

WW II "Smart Bombs"

In a recent edition, Roger A. Beaumont, Texas A&M, made reference to "smart bombs." The editors in turn mentioned radio-guided bombs controlled by a mother plane.

Have you or your readers heard of this one? During World War II, as a B-17 pilot, I trained in glide bombing at Brooksville, Fla. (1943). We were the Riding Provisional Group and probably the first to be involved in dropping a bomb that was guided or aimed to some degree.

I was told the glide bomb was supported by General Arnold. The actual ordnance consisted of a 2,000-pound bomb equipped with a twin-tail fuselage resembling a small P-38 fighter. There was a directional gyro mounted on the horizontal stabilizer of the tail section of the bomb fuselage. Each B-

carried two of these bombs externally, one under each wing. Bombs were dropped from a nine-ship formation. The bombardier used the Norden bombsight for aiming. Airspeed was critical at release point to ensure the glide bomb had flying speed. Reaching the required airspeed required diving the B-17s in formation, usually from 28,000 or 29,000 feet to somewhere around 25,000 or 24,000 feet, at which point the formation leveled out. The bombardier had to react very rapidly to aim and release the bombs before airspeed fell to a point the bombs would not fly, usually spinning out.

It was quite an impressive sight when a good drop was accomplished. The glide bombs took off in the same general formation the B-17s were flying and, while continually descending, proceeded on to the target area, usually about seventy-five miles from the release point. The bomb was designed for saturation bombing and to create an element of surprise and confusion since the target area would be taking hits while there were no bombers overhead.

As aircrews we looked forward to using the bomb, not the least of our reasons being that we would have little if any exposure to antiaircraft fire. The Riding Provisional Group flew to England as a group, but once a part of the Eighth Air Force, integrity was lost and the crews and aircraft were assigned to various Eighth Air Force bomb groups.

I was shot down after fifteen horizontal bombing missions and never had the opportunity to participate in a glide bombing mission. I would appreciate hearing more about the history of the Riding Provisional Group and would like to hear from members of the group if any are still around.

Lt. Col. Frank E. Upson, USAF (Ret.)
6218 Rue Marielyne
San Antonio, Tex. 78238

Weary B-52s

As a missile technician assigned to a B-52 unit, I can only say that if the B-52 lasts as long as President Carter thinks it will, we will surely be lucky. The old gal, which has served valiantly for many years, is getting old, and the effects of SEA on these bombers show.

The B-52 is hard to work on already, the weather greatly affects these aircraft, and sooner than Mr. Carter thinks we will have to replace them. Most of the people at Loring AFB, Me., feel let down and angry about the loss of the B-1. However, we shall always do our best to keep the B-52 flying and maintain our part of the Triad.

Sgt. Richard L. Skrable
Loring AFB, Me.

Group 10 CAP

On behalf of Philadelphia Group 10, thank you for the informative article in the June 1977 issue on the USAF Auxiliary—the Civil Air Patrol. I find it surprising the number of Air Force people who do not know about the CAP, or of its threefold mission. This article will go a long way to bridge that information gap.

Here in metropolitan Philadelphia we have a number of CAP units that would be very happy to have the assistance of Air Force people in working with the teenage cadets. Especially useful are the retired servicemen who want to stay active. Their military training is invaluable to our program.

1st Lt. Richard J. Luce, Jr., CAP
Group 10 Information Officer
Philadelphia, Pa.

They Did a Great Job

My thirteen-year-old son often says to me, "But, Daddy, what did you do in the war?" This just after I've told him of some of my experiences as a bomber pilot (B-17s) in World War II, Korea (B-29s), and in Vietnam. It seems that AIR FORCE Magazine, like most flight documents, emphasizes the exploits of US aces with little or no credit to bomber people; *e.g.*, "Some Famous Firsts in the Annals of Aviation," in your May issue. This does not list one first for bombers. My son cannot understand this.

The aces certainly deserve credit, but bomber crews should also be acknowledged. *E.g.*, the first US bombs dropped on Germany proper were in March 1943—B-17s led by the 368th Squadron, 306th Bomb Group (H), Wilhelmshaven—Commander, then Brig. Gen. Frank Armstrong. Other firsts that could be listed are: first bomber over Berlin; first bomber squadron to drop a total of 1,000 tons of bombs on German targets, etc. Historians might have difficulty, initially, in establishing facts, but it certainly can be done. Then maybe I can give my son an adequate answer to his question and he will understand that bomber people also made significant contributions to aviation history.

Col. John M. Regan, USAF (Ret.)
San Mateo, Calif.

• *We agree. With the help of the Office of Air Force History we'll try to pull together some data for the '78 Almanac. And thanks for calling this unintentional slight of the bombers to our attention.*—THE EDITORS

Missing Man Flyover

The Academy Library periodically is asked about the "missing man" flyover used at funerals, etc. Our research has produced no definitive evidence as to the country, place, and date the custom originated, and the originator's name. The general response is that it probably is similar to the Army's riderless horse tradition.

Any information on this custom, with source citations, is desired.

Donald J. Barrett
Assistant Director for Public Services
Library (DFSLB)
USAF Academy, Colo. 80840

FOTE Collection

I was a member of a combat crew with the 390th Bomb Group, 570th Bomb Squadron, Eighth Air Force, B-17s, from May 1943 to January 1944. In England we were stationed at #153 Parham Air Base, Framlingham. Last May I revisited the old field, now in derelict condition. My wife and I were escorted by Mr. Stewart Evans, an official of FOTE (Friends of the Eighth), which is a group of British enthusiasts dedicated to the preservation of the memory of the Eighth Air Force. These individuals are truly genuine in their feelings about the Americans who came to the aid of their country during those years of crisis.

I have given Mr. Evans every stray bit of memorabilia I could muster for the FOTE collection, and this letter is written in the hope that other ex-Eighth Air Force veterans

We suggest that readers keep their letters to a maximum of 500 words. The Editors reserve the right to excerpt or condense as required in the interests of space or good taste. Names will be withheld on request, but unsigned letters are not acceptable.

Airmail

will be willing to part with any photos, texts, documents—whatever—that could be added to their collection. FOTE is trying to interest the British government in endowing a museum to house the various artifacts the group has been gathering over the past four years.

It would be my personal pleasure to forward any and all such items that readers would care to send to me. I, for one, have a very warm feeling for these sincere people who cherish the memory of the Eighth.

Stanley M. Smith
1710 N. Avon St.
Burbank, Calif. 91505

Large Book About a Large Plane

I am writing a large book about the B-29 Superfortress for Doubleday & Co., Inc., New York, and would like to hear from AIR FORCE readers who were involved with the aircraft during World War II, Korea, or the years in between.

This will be a companion to my earlier book, *Log of the Liberators,* and will document each of the nearly 4,000 B-29s built. I would like to put various aspects of the story, such as the atom bombings, in their true perspective, and also hope to give the ground crews their fair share of credit for making this revolutionary airplane so effective. Naturally, variations on the theme, such as the KB-29s, SB-29s, and so on, will be covered in depth.

All documentary material loaned will be returned in original condition.

Steve Birdsall
20 Royal Street
Chatswood, 2067
Sydney, Australia

Downed P-38 Pilot

I'm trying to contact a P-38 pilot who went down off the coast of New Guinea, not too awfully far from Finschhafen. I think it was in the summer of 1944. It was said that he had drifted in a one-man liferaft for about nine days and had been on an island (possibly named Long Island) off the coast for about three days when found. He was standing on the beach pushing his liferaft up and down to attract attention. As we went by in a flying boat, I was the only person aboard who saw the man on the beach during the time he was visible from the aircraft. We tried to pick him up, but the water was too rough for landing. The next day he was picked up by a PT boat.

I had absolutely no business on that airplane, and especially on that day. All I can credit my presence to is something like ESP.

Surely there must be some P-38 pilots and personnel who knew of this incident, and I sincerely solicit their help in finding this pilot. I've never attempted to locate him before, but have had lots of good intentions. Takes all kinds—even us procrastinators.

James E. Honea
2109 S. Martin St.
Kilgore, Tex. 75662

New Guinea Photos

Will the historian for the 38th Bomb Group (M) please contact me regarding official photos of the 71st and 405th Bomb Squadrons (M) taken in New Guinea?

Maj. Rodman H. Williams
USAF (Ret.)
704 Pine Glen Dr.
Albany, Ga. 31705

Brenzett Museum

I am writing on behalf of the Brenzett Aeronautical Museum, Brenzett, Romney Marsh, Kent, England. We are a voluntary group who dig up World War II aeroplanes to display in our museum. Besides parts of Spitfires, Hurricanes, etc., we also have parts of Thunderbolts, Liberators, and B-17s on display. We have a British-flown flag and what we are after is an American flown flag to place beside it. Could any reader help?

Also, we would be glad to hear from any readers who were stationed in and around Romney Marsh, Ashford area, with stories or photographs of their stay here during World War II.

L. F. Greene
"Doanda Cumulus"
Dane Villas
Elvington Lane, Hawking
Folkestone, Kent
England

Bell Airacuda

I am seeking information on the Bell XFM-1 Airacuda (Fighter Multiengine), four of which were attached for testing to the 8th Pursuit Group GHQAF at Langley Field in 1940.

Any photos or data on characteristics, crew composition, performance, armament, test result

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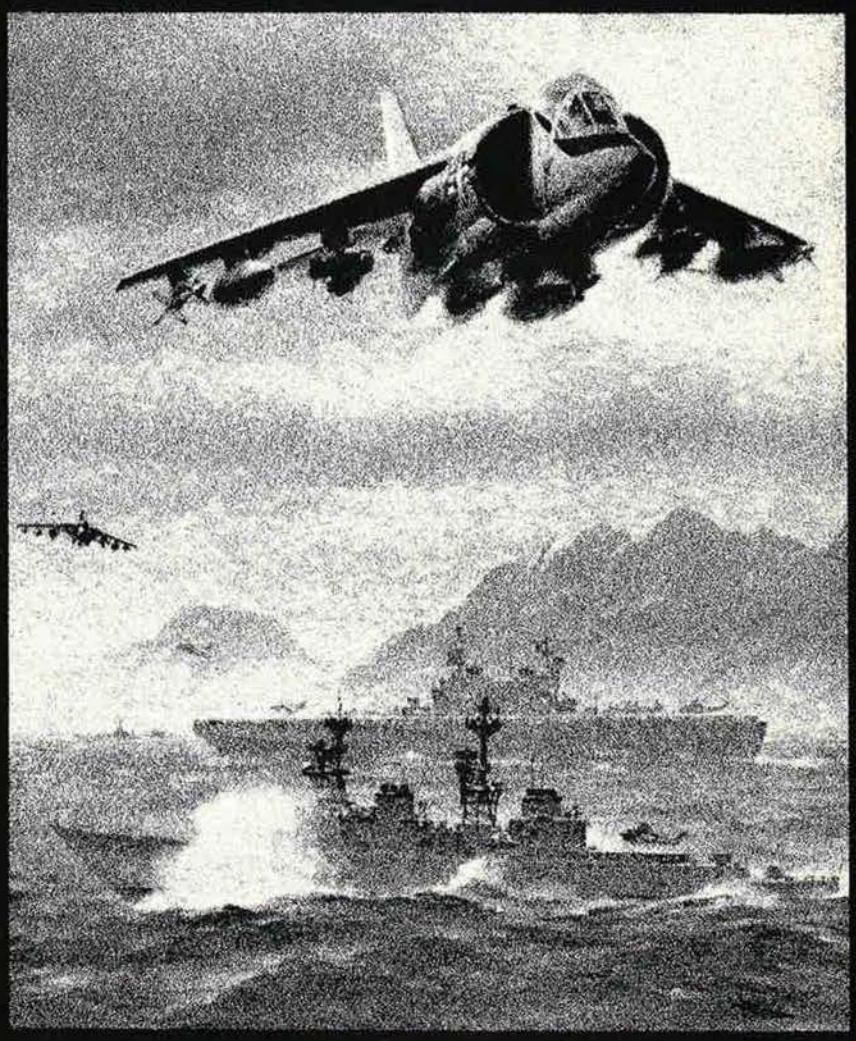

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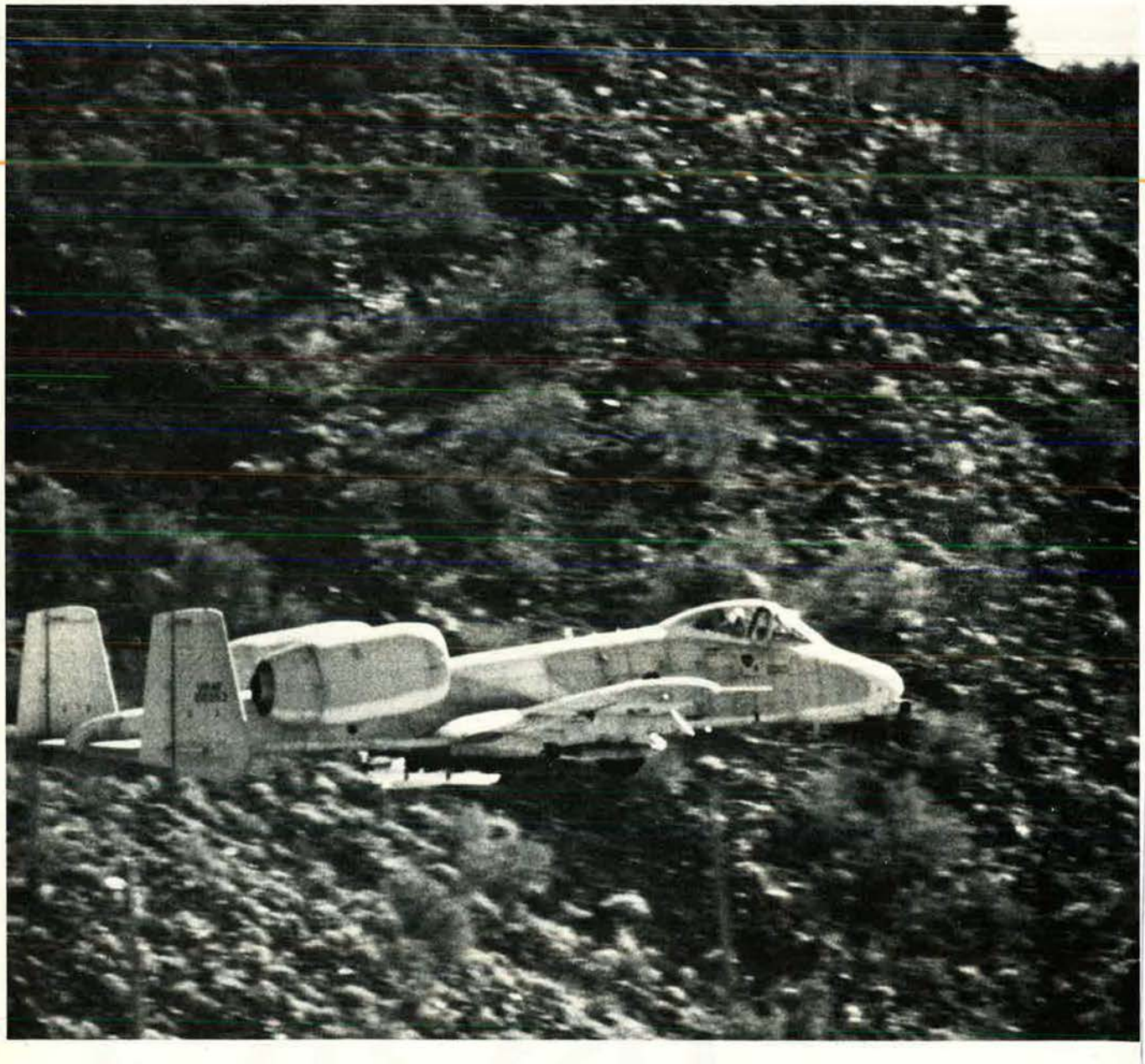

With the A-10 now in the USAF Tactical Air Command, fighter pilots have a tactical aircraft to defeat armor and protect the lives of friendly ground forces. The A-10 is the only modern attack aircraft developed for the CAS mission.

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and final disposition of these unique aircraft would be greatly appreciated.

Capt. W. S. Montgomery,
USAF (Ret.)
5406 Durango Ave.
Sarasota, Fla. 33580

Research Corner

I am researching local World War II USAAF losses for a chapter in a forthcoming book concerning surviving aircrews from crashes in the "Peak" area of the Pennine hills lying between the cities of Sheffield and Manchester.

I am particularly interested in contacting the crew of B-17G 43-37667 of the 709th Bomb Squadron, 447th Bomb Group, Rattlesden, April 6, 1945: 1st Lt. Winston R. Johnston and 2d Lt. Walter A. Vukelic (serious injuries); 2d Lt. Raymond W. Parks, Sgt. Robert J. Woodbeck, and Sgt. Robert J. Schug (minor injuries).

Also the sole survivor of the crew of B-24H #43-94841 of the 857th Bomb Squadron, 492d Bomb Group, Harrington, October 9, 1944: SSgt. Curtiss B. Anderson. The plane was flown by 1st Lt. Elmer D. Pitsenbarger and 2d Lt. James D. Nendall. The plane hit the end slopes of a local valley in bad visibility.

On December 19, 1943, a B-24H was abandoned by its crew over Boston," Lincolnshire, in very bad weather conditions. The plane, probably #41-29135 of the 392d Bomb Group, about-turned and flew across country to crash in a remote part of the hills. Unfortunately, I have no crew names listed.

Finally, I would like to hear from Lt. J. E. Coernan, who bailed out of P-47C RE #41-6227, locally, April 5, 1943, of the 63d Fighter Squadron, 56th Fighter Group, and Lt. Kuya-Senaskc, who also bailed out locally December 22, 1943, while ferrying P-38 #42-67670.

Any assistance will be most gratefully received.

Ron C. Collier
Aviation Historian
3 Elm Grove, Glossop
Derbyshire, England

I am seeking information on obtaining squadron, organizational, or unit (cloth) patches and emblems for my collection. All Air Force, Army, or foreign service patches or emblems are needed from World War II to the present. I have just started my collection and all information and help would be greatly appreciated. All correspondence will be answered.

A1C Mike Sullivan
Box 2883
APO New York 09130

I am looking for information from anyone—ground crews, pilots, training personnel, etc.—who worked with, or around, the Escuadron Aereo de Pelea 201. I understand this unit was assigned to the 58th Fighter Group, Fifth Air Force, Southwest Pacific Area, and that they were an Expeditionary Air Force of Mexico, stationed at Clark Field, Luzon, P. I., during WW II.

Thomas Valenzuela, Jr.
P. O. Box 525
Duarte, Calif. 91010

Looking for Two Crew Members

I am in search of two members of the 488th Bomb Squadron (M), 340th Bomb Group. They are ex-Sgt. Pilot Carrol B. "Pappy" Crane and Morris J. "Mo" Tierney. Both men flew B-25s in the Libyan desert in 1943.

"Pappy" Crane was from the Niobrara River country of Nebraska, and "Mo" Tierney was from Chicago.

Any information would be greatly appreciated.

Col. Robert M. Johnston,
USAF (Ret.)
RD #2
Worthington, Pa. 16262

SAC Flights

The Office of the Historian, Headquarters Strategic Air Command, would like to hear from current and former SAC aircrew and ground crew members on any record flights or other significant flights they were involved in. We would be most interested in photographs, diaries, and anecdotes about such flights.

All items will be treated with care and returned.

Office of the Historian (HO)
Hq. SAC
Offutt AFB, Neb. 68113

Calling Bill Chisholm

In order to complete a genealogy, I am trying to locate a distant cousin, Wilfred (Bill) Chisholm, son of Mr. and Mrs. William Chisholm of Cambridge, Mass. He served as an aircraft engine mechanic/flight engineer in the CBI Theater during World War II, left the AAF at the end of the war, and then reenlisted about a year later. He is known to have been at Fairchild (formerly

Airmail

Spokane) AFB, Wash., in late 1947 or early 1948.

Anyone having any information concerning Bill Chisholm can contact

Alan E. Dinn
21 Mackey Ave.
Port Washington, N. Y. 11050

Any More 359thers Around?

We are trying to locate former members of the 359th Fighter Group. If any readers were ever associated with the group, or know any former members, please get in touch with me.

Anthony Chardella, Chairman
359th Fighter Group
369th Fighter Sqdn. Assn.
105 Mohawk Trail Dr.
Pittsburgh, Pa. 15235

Flyers Out of Spinazola

Would appreciate hearing from former members of the 464th Bomb Group, 779th Squadron, 55th Wing who flew out of Spinazola, Italy during the period April–November 1944.

We are very much interested in organizing a big reunion at a location central to all. Please write to

Tom Byrnes
143 Ridge St.
Crestwood, N. Y. 1070
or
James Carnes
Zamars Road, Box 62
Tijeras, N. M. 87509

UNIT REUNIONS

AACS Groups

An effort is under way to hold a fir reunion of members of the 64th ar 65th AACS Groups and Hq. 5th AAC Wing during October in the Oklahon City area. Place and dates open to su gestion. Contact

Larry Camp
3557 Dublin Rd.
Columbus, Ohio 432

Air Weather Service

Northern California Retired AWS office will meet in Monterey, Calif., Oc ber 14–16. All ex/ret/recon AWS o cers welcome. Contact

Milt Sipple
2589 Dumbarton Ave
San Jose, Calif. 951
Phone: (408) 267-2555

(Continued on page 25)

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Airlift Association
All airlifters are invited to attend the 9th annual airlift reunion/convention and symposium at the Bel Air Hilton Hotel, St. Louis, Mo., October 27–30. Details from

The Airlift Association
P. O. Box 788
Sarasota, Fla. 33578

Transcontinental Test
All pilots, copilots, and passengers who participated in the Transcontinental Reliability Test on October 8, 1919—a reunion is being planned for October 6–8. There is a possibility of a refly of the original Reliability Test Route. Contact

Earle A. Nutter
P. O. Box 3744
San Bernardino, Calif. 92413

USAFSS
The 17th annual reunion of USAF Security Service officers will be held at Andrews AFB, Md., Officers' Club Saturday, October 1, from 1800 to 2100 hours. All officers, past and present, of USAFSS, and guests, are invited. For dinner reservations call (301) 420-7676. For other information, call

V. M. Heistand
(301) 688-6387 or
530-2879
or
E. J. White
(709) 533-3303 or
548-8128

Warton Air Depot
B.A.D. #2, Warton, Lancashire, England, is planning a reunion to be held October 6–9, in St. Louis, Mo. Contact

David G. Mayor
811 E. 16th Ave.
New Smyrna Beach, Fla. 32069

8th Air Force
The 8th AF Historical Society will host the 3d reunion of the 8th Air Force in St. Louis, Mo., October 6–9. Roger Freeman, author of *The Mighty Eighth*, will speak at the reunion banquet on October 8. Send stamped, self-addressed envelope to

8th AF News
Box 4738
Hollywood, Fla. 33023

27th Bomb Group
A 35th anniversary reunion of the old 27th Bomb Group, AAC, will be held October 6–8, at the Ramada Inn, Savannah, Ga. A memorial to the 27th will be dedicated at Savannah AFB. Contact

Samuel B. Moody
102 Bay Berry Rd.
Longwood, Fla. 32750
Phone: (305) 862-7623

Class 48-A
Pilot Training Class 48-A is planning a 30th reunion for all class members at Randolph AFB the last week in October. Interested members contact

John W. Oliver, Jr.
Rt. 2, Box 30
Holland, Tex. 76534

78th Fighter Group
The Duxford 78th Fighter Group Association will hold its 2d annual reunion October 7–9, in St. Louis, Mo. Contact

Garry Fry
174 Pauline Dr.
Elgin, Ill. 60120

94th Bomb Group
The 2d reunion of the 94th Bomb Group is set for October 14–16, at the Crown Center Hotel, Kansas City, Mo. All who served with the group or support units in England during WW II should plan to attend. Contact

Frank Halm
433 NW 33d St.
Corvallis, Ore. 97330
Phone: (503) 752-1845

(Continued on page 26)

Airmail

96th Bomb Group (H)
The 35th anniversary reunion of the 96th Bomb Group (H) Memorial Association will be held in St. Louis, Mo., October 6–9, along with the 8th Air Force's third Stateside reunion. For information contact

96th Bomb Group (H)
8th AF Reunion
Box 1304
Hallandale, Fla. 33009

303d Bomb Wing
A reunion of the 303d Bomb Wing is planned for October 28–30, at Davis-Monthan AFB, Ariz., Officers' Club. Seeking all former officers for our mailing list. Contact

J. D. McClung
5441 E. 6th St.
Tucson. Ariz. 85711
Phone: (602) 745-1629

306th Bomb Group
The 306th Bomb Group, Thurleigh, England, WW II, will meet in St. Louis, Mo., October 6–10, in conjunction with the 8th AF reunion. For information send stamped, self-addressed envelope to:

306th BG Reunion
8th AF News
Box 4738
Hollywood, Fla. 33023

351st Bomb Group
The 351st Bomb Group, WW II, stationed at Polebrook, England, will hold its 3d annual reunion in conjunction with the 8th AF, October 6–9, in St. Louis, Mo. Contact

Ben Schohan
398 Catawba Ave.
Westerville, Ohio 43081

381st Bomb Group (H)
The 3d reunion of the 381st Bomb Group (H) Memorial Association will be held October 6-9, in St. Louis, Mo. For details write

T. Paxton Sherwood
515 Woodland View Dr.
York, Pa. 17402

385th Bomb Group (H)
The 385th Bomb Group (H), stationed at Great Ashfield, England, WW II, will hold a reunion in conjunction with the 8th AF reunion in St. Louis, Mo., October 6–9. Contact

Don Hale
P. O. Box 126
East Alton, Ill. 62024

398th Bomb Group
A minireunion of the 398th Bomb Group stationed at Nuthamstead, WW II, will be held October 6–10, in St. Louis, Mo. in conjunction with the 8th AF reunion. Contact

398th Bomb Group Reunion
8th Air Force News
Box 4738
Hollywood, Fla. 33023

482d Bomb Group
We are in a regrouping action for future reunions. A minireunion will be held in St. Louis, Mo., October 6–10. Anyone assigned at any time to the 482d Bomb Group, Alconbury, England, WW II, Sta 102, including the 36th, 813th, 814th Bomb Squadrons and attached units please contact

Denny Scanlan, Jr.
200 West Plato Blvd.
St. Paul, Minn. 5510

757th/910th TFG
A 20-year reunion of the 757th/910th Tactical Fighter Group will be held at the Youngstown, Municipal Airport Vienna, Ohio, on September 24. Contac

910th TFG/MAF
Reunion Committee
Youngstown Municipal Ai
Vienna, Ohio 44473

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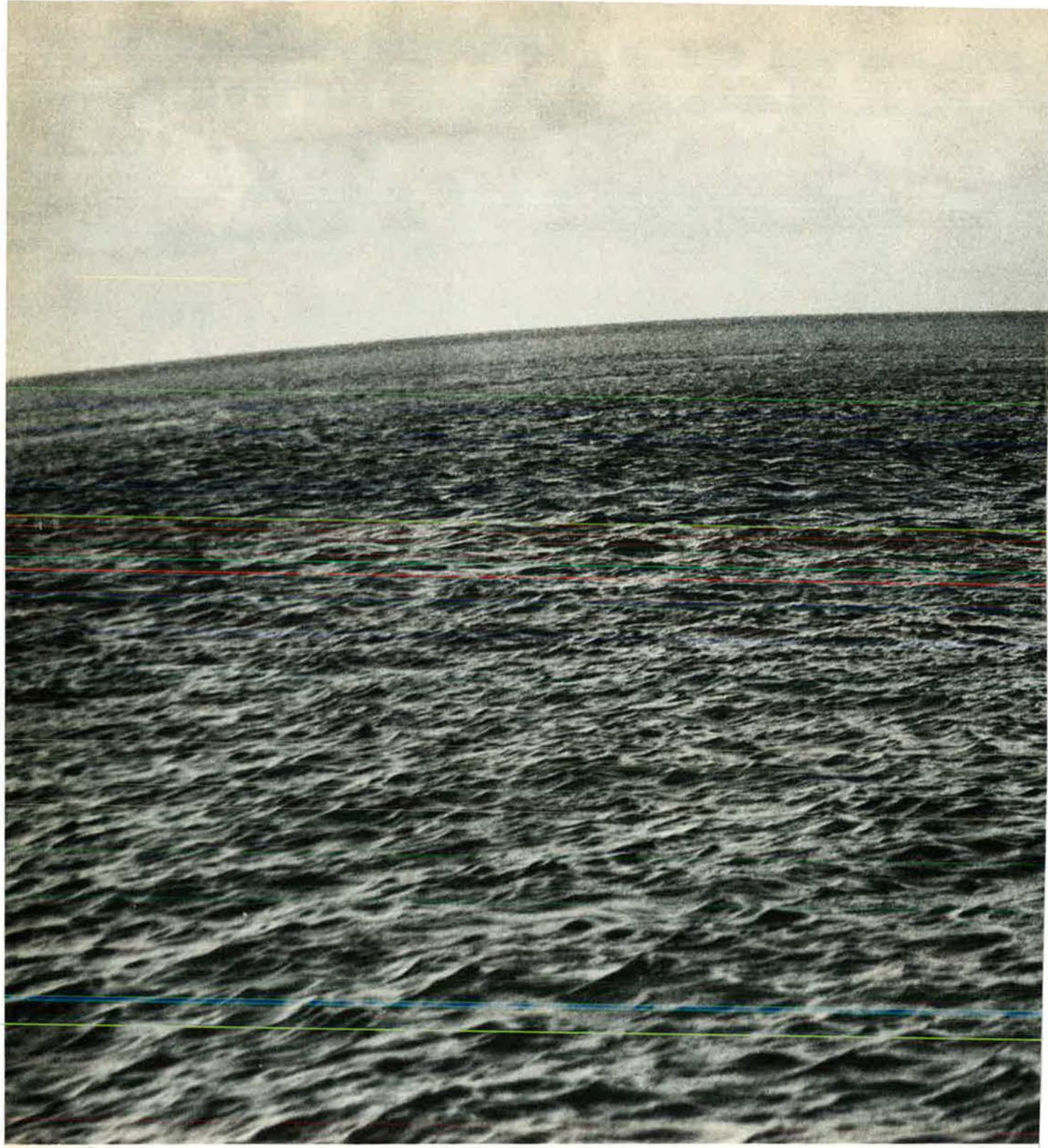

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rial refueling system, extra fuel cells,
d military avionics to make it ready
fulfill ATCA mission requirements.

Of course, there are other criteria for selecting the ATCA. And the 747 successfully meets them.

But anytime such a choice has to be made, and assuming everything else is equal, there's only one argument that makes sense.

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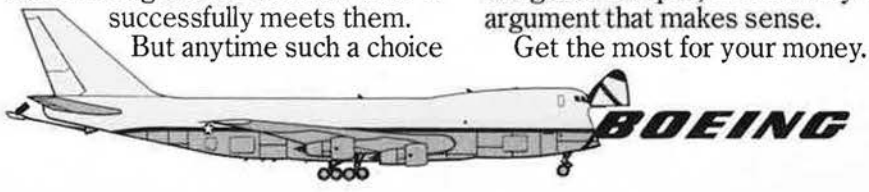


BOEING

Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., Aug. 8

★ COBRA DANE, the Aerospace Defense Command's new super radar erected at the southwestern tip of the Aleutians on Shemya Island, went operational in mid-July.

The six-story-tall precision phased-array radar, a vital link in the US intelligence, detection, and early warning network, is monitoring Soviet missile shots into the Kamchatka Peninsula and the North Pacific. COBRA DANE has a collateral mission of warning against missile attack on the continental US. It will also detect and track satellites in support of USAF's SPACETRACK System that keeps tabs on all man-made objects in space.

COBRA DANE is capable of tracking multiple objects up to 2,000 miles (3,218 km) in space. Its clocklike face measures ninety-six feet (29 m) across and contains 15,000 active elements.

★ Officially activated in July was the first combat unit to be equipped with USAF's new A-10 close-support aircraft, the 356th Tactical Fighter Squadron, Myrtle Beach AFB, S. C.

The squadron, dubbed the "Green Demons," is part of TAC's 354th TFW, Ninth Air Force. The entire wing should be equipped with A-10s during the coming year.

All pilots headed for duty with A-10 combat units are being trained by the 355th TFW, Davis-Monthan AFB, Ariz., including the two groups of 356th pilots who qualified in May and June, respectively. Operational flying of the A-10 at Myrtle Beach has already begun.

In another modernization move, a fourth combat wing—the 33d TFW, Eglin AFB, Fla.—has been selected to trade in its F-4 Phantoms for F-15 Eagles. Thus, it will follow the 1st TFW, Langley AFB, Va.; the 36th TFW, Bitburg AB, Germany; and the 49th TFW, Holloman AFB, N. M., which is to begin receiving its F-15s this autumn. (The 58th Tactical Training Wing, Luke AFB, Ariz., is responsible for Eagle pilot training.)

Of the total of 749 F-15s USAF plans to acquire, some 200 have been delivered.

★ Great Britain has begun a fifteen-year program to create an air defense system that would protect the island nation from conventional bombing attack.

Under the "now discredited NATO doctrine of the short nuclear war," British aerial defenses were allowed to dwindle to five interceptor squadrons. Now that trend is to be reversed.

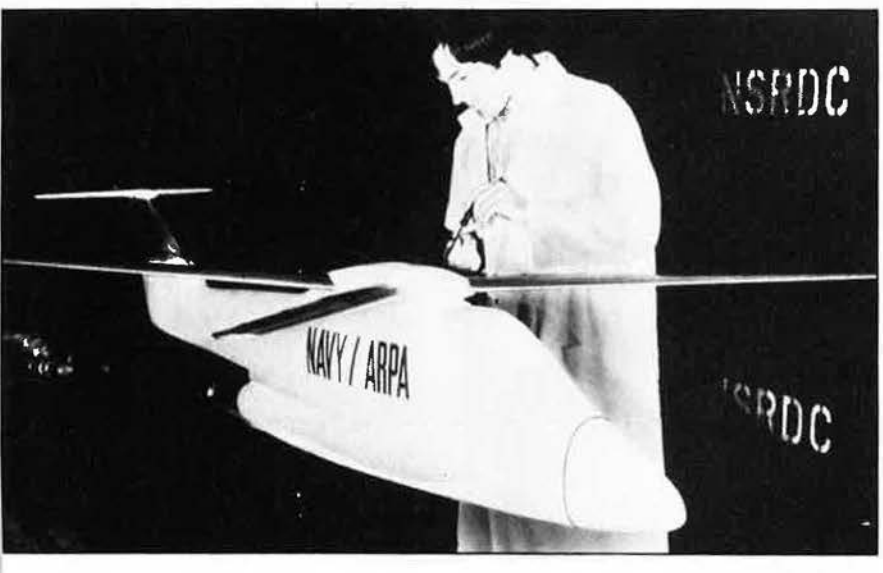
The price tag on the new defense system will approach $3 billion and will include new fighters, radar ground sites linked in real time by computers that will be meshed with batteries of antiaircraft missiles, and Nimrod aircraft equipped with look-down radar to defend against low-flying aircraft.

The RAF sees the main threat as coming from two Soviet aircraft: the Tupolev Backfire bomber and the Sukhoi Su-19 Fencer fighter-bomber (both described in our March issue —the Soviet Aerospace Almanac for 1977). If conventional warfare were to break out in Europe, aerial-refueled Backfires could attack the British Isles from the north and west after circling out over the Atlantic and Fencers could come in at ground level from Eastern Europe, RAF planners believe. (Warsaw Pact aircraft probing British radar capabilities caused the RAF to scramble fighters 133 times last year alone.)

All major airfields in the UK will be "hardened" with the construction of concrete aircraft shelters and blast-proof operations rooms, fuel stores, and other essential facilities.

Over the next several years, the RAF will replace its aging Phantoms and Lightnings through the acquisition of 165 new Tornado fighters which have excellent loiter capability and will be equipped with improved radar. These factors will help

From the eighty-seven AFAers who became Life Members between April 1 and June 30 of this year, AFA leaders chose one as the representative 1,000th Life Member. At the drawing, from left, AFA Executive Director James Straubel; AFA Presidential Nominee Gerald V. Hasler; current AFA President George M. Douglas; and long-time AFA Treasurer Jack B. Gross. Out of the bowl came the name of USAF Maj. David Shaw, of Redlands, Calif., who has been a member since 1963. Major Shaw will be AFA's guest at September's National Convention in Washington, D. C.



One-quarter-scale model of an X-wing experimental aircraft that could take off and land with wing rotating like a helicopter and fly conventionally with wing fixed. (See item below.)

them intercept intruder aircraft far at sea.

★ With the arrival of a last contingent of nine F-111F fighter-bombers in July, RAF Lakenheath has now become the second base in England to host a wing of the swingwing aircraft.

(Besides the 48th TFW at Lakenheath, the 20th TFW at RAF Upper Heyford is currently equipped with F-111Es.)

Operation "Ready Switch" began earlier this year, with the redeployment of the F-4D Phantom II squadrons at Lakenheath to Hill AFB, Utah, and Nellis AFB, Nev., to make room for the F-111s. According to TAC officials, "Switch" was conducted "to equip front-line fighter units with modern aircraft and combat-ready crews." Thus, with the second F-111 wing assigned to USAFE and NATO, "allied adverse-weather and low-level penetration capabilities for both interdiction and close air support missions" are increased substantially.

★ With initial funding by the Defense Advanced Research Projects Agency (DARPA), a revolutionary X-shaped wing is under development that would rotate helicopter-like for vertical takeoff and then lock in place for high-speed horizontal flight.

Under the program, Lockheed-California Co. is to build and ground-test a full-scale twenty-five foot (7.6 m) diameter wing and control system.

Visualized is an aircraft with unique characteristics. Officials said that in its helicopter mode such a craft could hit speeds of 233 mph (407 km/h), as well as take off and land vertically. With the wing locked, "transonic speeds equivalent to those at which commercial jet airliners fly" may be possible. Conventional takeoffs and landings are also conceivable, they declared.

A one-quarter-scale model of an X-wing aircraft is currently under test at David Taylor Naval Ship Research and Development Center's high-speed wind tunnel at Carderock, Md. The model was built by Lockheed under a previous contract.

Such an aircraft would be equipped with turbofan jet engines that would provide thrust for forward flight, power the wing during rotary flight, and produce air "from the engine's bypass fan to supply the trailing edge blowing system"—one of the system's unique design characteristics.

According to officials, with the X-wing stationary, the craft would have far greater speed than any existing helicopter, but in the helicopter mode would have three times the lifting efficiency of current VTOL aircraft.

The prototype X-wing is scheduled for wind-tunnel tests in 1978 at NASA's Ames Research Center, Moffett Field, Calif.

★ NASA has selected a "spinning" sail design over a square sail concept as a potential means of providing propulsion for its Interplanetary Automated Shuttle's (IAS) unmanned voyages around the solar system in the 1980s and later.

The space agency's "heliogyro" sail vaguely resembles a helicopter but with twelve extremely long

Intelligence Briefing...A Roundup

• According to *Foreign Report*, published by London's *Economist*, there may be as many as 40,000 Vietnamese troops stationed in Laos. Their presence "poses a direct threat to Thailand, and is apparently designed to promote the forward strategy of the Hanoi leaders as well as to guarantee the survival (and ideological soundness) of the Pathet Lao regime."

The Vietnamese have divided Laos into two military regions and have constructed a major camp, complete with two airstrips, some eighteen miles (thirty km) from the Thai border, *Foreign Report* contends. In place are troop barracks, antiaircraft batteries, and transport and tank depots. Close by the Cambodian border in Laos is also a training base for Thai insurgents, with Vietnamese, Cuban, and Russian instructors.

• *Foreign Report* also contends that Cyprus has become a major transit point for black-market arms in the Mediterranean. The largest diplomatic missions on the island are Cuban and Russian. Each has a staff of more than 150, "more than two-thirds of whom are believed to be intelligence officers or military personnel."

Cyprus is also currently thought to be a principal base of international terrorist organizations.

• And according to *Soviet World Outlook*, published by the University of Miami's Center for Advanced International Studies, the Soviet Union has begun a campaign to reverse the trend toward strained relationships between itself and the Arab states, particularly Egypt.

Aerospace World

blades or sails (perhaps 4.5 miles or 7.4 km long).

After launch by the Space Shuttle, the vehicle's blades would be spun out by centrifugal force. Deployed in two tiers of six each, and made of reflective aluminized plastic, they would be bombarded with a steady shower of sun-produced photons.

The heliogyro concept is to compete with an ion drive (solar electric) spacecraft propulsion system in the final selection phase of the project.

A possible early mission for the IAS: a rendezvous with Halley's Comet in 1986.

★ In September, USAF will conclude the test-flight program of an advanced environmental control system (AECS) aboard an F-15.

AECS is a kind of "air-conditioner" that keeps aircraft electronics from overheating during high-performance flying. When aircraft electronics equipment gets too hot such smaller components as transistors, resistors, and diodes quit, reducing avionics subsystem reliability and boosting maintenance costs.

"In fact," said AECS Program Director Eugene A. Zara, "studies indicate that fifty-two percent of all avionics failures are related to environmental conditions like temperature, humidity, and dust. Of these, more than half are linked to high temperatures."

Officials are optimistic that the new AECS can be tailored to most fighters and bombers and thus cut into the operation, maintenance, and cost problems.

Essentially, the AECS cleans and dehumidifies the air in cockpits and avionics bays while keeping it at a constant temperature. AECS was developed by McDonnell Douglas Corp., with Hamilton Standard, Windsor Locks, Conn., as subcontractor.

Also of cheer to pilots, AECS will provide a more comfortable cockpit throughout the entire flight envelope.

Capt. Anthony Batezel has joined AIR FORCE *Magazine as a Contributing Editor under USAF's Education With Industry (EWI) program. He previously served as Advertising and Publicity Officer with the US Air Force Recruiting Service in New York. Captain Batezel holds BA and MA degrees in English literature from the University of Hawaii. He entered USAF via AFROTC and has held information posts at Andrews AFB, Md., and on Taiwan. Captain Batezel is thirty years old and a bachelor.*

★ The *Spruce Goose,* Howard Hughes's giant wooden flying boat that has been languishing in a Long Beach, Calif., hangar for the last three decades, will be donated to a new "Air Museum of the West."

In 1975, a plan was afoot to dismantle the famous old *Goose* and distribute sections of it to various aviation museums around the country. That idea was eventually scotched.

Summa Corp., the Hughes holding company that has paid the costs of maintaining and housing the aeronautical curiosity, said that a group of Long Beach businessmen will seek public donations of $10 million to create the new museum, with the *Goose* presumably as its star attraction.

The 140-ton, eight-engine relic would then take its place beside another behemoth of transportation currently residing in Long Beach—the *Queen Mary*—purchased by the city as a tourist mecca in 1967.

★ Groundbreaking ceremonies for the Gen. Daniel "Chappie" James Air and Industrial Museum were scheduled for August 20 in Tuskegee, Ala.

It was at Tuskegee that black pilots were trained during World War II. In concert with the museum dedication will be the annual reunion of the Eastern Region of the Tuskegee Airmen's Association, of which ADCOM Commander General James is a member.

Among the events scheduled for the three-day affair was an air show at Moton Field, Ala., featuring the

This summer's Open House and Air Show (Flugtag '77) at Ramstein AB, Germany, drew a crowd estimated at more than 500,000. Of huge interest was this Air Force F-15 Eagle, which was on static display and demonstrated a maximum performance takeoff. It was one of forty NATO aircraft on view. Aerobatic maneuvers by three aerial demonstration teams wowed the audience.

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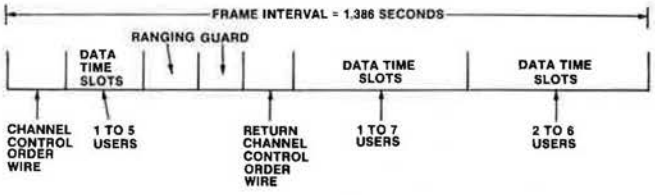

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Thunderbirds aerial demonstration team.

All former Tuskegee airmen were invited, as were the service chiefs and other notables.

Those wishing to donate items to the new museum should contact Lou Purnell, c/o National Air and Space Museum, Washington, D. C. 20560.

★ Joe Foss, an AFA Past President and currently a National Director, has accepted the chairmanship of the Lindbergh Memorial Fund. He succeeds Lt. Gen. James H. Doolittle, USAF (Ret.), and Neil Armstrong, who will act as cochairmen emeriti.

The Fund is in the process of raising $5 million in order to provide fellowships in science, exploration, and environmental matters. Its headquarters is at 30 E. 42d St., New York, N. Y. 10017.

★ In mid-May, during the fiftieth anniversary of Charles Lindbergh's solo flight across the Atlantic, the Smithsonian's National Air and Space Museum established the Charles A. Lindbergh Chair of Aerospace History.

The endowment was another step toward the Museum's goal of remaining an international center for the study of the history of flight.

This past summer, Museum officials announced that the Chair's first occupant will be Charles Harvard Gibbs-Smith, aerospace historian and Keeper Emeritus of the Victoria and Albert Museum in London. He'll occupy the Chair for one year beginning next Janua

★ **NEWS NOTES**—In July, sho after the first anniversary of its centennial opening, the Smiths ian's **National Air and Space seum** in Washington, D. C., rec its **10,000,000th visitor,** to the most popular tourist a in the nation's capital.

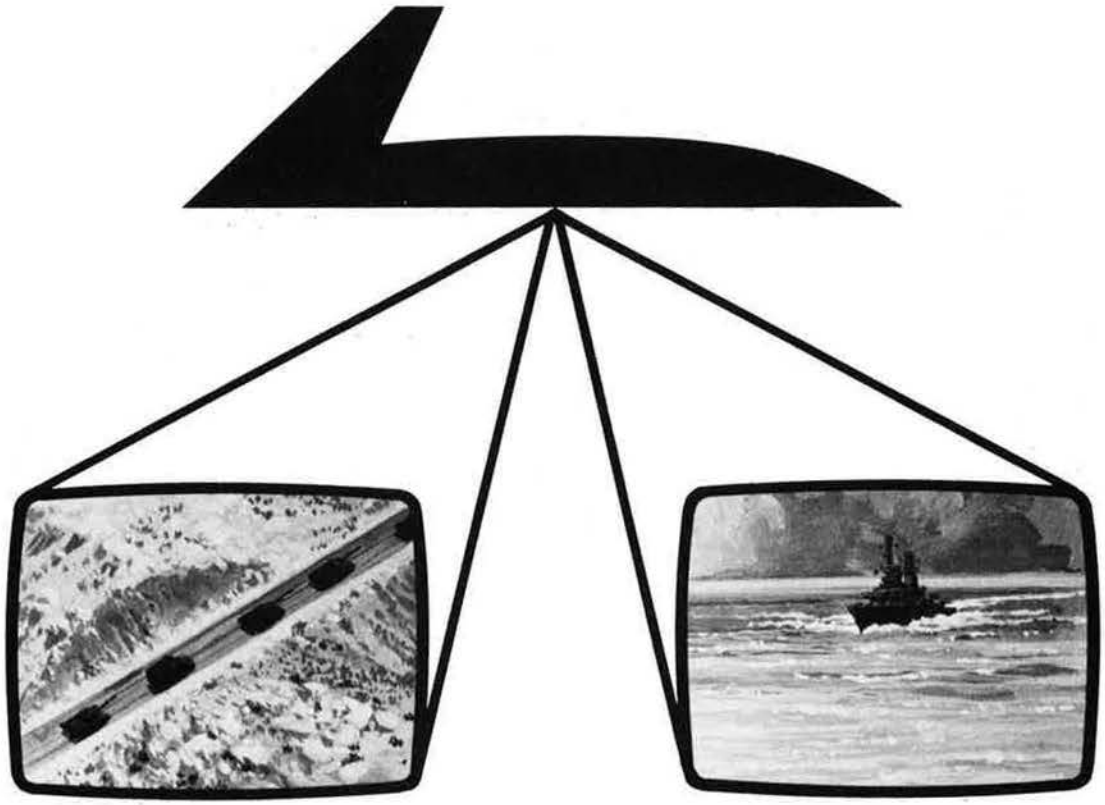
NASA received more tha **applications** from Space S **astronaut candidates.** The thirty

THE AIR FORCE'S BIRTHDAY GIRL

The US Air Force's Capt. Kathleen Hoster-Giles, here with husband Capt. Loren D. Giles, was born on September 18, 1947, the day the Air Force became a separate service. Her father, Col. Charles C. Hoster, retired from USAF the day he swore her in, his last official act. Kathleen is Assistant Wing Mobility Officer, 438th MAW, at McGuire AFB, N. J.; her husband is a Reserve C-141 pilot. Kathleen's sister is graduating from nursing school and has applied for an Air Force commission. Kathleen is to be a guest of AFA during the National Convention in Washington, D. C., in September, where she will participate in Convention activities.

The first officially released photo of a McDonnell Douglas F-15 air-superiority fighter in the Israeli Air Force, the second nation to operate the aircraft. Deliveries to Israel began last year. USAF is now flying more than 200 Eagles.

The Jam-Proof Connection



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George C. Kenney, 1889–1977

At press time, we learned of the death of retired USAF Gen. George C. Kenney in Miami, Fla., August 9. He'd turned eighty-eight just three days earlier. A fighter pilot in World War I and innovative flyer in the years that followed, he became General MacArthur's top air commander in the Southwest Pacific in World War II. From 1946–48, he served as the new Strategic Air Command's first commander. He retired in 1951 and was AFA President in 1953–54 and a member of AFA's Board the rest of his life. A full obituary of General Kenney will appear in our October issue.

orty pilots and mission specialists slated for a two-year training and evaluation period will be notified of their selection by December, the space agency said.

Dr. Randall E. Murphy, a physicist at Air Force Geophysics Lab, Hanscom AFB, Mass., has been awarded the **1976 Harold Brown Award** for "contributions in the area of atmospheric sciences with a major breakthrough in infrared spectroscopy." The award, established in 1969 and named for the current Defense Secretary who is a former Air Force Secretary, recognizes individual achievements in R&D.

Delivery of the Army's first production **MIM-72C Chaparral low-altitude air defense missile,** built by Ford Aerospace & Communications Corp.'s **Aeronutronic Div.,** took place this past summer.

Died: Capt. Charles Carter, narrator for USAF's Thunderbirds aerial demonstration team, in the crash of a T-38 in Cheyenne, Wyo., in July. He was thirty-three.

Died: Herbert G. Fales, aviation pioneer who acquired pilot's license No. 826 in 1917, in July in Phoenix, Ariz. He was eighty-one.

Died: Howard French, aviation pioneer who held a **pilot's license signed by Orville Wright** and was listed by the Greater Miami Aviation Association as the oldest commercial pilot in the world, in July in Miami. He was ninety-two.

Died: Edward H. Granville, one of a team of brothers who built the

Aerospace World

famed **Gee Bee racing planes** flown by Jimmy Doolittle among others, in July at his home in Madison, N. H. He was sixty-four.

Died: Katherine Stinson Otero, pioneer aviatrix and stunt flyer and one of the first women to qualify for a pilot's license, in Sante Fe, N. M., in July following a long illness. She was eighty-six.

Died: Francis Gary Powers, who was convicted by the Russians of spying following the downing of his U-2 over the Soviet Union in 1960, in the crash of his traffic helicopter in Los Angeles in August. He was forty-seven.

Died: Ray P. Whitman, military aviation pioneer and last surviving founder of the Bell Aircraft Corp., in July in Williamsville, N. Y. He was eighty-three. ■

Tony Fox, developer of the Foxjet aircraft, contends that compact, economical jet aircraft will find a new market among the smaller corporations. Here, he hoists the aircraft's powerplant, which weighs just 141 pounds (64 kg) but can generate 600 pounds of thrust. It was built by Williams Research Corp.

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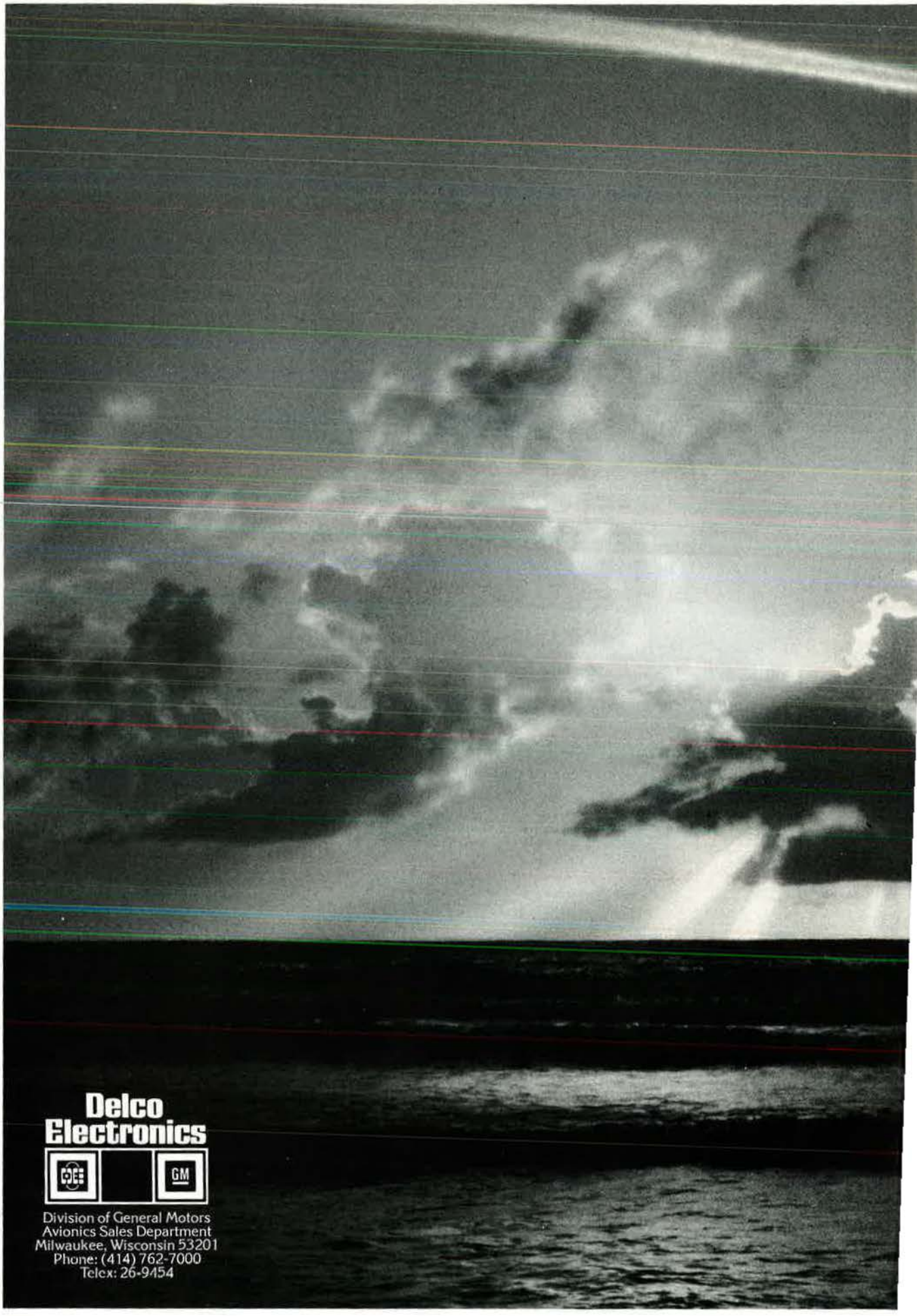
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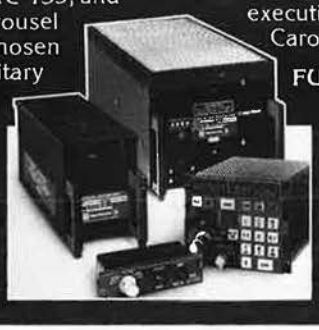
The Air Force recently selected Carousel over all competing ARINC-561 systems for installation in their C-141, C/KC-135, and C-5A fleets. Carousel has also been chosen for 18 other military programs, including C-130's.



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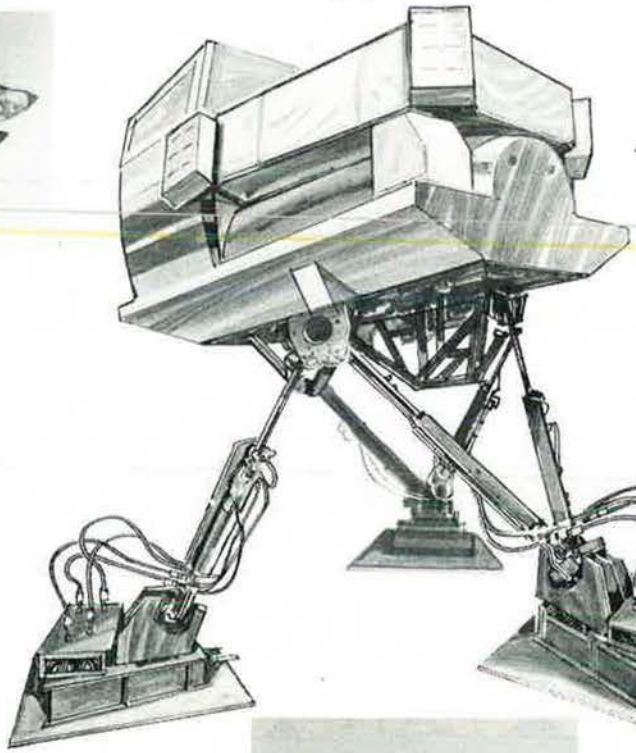

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AFA's Pivotal Role

BY THE HON. JOHN C. STETSON, SECRETARY OF THE AIR FORCE

THIS year marks the thirtieth anniversary of the establishment of the Department of the Air Force, and the thirty-first anniversary of the Air Force Association. Over nearly one-third of a century, both organizations have grown and matured, and have had a mutual interest in airpower and a mutual dedication to a strong, secure nation. Together, the Air Force and the AFA have been successful in achieving our common objectives within the broader framework of the nation's goals.

Despite continual changes in the environments within which the Air Force and the Air Force Association function, the two principal goals that we share have remained constant: first, a strong and modern Air Force, optimally equipped and manned, fully capable of meeting any anticipated threat; second, a public awareness of the issues and challenges of national security that confront us.

The Air Force Association has played a pivotal role in getting the message to the public. You have helped to stimulate a deep interest in aerospace activity. You have focused attention on critical issues and choices and have provided a major forum in which they could be objectively discussed and examined. You have spoken with clarity and

forcefulness on the entire range of issues affecting the Air Force. And, as the complexity of those issues has increased and new relationships have developed, your incisive analyses have become even more valuable, and the public service that you render has become even more important.

Today, airpower issues have taken on a new dimension in the evolving mosaic of international affairs and national defense. What were once elemental questions of systems effectiveness and force status have begun to assume a staggering complexity when viewed in the broadest context of national security.

Among the most important of the future challenges to our national security are the dwindling supplies of vital raw materials. As early as the end of this century, the world's reserves of relatively accessible, and therefore inexpensive, petroleum and gas will begin to be depleted. That fact alone has disconcerting implications for our security, but when coupled with what appears to be the Soviet Union's determined drive to achieve overall military superiority, it is an implicit threat to the major oil and gas resources of the world, located in the Middle East, and therein a threat to Western Europe, Japan, and ourselves.

We face other tests as well —tests that are not so dramatically new, but demand a continuing commitment to good management seasoned with new ideas. We must come to grips with complexity and cost in our weapon systems, and with the rapid pace of new technology. Equally important, we need to deal with the continuing requirement to attract and retain a solid core of capable, dedicated people. Personnel costs must be carefully regulated, but not by wholesale raids on the compensation and benefits structure.

As these challenges become more pressing, we will continue to look to the Air Force Association for help in leading informed public discussion on the threats and problems, the alternatives and options, the proposed solutions and new directions. We welcome your insight and appreciate your sustained support. ■

USAF's 30th Anniversary

Change and Constancy

BY GEN. DAVID C. JONES, CHIEF OF STAFF, UNITED STATES AIR FORCE

THIS thirtieth anniversary of the United States Air Force is an occasion for looking back with quiet pride, and forward with seasoned perspective.

Thirty years is a short time, less than the span of my career. When I think back to 1943, when I was commissioned, it is remarkable how little we knew of the future. The Soviet Union was an ally. Energy was a phenomenon in physics books, not a precious global resource. The jet engine was an experimental infant. We had no glimmer of atomic power. There were no computers. Deterrence was an obscure word with no special military connotation. The war was turning slowly on hinges of great industrial power, and time was our most generous benefactor.

The Air Force achieved Service status in the opening pages of the most powerful chapter ever written in the history of national security. The period since 1947 has been called a nuclear age, a jet age, a missile age, an electronic age, a computer age, a space age. The character of potential war has been revolutionized over and over again by technology—by gains in raw destructive power, speed, accuracy, dexterity, surveillance. At the same time, the military threat to the United States has grown steadily—primarily as the result of a relentless long-standing pursuit of military strength by the Soviet Union.

I am proud of the Air Force record over these years. We have neither swallowed change thoughtlessly nor compensated with crude growth. We have adapted with intelligence, restraint, and poise. Tensions have risen and fallen; distant wars have erupted and ended; popular support has waxed and

waned; weapons programs have gone forward and gone away.

Throughout these fluctuations, the Air Force has done its job—has kept deterrence an active barrier, has responded smartly to crisis, and has fought with skill and spirit in war. There has never been a time, since 1947, when the United States Air Force was not the best in the world.

The core ingredients in this success have been pride; dedicated, often inspired, professionalism; teamwork; and devotion to the elevated ideals and goals of the country.

Wherever there has been change, there has also been constancy—flyers poring over manuals and pushing their skills in the air toward new limits, missileers pursuing their constant vigil with self-discipline and initiative, technicians battling weather and fatigue to keep their systems going, support personnel with high standards and a better idea, staff members working into the morning hours to digest, interpret, and convey the meaning of change.

These qualities of commitment to task, mission, and country were with us thirty years ago, ten years ago, and are with us today. They are the underpinnings of the military strength of peaceful nations in any age, in the face of any challenge.

Change has brought us to a point in time—an era of readiness—where the need for such values is paramount. Without professional skill and spirit, readiness is a hollow idea. As Soviet strength has grown, as the potential pace of conflict has accelerated, as deterrence has become more subtle and complex, as constraints have imposed reductions, the Air Force has drawn on American technological ingenuity, progressive management, and the resourcefulness of its own people to adapt.

Readiness is the lens through which we must judge the success of that adaptation. It is not a matter of professional spirit alone; it is also a matter of modernization and coalition. We must both use and foster technology, and we must insist on the integral view—linking system to system, training to front-line mission, support to engagement, decision to action, ally to ally.

From conceptual planning t employment, no command, no system, no individual goes it alone. We will see change in capabilities, but we must measure progress in terms of the strength with which our capabilities are postured and united.

The future will bear down hard on our ingenuity and prepa ration. The Chief of Staff in the year 2007 will look back on change more remarkable than that of the last thirty years. With constancy of profession and continuing attention to the fabri of our deterrent and fighting strength, I am confident that he will look back with the same kind of pride and satisfaction I feel today. ■

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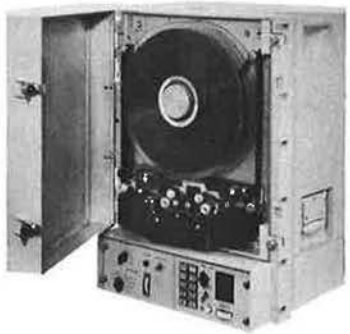

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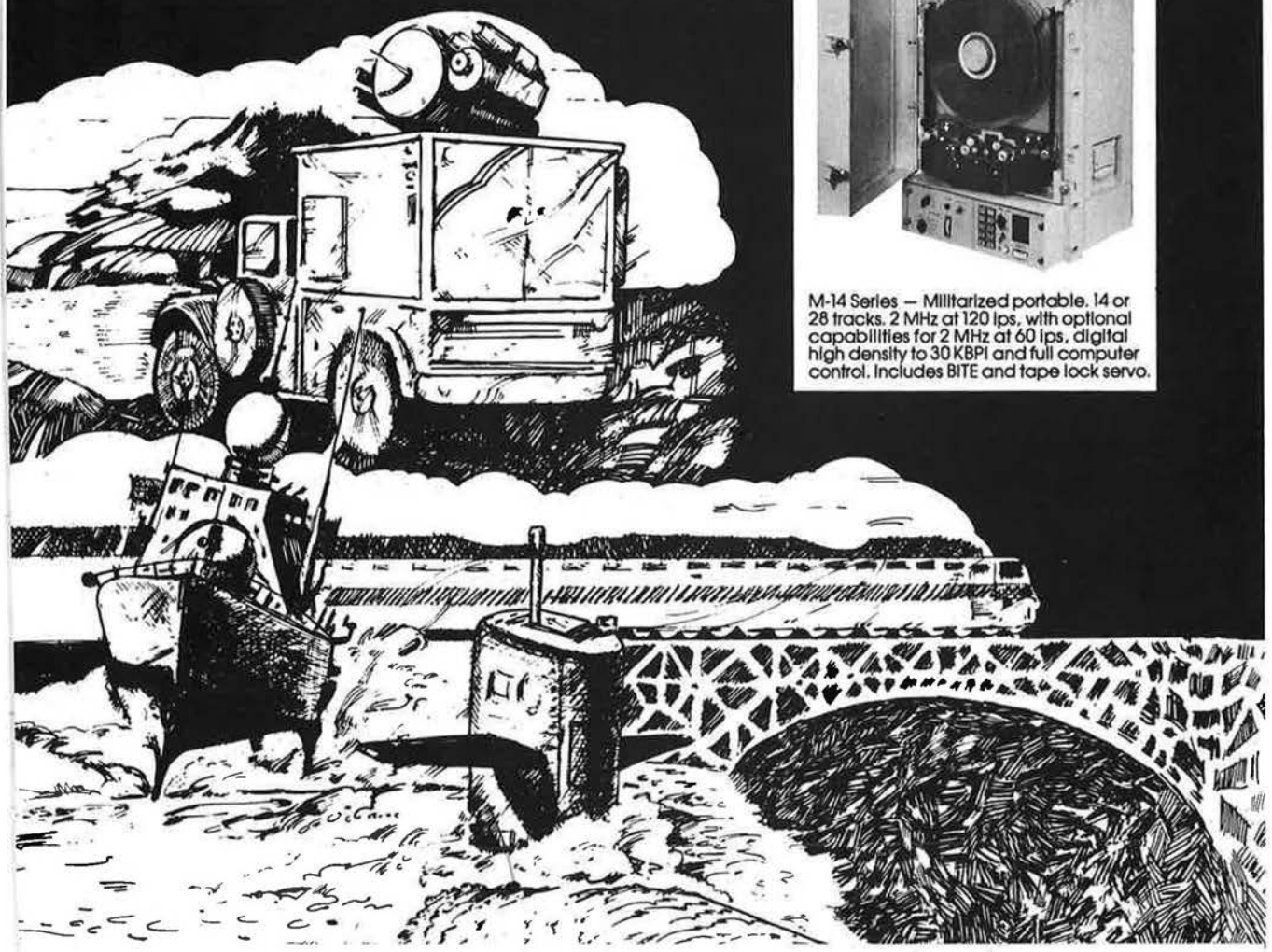

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AIR FORCE

SEPTEMBER 1977

The Air Force, in its thirtieth anniversary year, is making ready to meet tough new strategic and tactical challenges without compromising either its mission or the moral commitment to its people. In this comprehensive interview, Chief of Staff Gen. David C. Jones discusses USAF's programs and plans aimed at . . .

PREPARING FOR THE NEXT THIRTY YEARS

BY EDGAR ULSAMER, SENIOR EDITOR

As THE United States Air Force rounds out thirty years of service to the nation as an autonomous military force, its leadership sees reasons for much pride but none for complacency. "National security policy and the very real threats the US faces have changed considerably since 1947," Air Force Chief of Staff Gen. David C. Jones told AIR FORCE Magazine recently, "and evolution of the Air Force has been necessary to keep pace with these changes. I can report that the Air Force today is in good shape.

"In terms of its people," General Jones says, "the Air Force never has been better. The key indicators—morale, discipline, and productivity—make it obvious that we have high-quality people—active duty, Reserves, and civilians—motivated by wanting to serve in an outfit second to none." But there is a caveat: "The all-volunteer force issue affects all services, even though in the Air Force we never had draftees; many of our people, however, were draft-motivated. I forecast that recruiting—not for the highly technical skills but for some career fields with limited training opportunities—will become more difficult and challenging in the future."

Also, General Jones points out that after eight years of Air Force budgets that declined in terms of constant dollars, the Administration and Congress in 1975 halted the budget slide. "We have been able to climb slightly since then. The crucial issue is to sustain that trend. We must expect, however, and are prepared for persisten pressures to do more with less, and to look for ways t economize. We will continue to examine the base struc ture, overhead, and training ratios. We can be certai also about concern over personnel costs and the con stant challenge to all of us in leadership positions t keep our personnel costs as low as practical whil looking after our people so that an Air Force caree continues to provide a rewarding life."

Force Modernization

General Jones foresees no near-term changes in th fundamental makeup of the Air Force other than cor tinual modernization and strengthening of the forc structure. Pivotal here is the "fleshing out of the twent six active-duty fighter wings," he points out. There a fewer tactical fighters in the active force inventory tha authorized. This shortfall is to be reduced by the en of FY '78 and eliminated completely by 1981, when a of the nearly 2,000 authorized USAF aircraft of this ty are scheduled to be in operation. Deficiencies of the A Force's ten Reserve Forces fighter wings, in the mai result from lagging equipment modernization rather tha numerical shortfalls and are to be corrected within t next few years.

The main problem confronting the Air Force's sti

tegic forces is "deferred modernization during a period when the Soviet Union has been modernizing as well as expanding its strategic forces very rapidly. For well over twenty years, USAF's strategic forces have sustained the highest alert status and readiness of any US military activity. They are finely honed. Our concern is not with today, but our strategic defense posture in the 1980s and 1990s," General Jones notes.

Bombers

With the B-1 production program terminated, enhancement of existing bombers and research on future strategic aircraft become very important. "The President reaffirmed the strategic Triad concept at the same time he announced the B-1 decision," General Jones points out, "and it thus remains essential that the bomber component of the Triad be made as effective as possible, consistent with national priorities and goals. The Air Force is carefully studying the options available to do this, and I am confident that the programs eventually pursued will provide effectiveness and flexibility to our bomber force."

Cruise Missiles

The Administration's decision on the B-1 also brings to the forefront the issue of how best to incorporate cruise missiles into the force. General Jones ascribes a "very bright future to these weapons, which—even though the Air Force has operated cruise missiles such as the ground-launched Mace and the air-launched Hound Dog for a long time—represent a new challenge and opportunity with today's technology." Major advances in propulsion and guidance, coupled with miniaturization, mean that a B-52 or other launch vehicle could carry a relatively large number of these systems having longer ranges.

The Air Force is exploring several different air-launched cruise missiles (ALCMs), which could be deployed on B-52s within the near future, while also looking at more advanced follow-on systems and possible other carriers, according to General Jones:

"We are looking at the Boeing AGM-86B and at a modified version of the [US Navy's] Tomahawk, the General Dynamics AGM-109." The AGM-86B is 234 inches long and weighs 2,800 pounds. The AGM-109 is 219 inches long and weighs 2,550 pounds.

General Jones told AIR FORCE Magazine: "The Air Force is inclined to start with a relatively simple design that can be procured and deployed quite soon and then improve the weapon in an evolutionary fashion. If we indeed take this approach to attain operational status quickly, we probably should start out with a limited quantity. Also, there is a lot to be learned about force application and how to maintain this new weapon in a reliable, cost-effective fashion."

Another factor influencing USAF's decision on how to arrange the ALCM program and mission is the emergence of a newer, related weapon, the Advanced

General Jones takes issue with the notion that strategic nuclear inferiority is acceptable: "Proponents of this theory do not use the word inferiority. They use the phrase Minimum Assured Destruction, but they are talking about inferiority—in fact and in international perception."

Strategic Air-Launched Missile (ASALM). The latter, according to Air Force estimates, could be available about five or six years after ALCM enters the inventory. Calling the ASALM technology a "logical outgrowth of the cruise missile program," General Jones said, "we consider ASALM potentially a most promising capability." Combining rocket propulsion with ramjet technology (*see p. 22, June '77 issue*), ASALM could be capable of SRAM speeds and ALCM ranges.

ASALM is to be at least 168 inches long and is intended to fit the B-52's internal rotary launcher. At present, ASALM is a technology program, with propulsion technology flight demonstrations slated to be completed in FY '79. If authorized, USAF could, however, launch competitive advance development during this fiscal year and, at an RDT&E cost of about $675 million, complete development and testing by 1985.

A third area of cruise missile technology in which the Air Force is deeply involved is the ground-launched cruise missile (GLCM). The Defense Department this year named the Air Force as principal agency for development and deployment of the GLCM, which is being examined as an adjunct to US theater nuclear forces. A modified version of the Navy's Tomahawk, GLCM adapts the former's cannister and torpedo tube booster for launch from mobile transporters. The transporters could be dispersed to take advantage of existing revetments, hangarettes, or shelters, or be deployed in a fully mobile mode.

According to General Jones, GLCM is an effective counter to the Soviet Union's "very substantial intratheater nuclear delivery capability." In addition, he pointed out, "a considerable portion of our nuclear capability is vulnerable [to Soviet surprise attack], which GLCM could correct. Also, many of the F-4s and F-111s standing nuclear quick-reaction alert in Europe could be freed for conventional warfare assignment or be deployed against mobile targets, using nuclear weapons."

The ground-launched cruise missile frequently is portrayed as a promising tool for delivering conventional high-explosive warheads or submunitions. General Jones does not rule out this possibility, but he believes that "initially it probably won't be practical to deliver a conventional warhead against hardened targets with a missile that costs up to $1 million per copy."

ICBMs

"As could likely be the case with all strategic weapons," General Jones pointed out, "a significant factor influencing the exact shape of the future ICBM force could be the outcome of strategic arms limitations. The position of the Air Force on arms control can be stated very simply. We believe that arms-control agreements which equitably reduce force levels, contribute to greater global stability, and maintain effective deterrence are fully in the US national interest."

General Jones stressed that "the level of US ICBM effort has been diminished over time. While US initiatives primarily have been aimed at upgrading the quality of our existing Minuteman force, the Soviets have been deploying new ICBMs, increasing both the throw-weight and accuracy of their force. Consistent with the progress made in SALT, we have been watching the Soviet efforts very closely to ensure that asymmetries in the ICBM modernization efforts don't give the Soviets a destabilizing advantage."

Over the past decade, US modernization programs for ICBMs have refined guidance, improved yields, provided more weapons (through the introduction of multiple independently targeted reentry vehicles, or MIRVs), increased flexibility for employment, and enhanced survival (through upgraded silos and hardening of systems against nuclear effects). Similar efforts could be pursued in the future, or—in the face of increasing Soviet threats and depending on the outcomes of SALT—new systems could be introduced into the force. In this latter regard, the Air Force has been examining a new generation of ICBMs, called the MX. "We are continuing research and development work on MX," General Jones reports, "but as yet have made no commitment to production."

Strategic Defenses

So far as strategic defensive forces are concerned, General Jones believes that "the US should have some air defense capability to police our airspace and provide limited wartime defense." Two important needs, he points out, are to provide a number of E-3A AWACS to augment the ground radars and to prepare for deployment of a follow-on interceptor. "The F-106 can still do the job, but there are problems. Normal attrition is bound to cause serious shortages in the 1980s, and of course eventually we should take advantage of the capabilities of late-model fighter aircraft."

The Defense Department deferred all decisions on USAF's proposed follow-on interceptor (FOI) program until FY '79. Of the several aircraft considered, the Air Force views the F-15 as most suitable and cost-effective, according to General Jones: "We recognize, however, that other aircraft also have good capabilities, and we have an open mind concerning new information that might warrant reconsideration. But as of now we prefer the F-15 and see no need to incorporate the F-14's Phoenix missile system into the F-15."

A key factor in expanding USAF's active air defense capabilities is force augmentation provided by the Tactical Air Command, General Jones pointed out. "TAC is sitting on alert in support of ADCOM already. If we want to emphasize air defense, all we need do is to tell the TAC Commander. He is ready to go where the Joint Chiefs of Staff and the Defense Department tell him to go—be that Europe, Korea, or ADCOM."

Tac Air

In the past few years, the Soviet Union and other members of the Warsaw Pact have "created a whole new air force with changed and very impressive capabilities, and they continue comprehensive modernization programs at a fast rate. Within a short period the Pact's air arm has been transformed from a force of short range, limited-payload aircraft into a long-range fleet of impressive striking power. This shift confronts NATO for the first time, with the prospect of not only the traditional armored frontal assault and missile—and perhaps bomber—attacks behind the battle lines, but also heavy tac air assaults on bases, command and con

trol facilities, stocks, and supply corridors far behind the lines. I am deeply concerned about the situation in Europe, but on the other hand I don't share the feeling of desperation that is vented by some people from time to time," General Jones told AIR FORCE Magazine.

One reason for "being a little less pessimistic regarding NATO's ability to deter attack," he said, is "that the Soviet/Pact forces as yet don't seem to have been able to get their whole act together, especially so far as training and logistics are concerned. Also, I believe we tend to make full allowance for our own deficiencies, because we are keenly aware of them, and attach only limited weight to the problems the other side has." Most important, however, is the fact that, in response to the mounting challenge, "we and our allies are making significant improvements in readiness and force modernization."

USAF's weapons modernization, including the E-3A, F-15, F-16, A-10, EF-111A, F-4G Wild Weasel and other systems in production or under development, is "progressing well, although perhaps not always as fast as we would like. We must remember, however, that for five years running we bought fewer than 200 new aircraft annually to support and modernize a 9,000-aircraft inventory. We are now moving toward higher acquisition rates and eventually hope to reach an annual level of between 500 and 600 new aircraft for both the active-duty and Reserve components," General Jones said.

An aspect of USAF's tactical air makeup that remains under continuing review is the "high-low mix, specifically the mix of F-15s and F-16s. We think that the numbers now programmed put us on the right track, but obviously conditions can change and different people have different views. Our immediate concern is with the F-15 buy. The ultimate number of F-16s the Air Force will buy is less certain because the F-16 acquisition takes us way out into the 1980s," according to General Jones.

For several years to come, he added, USAF will concentrate on "absorbing" the range of new aircraft now in production or in their final stages of development to "ensure that we optimize them to the fullest by equipping them with the most effective subsystems and weapons." The relatively broad scope of the current modernization cycle, however, does not justify slackening long-term research and development programs, General Jones stressed: "We are thinking ahead and have made limited funds available for preliminary work on an advanced tactical fighter. Next year, we had better decide on a specific approach, because it will be at least the mid-1980s before such an aircraft can become a reality."

Airlift

"Former Defense Secretary [James R.] Schlesinger put it aptly when he said that an Army division in the middle of Louisiana that's needed in Europe but can't get there in time is next to useless. Airlift obviously is critical. One of our major concerns is our inability, at present, to meet the full requirement for rapidly deploying US Army forces and their supporting equipment to the NATO theater. Our greatest airlift problem is a shortfall in oversize cargo capacity," General Jones said.

Part of this deficiency is being corrected by lengthening the fuselage of the C-141s and adding aerial refueling capability. The largest single contribution to USAF's airlift capacity could be realized by modifying the Civil Reserve Air Fleet (CRAF), and at about one-tenth the cost of buying equivalent military airlift. "I am pleased about progress in Congress on this score. For the first time, the House/Senate Conference Committee has approved funds for CRAF modification. We will see where we go from there," General Jones said.

By June of next year, the Air Force and the Defense Department will decide the future of the Advanced Medium Short Takeoff and Landing (STOL) Transport (AMST), the wide-body STOL intratheater airlifter currently in a competitive prototype stage, General Jones said. "We have two fine designs [two McDonnell Douglas and two Boeing prototypes], but this portion of our airlift program is less certain than others—not in terms of requirement but rather of funding," he cautioned.

New Approaches to Readiness

Combat and support readiness, General Jones points out, are as important as force modernization. "We are, therefore, putting a tremendous amount of effort on readiness." This emphasis starts at the top, with USAF's new Assistant Vice Chief of Staff, Lt. Gen. W. L. Creech, put in "direct charge of overall readiness and NATO initiatives and by the assignment of Maj. Gen. H. S. Vandenberg, Jr., to the new position of the Air Force's Director of Operations and Readiness," General Jones said.

Project CHECKMATE

The Air Force-wide drive toward greater readiness is multifaceted, beginning with a hard, unique look at its own concepts, doctrines, and strategies in the general-purpose forces area through Project CHECKMATE, launched by the Chief of Staff last December. The uniqueness of CHECKMATE is that it attempts to assess capabilities as seen through Soviet eyes. "CHECKMATE is not an attempt to be field commanders here in the Pentagon, but we in this building do have to decide on critical Air Force priorities and concepts," General Jones said.

"We have taken a group of more than thirty-five combat-experienced air staff officers—operational as well as intelligence types—and said, 'You now are the Soviets, in terms of mindset, doctrine, concepts, history, and so forth. How would you operate against the US/NATO forces?' We picked the brains of many prominent experts, including former Ambassador Robert W. Komer, Lt. Gen. James F. Hollingsworth, USA (Ret.), and Professor John Erickson [of the University of Edinburgh in Scotland] in behalf of the 'Red' team. We then play it against our 'Blue' team, representing US/NATO forces, to evolve new, timely concepts and strategies and to generate a continuing flow of ideas and critiques.

"CHECKMATE can help us optimize our force structure. We are involving the pertinent commands, and I envision the project as a more or less permanent institution. While we are starting out with a NATO orientation, CHECKMATE is being expanded to look at warfare in other parts of the world," General Jones told

AIR FORCE Magazine. Its key products initially will be the creation of a library on Soviet military thought, a catalog of Soviet/Warsaw Pact attack strategies, including attendant elements of weakness, and formulation of US/NATO responses.

Readiness Training

The Air Force is stressing training as a component of readiness in several ways, from new, specialized courses at the Air University and elsewhere to intensified exercises with other services and NATO allies. "In all such training efforts," General Jones points out, "we would like the unifying theme to be partnership: partnership with our allies, and among services and commands. We need to focus our training on the innovative use of resources in a truly common effort linked as closely as possible to wartime conditions."

The Air War College curriculum, for instance, is being "reoriented toward theater air war." In addition, Air University has developed a theater staff officer course highlighting combat deployment and force application, while AFIT is offering a graduate degree program in Strategic and Tactical Sciences. The Special Operations School at Hurlburt is adding programs tailored to crisis response management, and terrorism awareness. These courses, along with the current Soviet Awareness Program, will feature training and studies designed to improve readiness for staff operators and planners, according to General Jones.

The RED FLAG training program at Nellis AFB, Nev., exposes tactical crews to the most realistic combat simulation that peacetime conditions will allow, in order to reduce combat losses during the critical first few missions (*see January '77 issue, pp. 40–44*). COPE THUNDER, a "mini-RED FLAG," is being operated by the Thirteenth Air Force at Clark AB, Philippines. Like RED FLAG, COPE THUNDER provides multiservice combat training against a "Red" aggressor force complete with T-38s made to look like MiGs and operated by USAF pilots using tactics and electronic warfare (EW) techniques likely to be encountered in combat.

COPE THUNDER's principal focus is on air combat in the Pacific theater, as are two other readiness programs. Air-to-air specialization tests involving two PACAF F-4E squadrons at Clark AB concentrate on improvements in air-to-air missile tactics and proficiency. Low-altitude training in Korea by B-52s—started last year following the deaths of two US Army officers at the hands of North Korean troops—also is being conducted, General Jones said.

Project BLUE FLAG at Eglin AFB, Fla., simulates an extensive enemy air defense environment "against which we will test the broad range of our weapon systems, our C^3 and EW systems and techniques, the ability of battle staffs to direct forces, and the skills of our entire combat teams," General Jones said. BLUE FLAG is now operational on a limited scale. Also at Eglin is the Tactical Air Readiness Group that integrates tactical readiness improvement programs.

General Jones considers "improved chemical warfare training and defenses another key requirement." Funds for procurement of CW equipment, manpower, and research and development are included in the Five-Year Defense Plan (FYDP). Other new or intensified measures include CW defensive instruction in basic military training, undergraduate pilot and navigator training, Officer Training School, and other formal programs. Also, US Air Forces in Europe (USAFE) is building CW protective facilities and acquiring medical antidotes for all its personnel, General Jones disclosed.

Another major training emphasis is on "making sure that everybody has a wartime job and the skills that go with it. This means that each person will be assigned a wartime Air Force specialty code. People who are not proficient in their assigned skill will be trained to minimum qualification and required to maintain proficiency. For example, we want to be able in wartime to close down the Air University and to funnel all personnel quickly into the war machine," General Jones said. A related readiness program focuses on better management of the rated force by "keeping our crews in the cockpit longer, thus assuring higher training and experience levels."

NATO Initiatives

Participation of TAC units in NATO exercises is being expanded to the point "where we have at least one squadron a month go to Europe, with the Reserve and Guard fully sharing in the activity. Reserve components, that—combined—represent about one-third of all Air Force tactical capabilities, must be full-fledged partners of the active-duty force. We, therefore, conduct frequent squadron movements and training activities to give them the most realistic training experience possible," General Jones emphasized.

Training deployments to Europe will involve using some allied bases to help refine interoperability concepts. Such use does not necessarily reflect wartime basing of US augmentation forces, although bilateral agreements have been and are being negotiated to provide for some collocated operating bases (COBs). The COB concept, General Jones explained, was developed by USAFE to alleviate overcrowding of the command's air bases by augmentation forces during periods of crisis or in wartime as well as for deployment and interoperability training.

Throughout the discussion, General Jones stressed the importance of enhancing *coalition* warfare as a key to improving readiness. "There is much that we and our allies can do in this area," the Chief of Staff stressed "to make sure that NATO's defense is strengthened. And I think we are headed in the right direction."

For instance, survivability of tactical ground facilities in Europe is being increased through improved "cross servicing" in terms of fuel and ordnance with allied air forces. The ultimate goal, General Jones explained, is to ensure that "a NATO aircraft can recover at any friendly base, refuel and rearm, get minimum maintenance, and recycle for another mission." Ground survivability in the context of allied command and control will benefit also from completion of the Allied Forces Central Europe Allied Air Forces Central Europe static war headquarters in the Boerfink bunker in Germany, he added.

Project CREEK PROTECT, a comprehensive Air Force effort to increase USAFE's ground survivability, stresses training in base defense and related fields. Other elements of CREEK PROTECT concentrate on toning down taxiways and parking ramps, base camouflage, dispersal, and revetment construction. "Much of our emphasis in this project is on such self help as sandbagging and other techniques to reduce vulnerability to ground attacks. We started with our European bases, but are extending these activities to Korea," General Jones said.

Operation READY EAGLE is a fundamental change in how overseas Air Force combat units convert to new aircraft without standing down operationally. "In the past, when we converted a unit in Europe we first phased out the old aircraft, then brought in the new aircraft, and finally brought the unit up to readiness. We recently flew the first squadron of F-15s nonstop to Bitburg AB, Germany. They went on alert that same day. Obviously there had to be subsequent in-theater training and checkout before they reached 100 percent effectiveness, but we found that we can do a lot of readiness training before we deploy overseas, to achieve an immediate combat capability. We proved the same point with a squadron of F-111s that was deployed to Lakenheath in England. It was combat-capable upon arrival," General Jones said.

Other Readiness Improvements

CORONA ACE, a recent review of USAF's air-to-air capabilities requested by General Jones, revealed both the need and means for improving air-to-air combat skills and hardware. Specifically, "we found that we need more 'aggressor' training, more air-to-air missiles, and higher Pk [kill probability] of the total weapon system. It made clear also that we must continue the modification and design refinement of our air-to-air munitions and that the F-15's integrity as a pure air-superiority weapon must not be compromised," General Jones said.

Under the heading of SORTIE SURGE, USAF has launched a comprehensive effort to increase sortie generation rates in intense combat operations through the use of new procedures and techniques. "We actually have been able to double and even triple the previous rates through the program that involves TAC, PACAF, USAFE, the Alaskan Air Command, AFLC, and AFSC," the General reported.

USAF is also increasing the readiness of its combat forces to reinforce, when required, the US Navy's sea reconnaissance and surveillance mission through specialized operations of B-52, F-111, and other aircraft. General Jones responded to recent claims about the alleged high vulnerability of USAF aircraft, especially the B-52, to ship-launched surface-to-air missiles by observing that "of course, there would be some vulnerability if we flew directly over Soviet ships equipped with SAMs. But, most of their ships don't have SAMs and, secondly, we would stand off and use GBU-15s [terminally guided glide bombs] whose range exceeds that of the Soviet SAMs." Plans to use the Navy's Harpoon missile aboard B-52s were dropped in favor of the GBU-15, he disclosed.

Measuring Readiness

Precise measurement of readiness and realistic readiness inspections are essential prerequisites for improving combat capability. "We are coming up with an expanded readiness measurement system," General Jones said. The Rand Corp. is exploring alternative ways for revamping USAF's measurement of unit capability. Air Force Headquarters and the major commands are developing a system to provide better information on changing combat readiness requirements and to improve the measurement and inspection process. Better readiness information will furnish near real time crisis management data as well as detailed, topical management information on changing requirements in training, equipment, and maintenance, according to the Chief of Staff.

To boost the realism of operational readiness inspection, Air Force management will direct increased emphasis on scenarios and criteria that reflect wartime tasks most likely to confront the Air Force. A key factor is joint TAC/USAFE scenarios; that is, "we will deploy under TAC and employ under USAFE criteria," he said. Similarly, MAC's "new look" test is "being built around actual joint service exercises and requirements while PACAF's operational readiness inspection will focus on around-the-clock operations with allowance for sortie surge and attrition factors."

Space

The Chief of Staff indicated that the Air Force's interest in space, and emphasis on capabilities in that medium, are certain to grow but believes that there will be no effect on force structure. Which USAF command or commands will operate the Space Shuttle for the Defense Department has not been decided, he said. The NASA-developed Shuttle and its modular, versatile interim upper stage (developed by the Air Force), the IUS, are expected to increase dramatically the effectiveness of USAF's space operations because of larger, heavier, more economical payloads. This, in turn, should lead to increased operational capabilities, greater reliability through redundant subsystems, and increased survivability. Present plans call for an average of about ten USAF/DoD Shuttle flights annually once the system achieves full operational status at both Vandenberg AFB in California and the Kennedy Space Center in Florida.

The Future

In concluding the interview, General Jones stated: "I am optimistic that USAF's next thirty years will be marked by at least the same standards of excellence and dedication as those of the past." A key factor behind USAF's currently healthy state, the Chief of Staff believes, is the wisdom of the service's early leaders, whose "very sound decisions on basic force structure, such as mission-oriented major commands as well as the combat structure, form a bedrock that, except for evolutionary improvements and adjustments, have stood the test of time. It is those decisions that we shall continue to build on as we look to the future." ■

Why the Sovie
It Could Fight and

A Summary of the Argument

American and Soviet nuclear doctrines are diametrically opposed. They are products of totally different historical experiences and political and socioeconomic systems. The apparent contradictions in Soviet nuclear doctrine and the dangers of US unilateral adherence to a strategy of mutual deterrence are best understood when put in historical perspective.

The American view of war has been conditioned by the ideas characteristic of a Western commercial society. Underlying it is the notion that human conflict results from misunderstandings that can be resolved by negotiation. Marxism, on the other hand, holds conflict to be normal (and desirable) so long as opposed economic classes exist. The Soviets see military forces as a political tool and a part of grand strategy. Americans generally regard war as an abnormal situation and want to end it rapidly through technological superiority and with the least possible loss of friendly (but not necessarily enemy) lives. Large peacetime forces are an unwelcome expense.

These contrary views of war were affected differently by the coming of nuclear weapons. In the US, atomic and thermonuclear bombs were considered "absolute" weapons, capable of destroying a society or even a civilization, and against which there was no defense. Thus, Clausewitz's dictum that war is an extension of politics was considered dead. Since nuclear war could serve no rational political purpose, the function of strategic forces should be to avert war. Because of the vast destructiveness of nuclear weapons, a "sufficiency" of weapons to retaliate was believed to be enough. Numerical superiority was thought to have little meaning. To ensure a stable balance, in which conflicts could be resolved by negotiation, the USSR should even have the ability to do unacceptable second-strike damage to the US. This concept of mutual deterrence, or mutual assured destruction, became US policy and, as nuclear delivery capabilities improved, remained the foundation of a somewhat more flexible policy.

These US strategic theories were developed largely by civilian scientists and "accountants," with little contribution from military professionals. The theorists were guided significantly by fiscal imperatives—the desire to reduce the defense budget while retaining a capacity to deter Soviet threats to US interests. The theories were formulated without reference to their Soviet counterparts, and in the belief that we can "educate" the Soviets to adopt our views.

In the USSR, where strategy is considered a science and the special province of the military, nuclear weapons were not held to be "absolute," except perhaps briefly after Stalin's death. The idea of mutual deterrence was never accepted. Soviet theorists rejected the idea that technology determines strategy. They adapted nuclear weapons to their traditional Clausewitzian view of war as an extension of politics.

The Communist revolution eliminated that segment of Russian society that was most Westernized, and put the peasant class in power. History had taught the Russian peasant that cunning and coercion assured survival; cunning when weak; cunning and coercion when strong. "Not to use force when one had it indicated some inner weakness." That concept of the use of power and the fact that, since 1914, the USSR has lost up to 60,000,000 citizens through war, famine, and purges and survived has no doubt conditioned the development of Soviet nuclear strategy.

By the mid-1960s, Soviet theorists had articulated a war-fighting, war-winning doctrine. Inherent in it is the capability to not only defeat, but to destroy an enemy, and the resolve, based on World War II experience, never again to be surprised. Nuclear weapons thus make strategy more important than ever in Soviet eyes, while it has become less important to US architects of nuclear deterrence.

Soviet nuclear doctrine, expounded in a wide range of Russian defense literature, has five related elements.

- Preemption (first strike).
- Quantitative superiority (a requisite for preemption and because the war may last for some time, even though the initial hours are decisive).
- Counterforce targeting.
- Combined-arms operations to supplement nuclear strikes.
- Defense, which has been almost totally neglected by the US under its concept of mutual deterrence.

Soviet doctrine is both a continuation and an extension of the Soviet belief that all military forces—nuclear and conventional—serve a political purpose as guarantor of internal control and an instrument for territorial expansion. Thus, large military forces are accepted in the Soviet Union as a rational capital investment, regardless of their impact on social programs.

Soviet writing on nuclear strategy has been largely ignored, or has been ridiculed in this country because of its jingoism and crudity, and the obscurity of Communist semantics. It is a strategy of "compellance," in contrast to the US doctrine of deterrence.

But, ". . . the relationship of Soviet doctrine and Soviet deployments [is] sufficiently close to suggest that ignoring or not taking seriously Soviet military doctrine may have very detrimental effects on US security."

Finally, ". . . as long as the Soviets persist in adhering to the Clausewitzian maxim on the function of war, mutual deterrence does not really exist. And unilateral deterrence is feasible only if we understand the Soviet war-winning strategy and make it impossible for them to succeed."

Union Thinks Win a Nuclear War

BY RICHARD PIPES
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Only rarely does AIR FORCE Magazine reprint an article from another publication. We believe this comparative analysis of Soviet and US nuclear doctrines, which appeared in the July issue of *Commentary* Magazine, to be one of the most important military/political essays of the year. Its author headed "Team B," which worked with CIA analysts in developing the current National Intelligence Estimates. A summary of his main points appears on the preceding page; however, we urge that the article be read in its entirety.

IN A RECENT interview with the *New Republic,* Paul Warnke, the newly appointed head of the Arms Control and Disarmament Agency, responded as follows to the question of how the United States ought to react to indications that the Soviet leadership thinks it possible to fight and win a nuclear war. "In my view," he replied, "this kind of thinking is on a level of abstraction which is unrealistic. It seems to me that instead of talking in those terms, which would indulge what I regard as the primitive aspects of Soviet nuclear doctrine, we ought to be trying to educate them into the real world of strategic nuclear weapons, which is that nobody could possibly win."[1]

Even after allowance has been made for Mr. Warnke's notoriously careless syntax, puzzling questions remain. On what grounds does he, a Washington lawyer, presume to "educate" the Soviet general staff composed of professional soldiers who thirty years ago defeated the Wehrmacht—and, of all things, about the "real world of strategic nuclear weapons" of which they happen to possess a considerably larger arsenal than we? Why does he consider them children who ought not to be "indulged"? And why does he chastise for what he regards as a "primitive" and unrealistic strategic doctrine not those who hold it, namely the Soviet military, but Americans who worry about their holding it?

All notes may be found on p. 66.

Be all that as it may, even if Mr. Warnke refuses to take Soviet strategic doctrine seriously, it behooves us to take Mr. Warnke's views of Soviet doctrine seriously. He not only will head our SALT II team; his thinking as articulated in the above statement and on other occasions reflects all the conventional wisdom of the school of strategic theory dominant in the United States, one of whose leading characteristics is scorn for Soviet views on nuclear warfare.

American and Soviet nuclear doctrines, it needs stating at the outset, are starkly at odds. The prevalent US doctrine holds that an all-out war between countries in possession of sizable nuclear arsenals would be so destructive as to leave no winner; thus, resort to arms has ceased to represent a rational policy option for the leaders of such countries vis-à-vis one another. The classic dictum of Clausewitz, that war is politics pursued by other means, is widely believed in the United States to have lost its validity after Hiroshima and Nagasaki. Soviet doctrine, by contrast, emphatically asserts that while an all-out nuclear war would indeed prove extremely destructive to both parties, its outcome would not be mutual suicide: The country better prepared for it and in possession of a superior strategy could win and emerge a viable society. "There is profound erroneousness and harm in the disorienting claims of bourgeois ideologies that there will be no victor in a thermonuclear world war," thunders an authoritative Soviet publication.[2] The

theme is mandatory in the current Soviet military literature. Clausewitz, buried in the United States, seems to be alive and prospering in the Soviet Union.

The predisposition of the American strategic community is to shrug off this fundamental doctrinal discrepancy. American doctrine has been and continues to be formulated and implemented by and large without reference to its Soviet counterpart. It is assumed here that there exists one and only one "rational" strategy appropriate to the age of thermonuclear weapons, and that this strategy rests on the principle of "mutual deterrence" developed in the United States some two decades ago. Evidence that the Russians do not share this doctrine, which, as its name indicates, postulates reciprocal attitudes, is usually dismissed with the explanation that they are clearly lagging behind us: Given time and patient "education," they will surely come around.

It is my contention that this attitude rests on a combination of arrogance and ignorance; that it is dangerous; and that it is high time to start paying heed to Soviet strategic doctrine, lest we end up deterring no one but ourselves. There is ample evidence that the Soviet military say what they mean, and usually mean what they say. When the recently deceased Soviet Minister of Defense, Marshal Grechko, assures us:

"Evidence that the Russians do not share this doctrine [mutual deterrence] . . . is usually dismissed with the explanation that they are clearly lagging behind us: Given time and patient 'education,' they will surely come around."

"We have never concealed, and do not conceal, the fundamental, principal tenets of our military doctrine,"[3] he deserves a hearing. This is especially true in view of the fact that Soviet military deployments over the past twenty years make far better sense in the light of Soviet doctrine, "primitive" and "unrealistic" as the latter may appear, than when reflected in the mirror of our own doctrinal assumptions.

MISTRUST of the military professional, combined with a pervasive conviction, typical of commercial societies, that human conflicts are at bottom caused by misunderstanding and ought to be resolved by negotiations rather than force, has worked against serious attention to military strategy by the United States. We have no general staff; we grant no higher degrees in "military science"; and, except for Admiral Mahan, we have produced no strategist of international repute. America has tended to rely on its insularity to protect it from aggressors, and on its unique industrial capacity to help crush its enemies once war was under way. The United States is accustomed to waging wars of its own choosing and on its own terms. It lacks an ingrained strategic tradition. In the words of one historian, Americans tend to view both military strategy and the armed forces as something to be "employed intermittently to destroy occasional and intermittent threats posed by hostile powers."[4]

This approach to warfare has had a number of consequences. The United States wants to win its wars quickly and with the smallest losses in American lives. It is disinclined, therefore, to act on protracted and indirect strategies, or to engage in limited wars and wars of attrition. Once it resorts to arms, it prefers to mobilize the great might of its industrial plant to produce vast quantities of the means of destruction with which in the shortest possible time to undermine the enemy's will and ability to continue the struggle. Extreme reliance on technological superiority, characteristic of US warfare, is the obverse side of America's extreme sensitivity to its own casualties; so is indifference to the casualties inflicted on the enemy. The strategic bombing campaigns waged by the US Air Force and the RAF against Germany and Japan in World War II excellently implemented this general attitude. Paradoxically, America's dread of war and casualties pushes it to adopt some of the most brutal forms of warfare, involving the indiscriminate destruction of the enemy's homeland with massive civilian deaths.

These facts must be borne in mind to understand the way the United States reacted to the advent of the nuclear bomb. The traditional military services—the Army and the Navy—whose future seemed threatened by the invention of a weapon widely believed to have revolutionized warfare and rendered conventional forces obsolete, resisted extreme claims made on behalf of the bomb. But they were unable to hold out for very long. An alliance of politicians and scientists, backed by the Air Force, soon overwhelmed them. "Victory through Airpower," a slogan eminently suited to the American way of war, carried all before it once bombs could be devised whose explosive power was measured in kilotons and megatons.

The US Army tried to argue after Hiroshima and Nagasaki that the new weapons represented no fundamental breakthrough. No revolution in warfare had occurred, its spokesman claimed: Atomic bombs were merely a more efficient species of the aerial bombs used in World War II, and in themselves no more able to ensure victory than the earlier bombs had been. As evidence, they could point to the comprehensive US Strategic Bombing Surveys carried out after the war to assess the effects of the bombing campaigns. These had demonstrated that saturation raids against German and Japanese cities had neither broken the enemy's morale nor paralyzed his armaments industry; indeed, German productivity kept on rising in the face of intensified Allied bombing, attaining its peak in the fall of 1944, on the eve of capitulation.

And when it came to horror, atomic bombs had nothing over conventional ones: As against the 72,000 casualties caused by the atomic bomb in Hiroshima, conventional raids carried ou

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against Tokyo and Dresden in 1945 had caused 84,000 and 135,000 fatalities, respectively. Furthermore, those who sought to minimize the impact of the new weapon argued, atomic weapons in no sense obviated the need for sizable land and sea forces. For example, General Ridgway, as Chief of Staff in the early 1950s, maintained that war waged with tactical nuclear weapons would demand larger rather than smaller field armies since these weapons were more complicated, since they would produce greater casualties, and since the dispersal of troops required by nuclear tactics called for increasing the depth of the combat zone.[5]

As we shall note below, similar arguments disputing the revolutionary character of the nuclear weapon surfaced in the Soviet Union, and there promptly came to dominate strategic theory. In the United States, they were just as promptly silenced by a coalition of groups, each of which it suited, for its own reasons, to depict the atomic bomb as the "absolute weapon" that had, in large measure, rendered traditional military establishments redundant and traditional strategic thinking obsolete.

ONCE World War II was over, the United States was most eager to demobilize its armed forces. Between June 1945 and June 1946, the US Army reduced its strength from 8,300,000 to 1,900,000 men; comparable manpower cuts were achieved in the Navy and Air Force. Little more than a year after Germany's surrender, the military forces of the United States, which at their peak had stood at 12,300,000 men, were cut down to 3,000,000; two years later they declined below 2,000,000. The demobilization proceeded at a pace (if not in a manner) reminiscent of the dissolution of the Russian army in the revolutionary year of 1917. Nothing could have stopped this mass of humanity streaming homeward. To most Americans peacetime conditions meant reversion to a skeletal armed force.

Yet, at the same time, growing strains in the wartime alliance with the Soviet Union, and mounting evidence that Stalin was determined to exploit the chaotic conditions brought about by the collapse of the Axis powers to expand his domain, called for an effective military force able to deter the Soviets. The United States could not fulfill its role as leader of the Western coalition without an ability to project its military power globally.

In this situation, the nuclear weapon seemed to offer an ideal solution: The atomic bomb could hardly have come at a better time from the point of view of US international commitments. Here was a device so frighteningly destructive, it was believed, that the mere threat of its employment would serve to dissuade would-be aggressors from carrying out their designs. Once the Air Force received the B-36, the world's first intercontinental bomber, the United States acquired the ability to threaten the Soviet Union with devastating punishment without, at the same time, being compelled to maintain a large and costly standing army.

Reliance on the nuclear deterrent became more imperative than ever after the conclusion of the Korean War, in the course of which US defense expenditures had been sharply driven up. President Eisenhower had committed himself to a policy of fiscal restraint. He wanted to cut the defense budget appreciably, and yet he had to do so without jeopardizing either America's territorial security or its worldwide commitments. In an effort to reconcile these contradictory desires, the President and his Secretary of State, John Foster Dulles, enunciated in the winter of 1953–54 a strategic doctrine which to an unprecedented degree based the country's security on a single weapon, the nuclear deterrent. In an address to the United Nations in December 1953, Eisenhower argued that since there was no defense against nuclear weapons (*i.e.*, thermonuclear or hydrogen bombs, which both countries were then beginning to produce), war between the two "atomic colossi" would leave no victors and probably cause the demise of civilization. A month later, Dulles enunciated what came to be known as the doctrine of "massive retaliation." The United States, he declared, had decided "to depend primarily upon a great capacity to retaliate, instantly, by means and at places of our choosing." Throughout his address, Dulles emphasized the fiscal benefits of such a strategy, "more basic security at less cost."

THE Eisenhower-Dulles formula represented a neat compromise between America's desires to reduce the defense budget and simultaneously to retain the capacity to respond to Soviet threats. The driving force was not, however, military but budgetary: behind "massive retaliation" (as well as its offspring, "mutual deterrence") lay *fiscal* imperatives. In the nuclear deterrent, the United States found a perfect resolution of the conflicting demands of domestic and foreign responsibilities. For this reason alone its adoption was a foregone conclusion: The alternatives were either a vast standing army or forfeiture of status as a leading world power. The Air Force enthusiastically backed the doctrine of massive retaliation. As custodian of the atomic bomb, it had a vested interest in a defense posture of which that weapon was the linchpin. And since in the first postwar decade the intercontinental bomber was the only available vehicle for delivering the bomb against an enemy like the Soviet Union, the Air Force could claim a goodly share of the defense budget built around the retaliation idea.

"Whether mutual deterrence deserves the name of a strategy at all is a real question."

Although the Soviet Union exploded a fission bomb in 1949 and announced the acquisition of a fusion (or hydrogen) bomb four years later, the United States still continued for a while longer to enjoy an effective monopoly on nuclear retaliation, since the Soviet Union lacked the means of delivering quantities of such bombs against US territory. That situation changed dramatically in 1957 when the Soviets launched the Sputnik. This event, which their propaganda hailed as a great contribution to the advancement of science (and ours as proof of the failures of the American educational system!), represented in fact a significant military demonstration, namely, the ability of the Russians to deliver nuclear warheads against the United States homeland, until then immune from direct enemy threats. At this point, massive retaliation ceased to make much sense and before long yielded to the doctrine of "mutual deterrence." The new doctrine postulated that inasmuch as

both the Soviet Union and the United States possessed (or would soon possess) the means of destroying each other, neither country could rationally contemplate resort to war. The nuclear stockpiles of each were an effective deterrent that ensured that they would not be tempted to launch an attack.

This doctrine was worked out in great and sophisticated detail by a bevy of civilian experts employed by various government and private organizations. These physicists, chemists, mathematicians, economists, and political scientists came to the support of the government's fiscally driven imperatives with scientific demonstrations in favor of the nuclear deterrent. Current US strategic theory was thus born of a marriage between the scientist and the accountant. The professional soldier was jilted.

A LARGE part of the US scientific community had been convinced as soon as the first atomic bomb was exploded that the nuclear weapon, which that community had conceived and helped to develop, had accomplished a complete revolution in warfare. This conclusion was reached without much reference to the analysis of the effects of atomic weapons carried out by the military, and indeed without consideration of the traditional principles of warfare. It represented, rather, an act of faith on the part of an intellectual community that held strong pacifist convictions and felt deep guilt at having participated in the creation of a weapon of such destructive power. As early as 1946, in an influential book sponsored by the Yale Institute of International Affairs, under the title *The Absolute Weapon,* a group of civilian strategic theorists enunciated the principles of the mutual-deterrence theory which subsequently became the official US strategic doctrine. The principal points made in this work may be summarized as follows:

1. Nuclear weapons are "absolute weapons" in the sense that they can cause unacceptable destruction, but also and above all because there exists against them no possible defense. When the aggressor is certain to suffer the same punishment as his victim, aggression ceases to make sense. Hence, war is no longer a rational policy option, as it had been throughout human history. In the words of Bernard Brodie, the book's editor: "Thus far the chief purpose of our military establishment had been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose" (p. 76).

2. Given the fact that the adjective "absolute" means, by definition, incapable of being exceeded or surpassed, in the nuclear age military superiority has become meaningless. As another contributor to the book, William T. R. Fox, expressed it: "When dealing with the absolute weapon, arguments based on relative advantage lose their point" (p. 181). From which it follows that the objective of modern defense policy should be not superiority in weapons, traditionally sought by the military, but "sufficiency"; just enough nuclear weapons to be able to threaten a potential aggressor with unacceptable retaliation—in other words, an "adequate" deterrent, no more, no less.

3. Nuclear deterrence can become effective only if it restrains mutually—*i.e.*, if the United States and the Soviet Union each can deter the other from aggression. An American monopoly on nuclear weapons would be inherently destabilizing, both because it could encourage the United States to launch a nuclear attack, and, at the same time, by making the Russians feel insecure, cause them to act aggressively. "Neither we nor the Russians can expect to feel even reasonably safe unless an atomic attack by one were certain to unleash a devastating atomic counterattack by the other," Arnold Wolfers maintained (p. 135). In other words, to feel secure the United States actually required the Soviet Union to have the capacity to destroy it.

BARELY one year after Hiroshima and three years before the Soviets were to acquire a nuclear bomb, *The Absolute Weapon* articulated the philosophical premises underlying the mutual-deterrence doctrine that today dominates US strategic thinking. Modern strategy, in the opinion of its contributors, involved preventing wars rather than winning them, securing sufficiency in decisive weapons rather than superiority, and even ensuring the potential enemy's ability to strike back. Needless to elaborate, these principles ran contrary to all the tenets of traditional military theory, which had always called for superiority in forces and viewed the objective of war to be victory. But then, if one had decided that the new weapons marked a qualitative break with all the weapons ever used in combat, one could reasonably argue that past military experience, and the theory based on it, had lost relevance. Implicit in these assumptions was the belief that Clausewitz and his celebrated formula proclaiming war an extension of politics were dead. Henry Kissinger, who can always be counted upon to utter commonplaces in the tone of prophetic revelation, announced Clausewitz's obituary nearly twenty years after *The Absolute Weapon* had made the point, in these words: "The traditional mode of military analysis which saw in war a continuation of politics but with its own appropriate means is no longer applicable."[6]

American civilian strategists holding such views gained the dominant voice in the formulation of US strategic doctrine with the arrival in Washington in 1961 of Robert S. McNamara as President Kennedy's Secretary of Defense. A prominent business executive specializing in finance and accounting, McNamara applied to the perennial problem of American strategy—how to maintain a credible global military posture without a large and costly military establishment—the methods of cost analysis. These had first been applied by the British during World War II under the name "operations research" and subsequently came to be adopted here as "systems analysis." Weapons' procurement was to be tested and decided by the same methods used to evaluate returns on investment in ordinary business enterprises. Mutual deterrence was taken for granted: The question of strategic posture reduced itself to the issue of which weapons systems would provide the United States with effective deterrence at the least expense. Under McNamara the procurement of weapons, decided on the basis of cost-effectiveness, came in effect to direct strategy, rather than the other way around, as had been the case through most of military history. It is at this point that applied science in partnership with budgetary accountancy—a partnership which had developed US strategic theory—also took charge of US defense policy.

AS WORKED out in the 1960s, and still in effect today, American nuclear theory rests on these propositions: All-out nuclear war is not a rational policy option, since no winner could possibly emerge from such a war. Should the Soviet Union nevertheless launch a surprise attack on the United States, the latter would emerge with enough of a deterrent to devastate the Soviet Union in a second strike. Since such

retaliatory attack would cost the Soviet Union millions of casualties and the destruction of all its major cities, a Soviet first strike is most unlikely. Meaningful defenses against a nuclear attack are technically impossible and psychologically counterproductive; nuclear superiority is meaningless.

In accord with these assumptions, the United States in the mid-1960s unilaterally froze its force of ICBMs at 1,054 and dismantled nearly all its defenses against enemy bombers. Civil defense was all but abandoned, as was in time the attempt to create an ABM system that held out the possibility of protecting American missile sites against a surprise enemy attack. The Russians were watched benignly as they moved toward parity with the United States in the number of intercontinental launchers, and then proceeded to attain numerical superiority. The expectation was that as soon as the Russians felt themselves equal to the United States in terms of effective deterrence, they would stop further deployments. The frenetic pace of the Soviet nuclear buildup was explained first on the ground that the Russians had a lot of catching up to do, then that they had to consider the Chinese threat, and finally on the grounds that they are inherently a very insecure people and should be allowed an edge in deterrent capability.

Whether mutual deterrence deserves the name of a strategy at all is a real question. As one student of the subject puts it:

> Although commonly called a "strategy," "assured destruction" was by itself an antithesis of strategy. Unlike any strategy that ever preceded it throughout the history of armed conflict, it ceased to be useful precisely where military strategy is supposed to come into effect: at the edge of war. It posited that the principal mission of the U.S. military under conditions of ongoing nuclear operations against [the continental United States] was to shut its eyes, grit its teeth, and reflexively unleash an indiscriminate and simultaneous reprisal against all Soviet aim points on a preestablished target list. Rather than deal in a considered way with the particular attack on hand so as to minimize further damage to the United States and maximize the possibility of an early settlement on reasonably acceptable terms, it had the simple goal of inflicting punishment for the Soviet transgression. Not only did this reflect an implicit repudiation of political responsibility, it also risked provoking just the sort of counterreprisal against the United States that a rational wartime strategy should attempt to prevent.[7]

I cite this passage merely to indicate that the basic postulates of US nuclear strategy are not as self-evident and irrefutable as its proponents seem to believe; and that, therefore, their rejection by the Soviet military is not, in and of itself, proof that Soviet thinking is "primitive" and devoid of a sense of realism.

THE principal differences between American and Soviet strategies are traceable to different conceptions of the role of conflict and its inevitable concomitant, violence, in human relations; and secondly, to different functions which the military establishment performs in the two societies.

In the United States, the consensus of the educated and affluent holds all recourse to force to be the result of an inability or an unwillingness to apply rational analysis and patient negotiation to disagreements: The use of force is *prima facie* evidence of failure. Some segments of this class not only refuse to acknowledge the existence of violence as a fact of life, they have even come to regard fear—the organism's biological reaction to the threat of violence—as inadmissible. "The notion of being threatened has acquired an almost class connotation," Daniel P. Moynihan notes in connection with the refusal of America's "sophisticated" elite to accept the reality of a Soviet threat. "If you're not very educated, you're easily frightened. And not being ever frightened can be a formula for self-destruction."[8]

Now this entire middle-class, commercial, essentially Protestant ethos is absent from Soviet culture, whose roots feed on another kind of soil, and which has had for centuries to weather rougher political climes. The Communist revolution of 1917, by removing from positions of influence what there was of a Russian bourgeoisie (a class Lenin was prone to define as much by cultural as by socioeconomic criteria), in effect installed in power the *muzhik*, the Russian peasant. And the *muzhik* had been taught by long historical experience that cunning and coercion alone ensured survival: One employed cunning when weak, and cunning coupled with coercion when strong. Not to use force when one had it indicated some inner weakness. Marxism, with its stress on class war as a natural condition of mankind so long as the means of production were privately owned, has merely served to reinforce these ingrained convictions. The result is an extreme Social-Darwinist outlook on life, which today permeates the Russian elite as well as the Russian masses, and which only the democratic intelligentsia and the religious dissenters oppose to any significant extent.

The Soviet ruling elite regards conflict and violence as natural regulators of all human affairs: Wars between nations, in its view, represent only a variant of wars between classes, recourse to the one or the other being dependent on circumstances. A conflictless world will come into being only when the socialist (*i.e.*, Communist) mode of production spreads across the face of the earth.

The Soviet view of armed conflict can be illustrated with another citation from the writings of the late Marshal Grechko, one of the most influential Soviet military figures of the post-World War II era. In his principal treatise, Grechko refers to the classification of wars formulated in 1972 by his US counterpart, Melvin Laird. Laird divided wars according to engineering criteria—in terms of weapons employed and the scope of the theater of operations—to come up with four principal types of wars: strategic-nuclear, theater-nuclear, theater-conventional, and local-conventional. Dismissing this classification as inadequate, Grechko applies quite different standards to come up with his own typology:

> Proceeding from the fundamental contradictions of the contemporary era, one can distinguish, according to *sociopolitical criteria*, the following types of wars: (1) wars between states (coalitions) of two contrary social systems—capitalist and socialist; (2) civil wars between the proletariat and the bourgeoisie, or between the popular masses and the forces of the extreme reaction supported by the imperialists of other countries; (3) wars between imperialist states and the peoples of colonial and dependent states fighting for their freedom and independence; and (4) wars among capitalist states.[9]

This passage contains many interesting implications. For instance, it makes no allowance for war between two Communist countries, like the Soviet Union and China, though such a war seems greatly to preoccupy the Soviet leadership. Nor does it provide for war pitting a coalition of capitalist and Communist states against another capitalist state, such as actually occurred during World War II when the United States and the Soviet Union joined forces against Germany. But for our purposes, the most noteworthy aspect of Grechko's system

of classification is the notion that social and national conflicts *within* the capitalist camp (that is, in all countries not under Communist control) are nothing more than a particular mode of class conflict of which all-out nuclear war between the superpowers is a conceivable variant. In terms of this typology, an industrial strike in the United States, the explosion of a terrorist bomb in Belfast or Jerusalem, the massacre by Rhodesian guerrillas of a black village or a white farmstead, differ from nuclear war between the Soviet Union and the United States only in degree, not in kind. All such conflicts are calibrations on the extensive scale by which to measure the historic conflict which pits communism against capitalism and imperialism. Such conflicts are inherent in the stage of human development that precedes the final abolition of classes.

Middle-class American intellectuals simply cannot assimilate this mentality, so alien is it to their experience and view of human nature. Confronted with the evidence that the most influential elements in the Soviet Union do indeed hold such views, they prefer to dismiss the evidence as empty rhetoric, and to regard with deep suspicion the motives of anyone who insists on taking it seriously. Like some ancient Oriental despots, they vent their wrath on the bearers of bad news. How ironic that the very people who have failed so dismally to persuade American television networks to eliminate violence from their programs, nevertheless feel confident that they can talk the Soviet leadership into eliminating violence from its political arsenal!

"The guidelines of Soviet nuclear strategy ... resulted in the unequivocal rejection of the notion of the 'absolute weapon' and all the theories that US strategists had deduced from it."

Solzhenitsyn grasped the issue more profoundly as well as more realistically when he defined the antithesis of war not as the absence of armed conflict between nations—*i.e.*, "peace" in the conventional meaning of the term—but as the absence of all violence, internal as well as external. His comprehensive definition, drawn from his Soviet experience, obversely matches the comprehensive Soviet definition of warfare.

WE KNOW surprisingly little about the individuals and institutions whose responsibility it is to formulate Soviet military doctrine. The matter is handled with the utmost secrecy, which conceals from the eyes of outsiders the controversies that undoubtedly surround it. Two assertions, however, can be made with confidence.

Because of Soviet adherence to the Clausewitzian principle that warfare is always an extension of politics—*i.e.*, subordinate to overall political objectives (about which more below)—Soviet military planning is carried out under the close supervision of the country's highest political body, the Politburo. Thus, military policy is regarded as an intrinsic element of "grand strategy," whose arsenal also includes a variety of nonmilitary instrumentalities.

Secondly, the Russians regard warfare as a science (*nauka*, in the German sense of *Wissenschaft*). Instruction in the subject is offered at a number of university-level institutions, and several hundred specialists, most of them officers on active duty, have been accorded the Soviet equivalent of the Ph.D. in military science. This means that Soviet military doctrine is formulated by full-time specialists: It is as much the exclusive province of the certified military professional as medicine is that of the licensed physician. The civilian strategic theorist who since World War II has played a decisive role in the formulation of US strategic doctrine is not in evidence in the Soviet Union, and probably performs at best a secondary, consultative function.

ITS PENCHANT for secrecy notwithstanding, the Soviet military establishment does release a large quantity of unclassified literature in the form of books, specialist journals, and newspapers. Of the books, the single most authoritative work at present is unquestionably the collective study, *Military Strategy*, edited by the late Marshal V. D. Sokolovskii, which summarizes Soviet warfare doctrine of the nuclear age.[10] Although published fifteen years ago, Sokolovskii's volume remains the only Soviet strategic manual publicly available—a solitary monument confronting a mountain of Western works on strategy. A series called "The Officer's Library" brings out important specialized studies.[11] The newspaper *Krasnaia zvezda* ("Red Star") carries important theoretical articles which, however, vie for the reader's attention with heroic pictures of Soviet troops storming unidentified beaches and firing rockets at unnamed foes. The flood of military works has as its purpose indoctrination, an objective to which the Soviet high command attaches the utmost importance: indoctrination both in the psychological sense, designed to persuade the Soviet armed forces that they are invincible, as well as of a technical kind, to impress upon the officers and ranks the principles of Soviet tactics and the art of operations.

To a Western reader, most of this printed matter is unadulterated rubbish. It not only lacks the sophistication and intellectual elegance which he takes for granted in works on problems of nuclear strategy; it is also filled with a mixture of pseudo-Marxist jargon and the crudest kind of Russian jingoism. Which is one of the reasons why it is hardly ever read in the West, even by people whose business it is to devise a national strategy against a possible Soviet threat. By and large the material is ignored. Two examples must suffice. *Strategy in the Missile Age*, an influential work by Bernard Brodie, one of the pioneers of US nuclear doctrine, which originally came out in 1959, and was republished in 1965, makes only a few offhand allusions to Soviet nuclear strategy, and then either to note with approval that it is "developing along lines familiar in the United States" (p. 171), or else, when the Russians prefer to follow their own track, to dismiss it as a "ridiculous and reckless fantasy" (p. 215). Secretary of Defense McNamara perused Sokolovskii and "remained unimpressed," for nowhere in the book did he find "a sophisticated analysis of nuclear war."[12]

The point to bear in mind, however, is that Soviet military literature, like all Soviet literature on politics broadly defined, is written in an elaborate code language. Its purpose is not to dazzle with originality and sophistication, but to convey to the initiates messages of grave importance. Soviet policy-makers may speak to one another plainly in private, but when they take pen in hand they invariably resort to an "Aesopian" language, a habit acquired when the forerunner of today's Communist party had to function in the Czarist underground. Buried in the

flood of seemingly meaningless verbiage, nuggets of precious information on Soviet perceptions and intentions can more often than not be unearthed by a trained reader. In 1958–59, two American specialists employed by the Rand Corporation, Raymond L. Garthoff and Herbert S. Dinerstein, by skillfully deciphering Soviet literature on strategic problems and then interpreting this information against the background of the Soviet military tradition, produced a remarkably prescient forecast af actual Soviet military policies of the 1960s and 1970s.[13] Unfortunately, their findings were largely ignored by US strategists from the scientific community who had convinced themselves that there was only one strategic doctrine appropriate to the age of nuclear weapons, and that therefore evidence indicating that the Soviets were adopting a different strategy could be safely disregarded.

THIS predisposition helps explain why US strategists persistently ignored signs indicating that those who had control of Soviet Russia's nuclear arsenal were not thinking in terms of mutual deterrence. The calculated nonchalance with which Stalin at Potsdam reacted to President Truman's confidences about the American atomic bomb was a foretaste of things to come. Initial Soviet reactions to Hiroshima and Nagasaki were similar in tone: The atomic weapon had not in any significant manner altered the science of warfare or rendered obsolete the principles that had guided the Red Army in its victorious campaigns against the Wehrmacht. These basic laws, known as the five "constant principles" that win wars, had been formulated by Stalin in 1942. They were, in declining order of importance: "stability of the home front," followed by morale of the armed forces, quantity and quality of the divisions, *military equipment,* and, finally, ability of the commanders.[14] There was no such thing as an "absolute weapon"—weapons altogether occupied a subordinate place in warfare; defense against atomic bombs was entirely possible.[15] This was disconcerting, to be sure, but it could be explained away as a case of sour grapes. After all, the Soviet Union had no atomic bomb, and it was not in its interest to seem overly impressed by a weapon on which its rival enjoyed a monopoly.[16]

In September 1949, the Soviet Union exploded a nuclear device. Disconcertingly, its attitude to nuclear weapons did not change, at any rate not in public. For the remaining four years, until Stalin's death, the Soviet high command continued to deny that nuclear weapons required fundamental revisions of accepted military doctrine. With a bit of good will, this obduracy could still have been rationalized: For although the Soviet Union now had the weapon, it still lacked adequate means of delivering it across continents insofar as it had few intercontinental bombers (intercontinental rockets were regarded in the West as decades away). The United States, by contrast, possessed not only a fleet of strategic bombers but also numerous air bases in countries adjoining Soviet Russia. So once again one could find a persuasive explanation of why the Russians refused to see the light. It seemed reasonable to expect that as soon as they had acquired both a stockpile of atomic bombs and a fleet of strategic bombers, they would adjust their doctrine to conform with the American.

Events which ensued immediately after Stalin's death seemed to lend credence to these expectations. Between 1953 and 1957, a debate took place in the pages of Soviet publications which, for all its textural obscurity, indicated that a new school of Soviet strategic thinkers had arisen to challenge the conventional wisdom. The most articulate spokesman of this new school, General N. Talenskii, argued that the advent of nuclear weapons, especially the hydrogen bomb, which had just appeared on the scene, did fundamentally alter the nature of warfare. The sheer destructiveness of these weapons was such that one could no longer talk of a socialist strategy automatically overcoming the strategy of capitalist countries: The same rules of warfare now applied to both social systems. For the first time doubt was cast on the immutability of Stalin's "five constant principles." In the oblique manner in which Soviet debates on matters of such import are invariably conducted, Talenskii was saying that perhaps, after all, war had ceased to represent a viable policy option. More important yet, speeches delivered by leading Soviet politicians in the winter of 1953–54 seemed to support the thesis advanced by President Eisenhower in his United Nations address of December 1953 that nuclear war could spell the demise of civilization. In an address delivered on March 12, 1954, and reported the following day in *Pravda,* Stalin's immediate successor, Georgii Malenkov, echoed Eisenhower's sentiments: A new world war would unleash a holocaust that, "with the present means of warfare, means the destruction of world civilization."[17]

This assault on its traditional thinking—and, obliquely, on its traditional role—engendered a furious reaction from the Soviet military establishment. The Red Army was not about to let itself be relegated to the status of a militia whose principal task was averting war rather than winning it. Malenkov's unorthodox views on war almost certainly contributed to his downfall; at any rate, his dismissal in February 1955 as party leader was accompanied by a barrage of press denunciations of the notion that war had become unfeasible. There are strong indications that Malenkov's chief rival, Khrushchev, capitalized on the discontent of the military to form with it an alliance with whose help he eventually rode to power. The successful military counterattack seems to have been led by the World War II hero, Marshal Georgii Zhukov, whom Khrushchev made his Minister of Defense and brought into the Presidium. The guidelines of Soviet nuclear strategy, still in force today, were formulated during the first two years of Khrushchev's tenure (1955–57), under the leadership of Zhukov himself. They resulted in the unequivocal rejection of the notion of the "absolute weapon" and all the theories that US strategists had deduced from it. Stalin's view of the military "constants" was implicitly reaffirmed. Thus the re-Stalinization of Soviet life, so noticeable in recent years, manifested itself first in military doctrine.

TO UNDERSTAND this unexpected turn of events—so unexpected that most US military theorists thus far have not been able to come to terms with it—one must take into account the function performed by the military in the Soviet system.

Unlike the United States, the Soviet government needs and wants a large military force. It has many uses for it, at home and abroad. As a regime that rests neither on tradition nor on a popular mandate, it sees in its military the most effective manifestation of government omnipotence, the very presence of which discourages any serious opposition from raising its head in the country as well as in its dependencies. It is, after all, the Red Army that keeps Eastern Europe within the Soviet camp. Furthermore, since the regime is driven by ideology, internal politics, and economic exigencies steadily to expand, it requires an up-to-date military force capable of seizing opportunities that may present themselves along the Soviet Union's immensely long frontier or even beyond. The armed

forces of the Soviet Union thus have much more to do than merely protect the country from potential aggressors: They are the mainstay of the regime's authority and a principal instrumentality of its internal and external policies. Given the shaky status of the Communist regime internally, the declining appeal of its ideology, and the noncompetitiveness of its goods on world markets, a persuasive case can even be made that, ruble for ruble, expenditures on the military represent for the Soviet leadership an excellent and entirely "rational" capital investment.

For this reason alone (and there were other compelling reasons too, as we shall see), the Soviet leadership could not accept the theory of mutual deterrence.[18] After all, this theory, pushed to its logical conclusion, means that a country can rely for its security on a finite number of nuclear warheads and on an appropriate quantity of delivery vehicles; so that, apart perhaps from some small mobile forces needed for local actions, the large and costly traditional military establishments can be disbanded. Whatever the intrinsic military merits of this doctrine may be, its broader implications are entirely unacceptable to a regime like the Soviet one for whom military power serves not only (or even primarily) to deter external aggressors, but also and above all to ensure internal stability and permit external expansion. Thus, ultimately, it is *political* rather than strictly strategic or fiscal considerations that may be said to have determined Soviet reactions to nuclear weapons and shaped the content of Soviet nuclear strategy. As a result, Soviet advocates of mutual deterrence like Talenskii were gradually silenced. By the mid-1960s the country adopted what in military jargon is referred to as a "war-fighting" and "war-winning" doctrine.

Given this fundamental consideration, the rest followed with a certain inexorable logic. The formulation of Soviet strategy in the nuclear age was turned over to the military who are in complete control of the Ministry of Defense. (Two American observers describe this institution as a "uniformed empire."[19]) The Soviet General Staff had only recently emerged from winning one of the greatest wars in history. Immensely confident of their own abilities, scornful of what they perceived as the minor contribution of the United States to the Nazi defeat, inured to casualties running into tens of millions, the Soviet generals tackled the task with relish. Like their counterparts in the US Army, they were professionally inclined to denigrate the exorbitant claims made on behalf of the new weapon by strategists drawn from the scientific community; unlike the Americans, however, they did not have to pay much heed to the civilians. In its essentials, Soviet nuclear doctrine as it finally emerged is not all that different from what American doctrine might have been had military and geopolitical rather than fiscal considerations played the decisive role here as they did there.

SOVIET military theorists reject the notion that technology (*i.e.*, weapons) decides strategy. They perceive the relationship to be the reverse: strategic objectives determine the procurement and application of weapons. They agree that the introduction of nuclear weapons has profoundly affected warfare, but deny that nuclear weapons have altered its essential quality. The novelty of nuclear weapons consists not in their destructiveness—that is, after all, a matter of degree, and a country like the Soviet Union which, as Soviet generals proudly boast, suffered in World War II the loss of more than 20,000,000 casualties, as well as the destruction of 1,710 towns, over 70,000 villages, and some 32,000 industrial establishments to win the war and emerge as a global power, is not to be intimidated by the prospect of destruction.[20] Rather, the innovation consists of the fact that nuclear weapons, coupled with intercontinental missiles, can by themselves carry out strategic missions that previously were accomplished only by means of prolonged tactical operations:

> Nuclear missiles have altered the relationship of tactical, operational, and strategic acts of the armed conflict. If in the past the strategic end-result was secured by a succession of sequential, most often long-term, efforts [and] comprised the sum of tactical and operational successes, strategy being able to realize its intentions only with the assistance of the art of operations and tactics, then today, by means of powerful nuclear strikes, strategy can attain its objectives directly.[21]

In other words, military strategy, rather than a casualty of technology, has, thanks to technology, become more central than ever. By adopting this view, Soviet theorists believe themselves to have adapted modern technological innovations in weaponry to the traditions of military science.

Implicit in all this is the idea that nuclear war is feasible and that the basic function of warfare, as defined by Clausewitz, remains permanently valid, whatever breakthroughs may occur in technology. "It is well known that the essential nature of *war as a continuation of politics does not change with changing technology and armament.*"[22] This code phrase from Sokolovskii's authoritative manual was certainly hammered out with all the care that in the United States is lavished on an amendment to the Constitution. It spells the rejection of the whole basis on which US strategy has come to rest: Thermonuclear war is not suicidal, it can be fought and won, and thus resort to war must not be ruled out.

In addition (though we have no solid evidence to this effect), it seems likely that Soviet strategists reject the mutual-deterrence theory on several technical grounds of a kind that have been advanced by American critics of this theory like Albert Wohlstetter, Herman Kahn, and Paul Nitze.

1. Mutual deterrence postulates a certain finality about weapons technology: It does not allow for further scientific breakthroughs that could result in the deterrent's becoming neutralized. On the offensive side, for example, there is the possibility of significant improvements in the accuracy of ICBMs or striking innovations in antisubmarine warfare; on the defensive, satellites that are essential for early warning of an impending attack could be blinded and lasers could be put to use to destroy incoming missiles.

2. Mutual deterrence constitutes "passive defense," which usually leads to defeat. It threatens punishment to the aggressor after he has struck, which may or may not deter him from striking; it cannot prevent him from carrying out his designs. The latter objective requires the application of "active defense"—*i.e.*, nuclear preemption.

3. The threat of a second strike, which underpins the mutual-deterrence doctrine, may prove ineffectual. The side that has suffered the destruction of the bulk of its nuclear forces in a surprise first strike may find that it has so little of a deterrent left and the enemy so much, that the cost of striking back in retaliation would be exposing its own cities to total destruction by the enemy's third strike. The result could be a paralysis of will, and capitulation instead of a second strike.

Soviet strategists make no secret of the fact that they regard the US doctrine (with which, judging by the references in their literature, they are thoroughly familiar) as second-rate. In their

view, US strategic doctrine is obsessed with a single weapon, which it "absolutizes" at the expense of everything else that military experience teaches soldiers to take into account. Its philosophical foundations are "idealism" and "metaphysics"—*i.e.*, currents that engage in speculative discussions of objects (in this case, weapons) and of their "intrinsic" qualities, rather than relying on pragmatic considerations drawn from experience.[23]

Since the mid-1960s, the proposition that thermonuclear war would be suicidal for both parties has been used by the Russians largely as a commodity for export. Its chief proponents include staff members of the Moscow Institute of the USA and Canada, and Soviet participants at Pugwash, Dartmouth, and similar international conferences, who are assigned the task of strengthening the hand of antimilitary intellectual circles in the West. Inside the Soviet Union, such talk is generally denounced as "bourgeois pacifism."[24]

IN THE Soviet view, a nuclear war would be total and go beyond formal defeat of one side by the other: "War must not simply [be] the defeat of the enemy, it must be his destruction. This condition has become the basis of Soviet military strategy," according to the *Military-Historical Journal*.[25] Limited nuclear war, flexible response, escalation, damage limiting, and all the other numerous refinements of US strategic doctrine find no place in its Soviet counterpart (although, of course, they are taken into consideration in Soviet operational planning).

For Soviet generals the decisive influence in the formulation of nuclear doctrine were the lessons of World War II with which, for understandable reasons, they are virtually obsessed. This experience they seem to have supplemented with knowledge gained from professional scrutiny of the record of Nazi and Japanese offensive operations, as well as the balance sheet of British and American strategic-bombing campaigns. More recently, the lessons of the Israeli-Arab wars of 1967 and 1973 in which they indirectly participated seem also to have impressed Soviet strategists, reinforcing previously held convictions. They also follow the Western literature, tending to side with the critics of mutual deterrence. The result of all these diverse influences is a nuclear doctrine that assimilates into the main body of the Soviet military tradition the technical implications of nuclear warfare without surrendering any of the fundamentals of this tradition.

The strategic doctrine adopted by the USSR over the past two decades calls for a policy diametrically opposite to that adopted in the United States by the predominant community of civilian strategists; not deterrence but victory, not sufficiency in weapons but superiority, not retaliation but offensive action. The doctrine has five related elements: (1) preemption (first strike), (2) quantitative superiority in arms, (3) counterforce targeting, (4) combined-arms operations, and (5) defense. We shall take up each of these elements in turn.

PREEMPTION. The costliest lesson which the Soviet military learned in World War II was the importance of surprise. Because Stalin thought he had an understanding with Hitler, and because he was afraid to provoke his Nazi ally, he forbade the Red Army to mobilize for the German attack of which he had had ample warning. As a result of this strategy of "passive defense," Soviet forces suffered frightful losses and were nearly defeated. This experience etched itself very deeply on the minds of the Soviet commanders: In their theoretical writings, no point is emphasized more consistently than the need never again to allow themselves to be caught in a surprise attack. Nuclear weapons make this requirement especially urgent because, according to Soviet theorists, the decision in a nuclear conflict in all probability will be arrived at in the initial hours. In a nuclear war the Soviet Union, therefore, would not again have at its disposal the time it enjoyed in 1941–42 to mobilize reserves for a victorious counteroffensive after absorbing devastating setbacks.

Given the rapidity of modern warfare (an ICBM can traverse the distance between the USSR and the United States in thirty minutes), not to be surprised by the enemy means, in effect, to inflict surprise on him. Once the latter's ICBMs have left their silos, once his bombers have taken to the air and his submarines to sea, a counterattack is greatly reduced in effectiveness. These considerations call for a preemptive strike. Soviet theorists draw an insistent, though to an outside observer very fuzzy, distinction between "preventive" and "preemptive" attacks. They claim that the Soviet Union will never start a war—*i.e.*, it will never launch a preventive attack—but once it had concluded that an attack upon it was imminent, it would not hesitate to preempt. They argue that historical experience indicates outbreaks of hostilities are generally preceded by prolonged diplomatic crises and military preparations which signal to an alert command an imminent threat and the need to act. Though the analogy is not openly drawn, the action which Soviet strategists seem to have in mind is that taken by the Israelis in 1967, a notably successful example of "active defense" involving a well-timed preemptive strike. (In 1973, by contrast, the Israelis pursued the strategy of "passive defense," with unhappy consequences.) The Soviet doctrine of nuclear preemption was formulated in the late 1950s, and described at the time by Garthoff and Dinerstein in the volumes referred to above.

"There is no indication that the Soviet military share the view prevalent in the US that . . . numbers of weapons do not matter. . . ."

A corollary of the preemption strategy holds that a country's armed forces must always be in a state of high combat readiness so as to be able to go over to active operations with the least delay. Nuclear warfare grants no time for mobilization. Stress on the maintenance of a large ready force is one of the constant themes of Soviet military literature. It helps explain the immense land forces that the USSR maintains at all times and equips with the latest weapons as they roll off the assembly lines.

QUANTITATIVE SUPERIORITY. There is no indication that the Soviet military share the view prevalent in the US that in the nuclear age numbers of weapons do not matter once a certain quantity had been attained. They do like to pile up all sorts of weapons, new on top of old, throwing away nothing that might come in handy. This propensity to accumulate hardware is

usually dismissed by Western observers with contemptuous references to a Russian habit dating back to Czarist days. It is not, however, as mindless as it may appear. For although Soviet strategists believe that the ultimate outcome in a nuclear war will be decided in the initial hours of the conflict, they also believe that a nuclear war will be of long duration: To consummate victory—that is, to destroy the enemy—may take months or even longer. Under these conditions, the possession of a large arsenal of nuclear delivery systems, as well as of other types of weapons, may well prove to be of critical importance. Although prohibited by self-imposed limitations agreed upon in 1972 at SALT I from exceeding a set number of intercontinental ballistic-missile launchers, the Soviet Union is constructing large numbers of so-called Intermediate-Range Ballistic Missile launchers (*i.e.*, launchers of less than intercontinental range), not covered by SALT. Some of these could be rapidly converted into regular intercontinental launchers, should the need arise.[26]

Reliance on quantity has another cause, namely, the peculiarly destructive capability of modern missiles equipped with Multiple Independently targettable Reentry Vehicles, or MIRVs. The nose cones of MIRVed missiles, which both superpowers possess, when in mid-course, split like a peapod to launch several warheads, each aimed at a separate target. A single missile equipped with three MIRVs of sufficient accuracy, yield, and reliability can destroy up to three of the enemy's missiles—provided, of course, it catches them in their silos, before they have been fired (which adds another inducement to preemption). Theoretically, assuming high accuracy and reliability, should the entire American force of 1,054 ICBMs be MIRVed (so far only half of them have been MIRVed), it would take only 540 American ICBMs, each with three MIRVs, to attack the entire Soviet force of 1,618 ICBMs. The result would leave the United States with 514 ICBMs and the USSR with few survivors. Unlikely as the possibility of an American preemptive strike may be, Soviet planners apparently prefer to take no chances; they want to be in a position rapidly to replace ICBMs lost to a sudden enemy first strike. Conversely, given its doctrine of preemption, the Soviet Union wants to be in a position to destroy the largest number of American missiles with the smallest number of its own, so as to be able to face down the threat of a US second strike. Its most powerful ICBM, the SS-18, is said to have been tested with up to ten MIRVs (compared to three of the Minuteman-III, America's only MIRVed ICBM). It has been estimated that 300 of these giant Soviet missiles, authorized under SALT I, could seriously threaten the American arsenal of ICBMs.

COUNTERFORCE. Two terms commonly used in the jargon of modern strategy are "counterforce" and "countervalue." Both terms refer to the nature of the target of a strategic nuclear weapon. Counterforce means that the principal objective of one's nuclear missiles are the enemy's force—*i.e.*, his launchers as well as the related command and communications facilities. Countervalue means that one's principal targets are objects of national "value," namely the enemy's population and industrial centers.

Given the predominantly defensive (retaliatory) character of current US strategy, it is naturally predisposed to a counter-*value* targeting policy. The central idea of the US strategy of deterrence holds that should the Soviet Union dare to launch a surprise first strike at the United States, the latter would use its surviving missiles to lay waste Soviet cities. It is taken virtually for granted in this country that no nation would consciously expose itself to the risk of having its urban centers destroyed—an assumption that derives from British military theory of the 1920s and 1930s, and which influenced the RAF to concentrate on strategic bombing raids on German cities in World War II.

The Soviet high command has never been much impressed with the whole philosophy of countervalue strategic bombing, and during World War II resisted the temptation to attack German cities. This negative attitude to bombing of civilians is conditioned not by humanitarian considerations but by cold, professional assessments of the effects of that kind of strategic bombing as revealed by the Allied Strategic Bombing Surveys. The findings of these surveys were largely ignored in the United States, but they seem to have made a strong impression in the USSR. Not being privy to the internal discussions of the Soviet military, we can do no better than consult the writings of an eminent British scientist, P. M. S. Blackett, noted for his pro-Soviet sympathies, whose remarkable book *Fear, War and the Bomb*, published in 1948–49, indicated with great prescience the lines which Soviet strategic thinking were subsequently to take.

Blackett, who won the Nobel Prize for Physics in 1948, had worked during the war in British Operations Research. He concluded that strategic bombing was ineffective, and wrote his book as an impassioned critique of the idea of using atomic weapons as a strategic deterrent. Translating the devastation wrought upon Germany into nuclear terms, he calculated that it represented the equivalent of the destruction that would have been caused by 400 "improved" Hiroshima-type atomic bombs. Yet despite such punishment, Nazi Germany did not collapse. Given the much greater territory of the Soviet Union and a much lower population density, he argued, it would require "thousands" of atomic bombs to produce decisive results in a war between America and Russia.[27] Blackett minimized the military effects of the atomic bombing on Japan. He recalled that in Hiroshima trains were operating forty-eight hours after the blast; that industries were left almost undamaged and could have been back in full production within a month; and that if the most elementary civil-defense precautions had been observed, civilian casualties would have been substantially reduced. Blackett's book ran so contrary to prevailing opinion and was furthermore so intemperately anti-American in tone that its conclusions were rejected out of hand in the West.

"There is something innately destabilizing in the very fact that we consider nuclear war unfeasible and suicidal for both, and our chief adversary views it as feasible and winnable for himself."

Too hastily, it appears in retrospect. For while it is true that the advent of hydrogen bombs a few years later largely invalidated the estimates on which he had relied, Blackett correctly anticipated Soviet reactions. Analyzing the results of Allied saturation bombing of Germany, Soviet generals concluded that it was largely a wasted effort. Sokolovskii cites in his manual the well-known figures showing that German military

productivity rose throughout the war until the fall of 1944, and concludes: "It was not so much the economic struggle and economic exhaustion [*i.e.*, countervalue bombing] that were the causes for the defeat of Hitler's Germany, but rather the armed conflict and the defeat of its armed forces [*i.e.*, the counterforce strategy pursued by the Red Army.]"[28]

Soviet nuclear strategy is counter*force* oriented. It targets for destruction—at any rate, in the initial strike—not the enemy's cities but his military forces and their command and communication facilities. Its primary aim is to destroy not civilians but soldiers and their leaders, and to undermine not so much the will to resist as the capability to do so. In the words of Grechko:

> The Strategic Rocket Forces, which constitute the basis of the military might of our armed forces, are designed to annihilate the means of the enemy's nuclear attack, large groupings of his armies, and his military bases; to destroy his military industries; [and] to disorganize the political and military administration of the aggressor as well as his rear and transport.[29]

Any evidence that the United States may contemplate switching to a counterforce strategy, such as occasionally crops up, throws Soviet generals into a tizzy of excitement. It clearly frightens them far more than the threat to Soviet cities posed by the countervalue strategic doctrine.

COMBINED-ARMS OPERATIONS. Soviet theorists regard strategic nuclear forces (organized since 1960 into a separate arm, the Strategic Rocket Forces) to be the decisive branch of the armed services, in the sense that the ultimate outcome of modern war would be settled by nuclear exchanges. But since nuclear war, in their view, must lead not only to the enemy's defeat but also to his destruction (*i.e.*, his incapacity to offer further resistance), they consider it necessary to make preparations for the follow-up phase, which may entail a prolonged war of attrition. At this stage of the conflict, armies will be needed to occupy the enemy's territory, and navies to interdict his lanes of communications. "In the course of operations [battles], armies will basically complete the final destruction of the enemy brought about by strikes of nuclear rocket weapons."[30] Soviet theoretical writings unequivocally reject reliance on any one strategy (such as the *Blitzkrieg*) or on any one weapon, to win wars. They believe that a nuclear war will require the employment of all arms to attain final victory.

The large troop concentrations of Warsaw Pact forces in Eastern Europe—well in excess of reasonable defense requirements—make sense if viewed in the light of Soviet combined-arms doctrine. They are there not only to have the capacity to launch a surprise land attack against NATO, but also to attack and seize Western Europe with a minimum of damage to its cities and industries *after* the initial strategic nuclear exchanges have taken place, partly to keep Europe hostage, partly to exploit European productivity as a replacement for that of which the Soviet Union would have been deprived by an American second strike.

As for the ocean-going navy which the Soviet Union has now acquired, it consists primarily of submarines and ground-based naval air forces, and apparently would have the task of cleaning the seas of US ships of all types and cutting the sea lanes connecting the United States with allied powers and sources of raw materials.

The notion of an extended nuclear war is deeply embedded in Soviet thinking, despite its being dismissed by Western strategists who think of war as a one-two exchange. As Blackett noted sarcastically already in 1948–49: "Some armchair strategists (including some atomic scientists) tend to ignore the inevitable countermoves of the enemy. More chess playing and less nuclear physics might have instilled a greater sense of the realities."[31] He predicted that a World War III waged with the atomic bombs then available would last longer than either of its predecessors, and require combined-arms operations—which seems to be the current Soviet view of the matter.

DEFENSE. As noted, the US theory of mutual deterrence postulates that no effective defense can be devised against an all-out nuclear attack: It is this postulate that makes such a war appear totally irrational. In order to make this premise valid, American civilian strategists have argued against a civil-defense program, against the ABM, and against air defenses.

Nothing illustrates better the fundamental differences between the two strategic doctrines than their attitudes to defense against a nuclear attack. The Russians agreed to certain imprecisely defined limitations on ABM after they had initiated a program in this direction, apparently because they were unable to solve the technical problems involved and feared the United States would forge ahead in this field. However, they then proceeded to build a tight ring of antiaircraft defenses around the country while also developing a serious program of civil defense.

Before dismissing Soviet civil-defense efforts as wishful thinking, as is customary in Western circles, two facts must be emphasized.

One is that the Soviet Union does not regard civil defense to be exclusively for the protection of ordinary civilians. Its chief function seems to be to protect what in Russia are known as the "cadres," that is, the political and military leaders as well as industrial managers and skilled workers—those who could reestablish the political and economic system once the war was over. Judging by Soviet definitions, civil defense has as much to do with the proper functioning of the country during and immediately after the war as with holding down casualties. Its organization, presently under Deputy Minister of Defense, Colonel-General A. Altunin, seems to be a kind of shadow government charged with responsibility for administering the country under the extreme stresses of nuclear war and its immediate aftermath.[32]

Secondly, the Soviet Union is inherently less vulnerable than the United States to a countervalue attack. According to the most recent Soviet census (1970), the USSR had only nine cities with a population of one million or more; the aggregate population of these cities was 20,500,000, or 8.5 percent of the country's total. The United States 1970 census showed thirty-five metropolitan centers with over one million inhabitants, totaling 84,500,000 people, or 41.5 percent of the country's aggregate. It takes no professional strategist to visualize what these figures mean. In World War II, the Soviet Union lost 20,000,000 inhabitants out of a population of 170,000,000—*i.e.*, twelve percent; yet the country not only survived but emerged stronger politically and militarily than it had ever been. Allowing for the population growth that has occurred since then, this experience suggests that as of today the USSR could absorb the loss of 30,000,000 of its people and be no worse off, in terms of human casualties, than it had been at the conclusion of World War II. In other words, all of the USSR's multimillion cities could be destroyed without trace or survivors, and, provided that its essential cadres had been

saved, it would emerge less hurt in terms of casualties than it was in 1945.

Such figures are beyond the comprehension of most Americans. But clearly a country that since 1914 has lost, as a result of two world wars, a civil war, famine, and various "purges," perhaps up to 60,000,000 citizens, must define "unacceptable damage" differently from the United States, which has known no famines or purges, and whose deaths from all the wars waged since 1775 are estimated at 650,000—fewer casualties than Russia suffered in the 900-day siege of Leningrad in World War II alone. Such a country tends also to assess the rewards of defense in much more realistic terms.

How significant are these recondite doctrinal differences? It has been my invariable experience when lecturing on these matters that during the question period someone in the audience will get up and ask: "But is it not true that we and the Russians already possess enough nuclear weapons to destroy each other ten times over" (or fifty, or a hundred—the figures vary)? My temptation is to reply: "Certainly. But we also have enough bullets to shoot every man, woman, and child, and enough matches to set the whole world on fire. The point lies not in our ability to wreak total destruction: It lies in intent." And insofar as military doctrine is indicative of intent, what the Russians think to do with their nuclear arsenal is a matter of utmost importance that calls for close scrutiny.

Enough has already been said to indicate the disparities between American and Soviet strategic doctrines of the nuclear age. These differences may be most pithily summarized by stating that whereas we view nuclear weapons as a deterrent, the Russians see them as a "compellant"—with all the consequences that follow. Now it must be granted that the actual, operative differences between the two doctrines may not be quite as sharp as they appear in the public literature: It is true that our deterrence doctrine leaves room for some limited offensive action, just as the Russians include elements of deterrence in their "war-fighting" and "war-winning" doctrine. Admittedly, too, a country's military doctrine never fully reveals how it would behave under actual combat conditions. And yet the differences here are sharp and fundamental enough, and the relationship of Soviet doctrine to Soviet deployments sufficiently close, to suggest that ignoring or not taking seriously Soviet military doctrine may have very detrimental effects on US security. There is something innately destabilizing in the very fact that we consider nuclear war unfeasible and suicidal for both, and our chief adversary views it as feasible and winnable for himself.

SALT misses the point at issue so long as it addresses itself mainly to the question of numbers of strategic weapons: Equally important are qualitative improvements within the existing quotas, and the size of regular land and sea forces. Above all, however, looms the question of intent: As long as the Soviets persist in adhering to the Clausewitzian maxim on the function of war, mutual deterrence does not really exist. And unilateral deterrence is feasible only if we understand the Soviet war-winning strategy and make it impossible for them to succeed. ■

NOTES

[1] "The Real Paul Warnke," the *New Republic*, March 26, 1977, p. 23.

[2] N. V. Karabanov in N. V. Karabanov, et al., *Filosofskoe nasledie V. I. Lenina i problemy sovremennoi voiny* ("The Philosophical Heritage of V. I. Lenin and the Problems of Contemporary War") (Moscow, 1972), pp. 18–19, cited in Leon Gouré, F. D. Kohler, and M. L. Harvey, eds., *The Role of Nuclear Forces in Current Soviet Strategy* (1974), p. 60.

[3] A. A. Grechko, *Vooruzhonnye sily sovetskogo gosudarstva* ("The Armed Forces of the Soviet State") (Moscow, 1975), p. 345.

[4] Russell F. Weigley, *The American Way of War* (1973), p. 368.

[5] Matthew B. Ridgway, *Soldier* (1956), pp. 296–97.

[6] In Michael Howard, ed., *The Theory and Practice of War* (London, 1965), p. 291.

[7] Benjamin S. Lambeth, *Selective Nuclear Options in American and Soviet Strategic Policy* (Rand Corporation, R-2034-DDRE, December 1976), p. 14. This study analyzes and approves of the refinement introduced into the US doctrine by James R. Schlesinger as Secretary of Defense in the form of "limited-response options."

[8] Interview with *Playboy*, March 1977, p. 72.

[9] Grechko, *Voorozhunnye sily sovetskogo gosudarstva*, pp. 347–48, emphasis added.

[10] *Voennaia strategiia* (Moscow, 1962). Since 1962, there have been two revised editions (1963 and 1968). The 1962 edition was immediately translated into English; but currently the best version is that edited by Harriet Fast Scott (Crane-Russak, 1975), which renders the third edition but collates its text with the preceding two.

[11] To date, twelve volumes in this series have been translated into English and made publicly available through the US Government Printing Office.

[12] William W. Kaufmann, *The McNamara Strategy* (1964), p. 97.

[13] Garthoff's principal works are *Soviet Military Doctrine* (1953), *Soviet Strategy in the Nuclear Age* (1958), and *The Soviet Image of Future War* (1959). Dinerstein wrote *War and the Soviet Union* (1959).

[14] Cited in J. M. Mackintosh, *The Strategy and Tactics of Soviet Foreign Policy* (London, 1962), pp. 90–91, emphasis added.

[15] Articles in the *New Times* for 1945–46 cited in P. M. S. Blackett, *Fear, War and the Bomb* (1949), pp. 163–65.

[16] We now know that orders to proceed with the development of a Soviet atomic bomb were issued by Stalin in June 1942, probably as a result of information relayed by Klaus Fuchs concerning the Manhattan Project, on which he was working at Los Alamos, *Bulletin of the Atomic Scientists*, XXIII, No. 10, December 1967, p. 15.

[17] Dinerstein, *War and the Soviet Union*, p. 71.

[18] I would like to stress the word "theory," for the Russians certainly accept the *fact* of deterrence. The difference is that whereas American theorists of mutual deterrence regard this condition as mutually desirable and permanent, Soviet strategists regard it as undesirable and transient: They are entirely disinclined to allow us the capability of deterring them.

[19] Matthew P. Gallagher and Karl F. Spielmann, Jr., *Soviet Decision-Making for Defense* (1972), p. 39.

[20] The figures are from Grechko, *Vooruzhonnye sily*, p. 97.

[21] *Metodologicheskie problemy voennoi teorii i praktiki* ("Methodological Problems of Military Theory and Practice") (Moscow, Ministry of Defense of the USSR, 1969), p. 288.

[22] V. D. Sokolovskii, *Soviet Military Strategy* (Rand Corporation, 1963), p. 99, emphasis added.

[23] See, *e.g.*, *Metodologicheskie problemy*, pp. 289–90.

[24] Gouré et al., *The Role of Nuclear Forces*, p. 9.

[25] Cited *ibid.*, p. 106.

[26] I have in mind the SS-20, a recently developed Soviet rocket. This is a two-stage version of the intercontinental SS-16 which can be turned into an SS-16 with the addition of a third booster and fired from the same launcher. Its production is not restricted by SALT I and not covered by the Vladivostok Accord.

[27] Blackett, *Fear*, p. 88. As a matter of fact, recent unofficial Soviet calculations stress that the United States dropped on Vietnam the TNT equivalent of 650 Hiroshima-type bombs—also without winning the war: *Kommunist Vooruzhonnykh Sil* ("The Communist of the Armed Forces"), No. 24, December 1973, p. 27, cited in Gouré et al., *The Role of Nuclear Forces*, p. 104.

[28] Sokolovskii, *Soviet Military Strategy* (3d edition), p. 21.

[29] A. A. Grechko, *Na strazhe mira i stroitel'stva Kommunizma*, ("Guarding Peace and the Construction of Communism") (Moscow, 1971), p. 41.

[30] *Metodologicheskie problemy*, p. 288.

[31] Blackett, *Fear*, p. 79.

[32] On the subject of civil defense, see Leon Gouré, *War Survival in Soviet Strategy* (1976).

Sperry Update 2

A timely report of Sperry Flight Systems activities in the airline, defense, space and general aviation markets.

Sperry multiplex units chosen for Hughes AH-64.

Hughes has awarded a development and preproduction contract to Sperry Flight Systems for multiplex remote terminal units to process data for the AH-64 fire control system. The MRTU, which utilizes high-density hybrid circuitry, is a direct application of technology developed by Sperry for the Space Shuttle orbiter and solid rocket boosters.

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The indicator has a built-in electric vertical gyro and a patented drive connection between the attitude indicator sphere and the gyro. The GH-14 for the OH-58 has a new, lower speed, higher mass gyro momentum wheel and electronics tailored to Army specifications.

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The Birth of the US Air Force

BY HERMAN S. WOLK

In 1910, Italian air strategist Giulio Douhet wrote that besides grappling with technical questions, aerial warfare demanded solution to problems of "organization and utilization of aerial forces." Before organizing an independent air force, "we must first know what we intend to do with it and how to use it."

Long before establishment of the United States Air Force in September 1947, US Army airmen knew what they intended to do with a separate service. Why did it take so long to achieve independence? The answer lies in geography, technology, the climate in the United States between World Wars I and II, roles and missions of the services, military bureaucracy, politics, and the American temperament.

From August 1907, when the US Army Signal Corps formed an Aeronautical Division under Capt. Charles deF. Chandler to take "charge of all matters pertaining to military ballooning, air machines, and all kindred subjects," it took forty years to establish the United States Air Force. During those four decades, there were recurring proposals to give the Army's air arm status equal to that of the other Army branches, the first a bill for that purpose introduced in the House of Representatives in 1913. And, as technology advanced, the concept of independent, strategic air action began to take form. In November 1917, Maj. Edgar S. Gorrell, a member of the Technical Section, Air Service, American Expeditionary Force, gave Brig. Gen. Benjamin D. Foulois, Chief of Air Services, AEF, a proposal to bomb German industry. "The object of strategical bombing," he noted, "is to drop aerial bombs upon the commercial centers and lines of communication in such quantities as will wreck the points aimed at and cut off the necessary supplies without which the armies in the field cannot exist."

In October 1918, the Allies had, in fact, agreed to form an Inter-Allied Independent Air Force to circumvent the front lines and attack the enemy's homeland. This idea, which did not come to fruition before the Armistice the following month, was a vision of the independent mission, the rationale for a separate air force that would obviate the need for ground wars of attrition.

The Army Reorganization Act of 1920 did establish the US Army Air Service as a combatant branch, and the Air Corps Act of 1926 resulted in a change of name for the air arm, the appointment of an Assistant Secretary of War for Air, and the assignment of Air Corps officers to the War Department General Staff. However, this was considered insufficient by some airmen, including Brig. Gen. William (Billy) Mitchell, who held that the airplane was more economical and more effective than the battleship.

In October 1933, the Drum Board—one of several committees and boards appointed during the 1920s and early 1930s to study military aviation issues—proposed formation of a General Headquarters (GHQ) Air Force. A similar recommendation was made by the Baker Board the following year, and the GHQ Air Force was created on March 1, 1935, with Brig. Gen. Frank M. Andrews as its commander. Though a step far short of independence and in some ways an unsatisfactory compromise, formation of GHQ was unprecedented. Earlier, Air Corps units in the US had come under control of Army Corps Area commanders in whose territory they were stationed.

GHQ, headed by an Air Corps commander for the first time, unified combat air units and provided the structure for coordinated training in peacetime and combat in war. Air units were formed into three wings; however, lines of authority were convoluted. For tactical training and employment, GHQ would be under control of the General Staff in peace and the Commander of Army Field Forces in war. For procurement and supply, it came under the Chief of Air Corps. Administratively, air bases were responsible to Army Corps Area commanders. Thus, when they were involved with air matters, the Army Chief of Staff and War Department General Staff dealt with the Commander of GHQ Air Force, the Chief of Air Corps, and the Corps Area commanders.

Nevertheless, formation of GHQ gave airmen the opportunity to coordinate air operations with other forces. This meant using military air under unified direction. Mobility of this "striking force of the air" called for rapid concentration of force in any of the Army's major areas. Strenuous training was designed to prepare forces to attack an enemy approaching US coasts if the Navy could not cope with the situation (the Army and Navy had fought a constant battle over the coastal air defense mission). Also, GHQ would be able to strike enemy ground forces should they be near US borders. GHQ conducted maneuvers with pursuit and bombardment craft, judging results and devising tactics.

Andrews was replaced in February 1939 by Maj. Gen. Delos C. Emmons. During his command, Andrews had increasingly made clear his conviction that airpower should be "separately organized"—bringing him into conflict with Chief of Air Corps Maj. Gen. Oscar Westover, who opposed separation—and that bombardment aviation should be the "basic element" of the air forces. He thought the next war would find great cities destroyed by air attacks. An adequate air defense could not be built "under the existing military organization." The United States was a "secondary Air Power," this being "inherent in any Air Corps that is an integral part of an Army and Navy." Andrews stressed the need for a separate air organization with its own budget.

Preparing for War

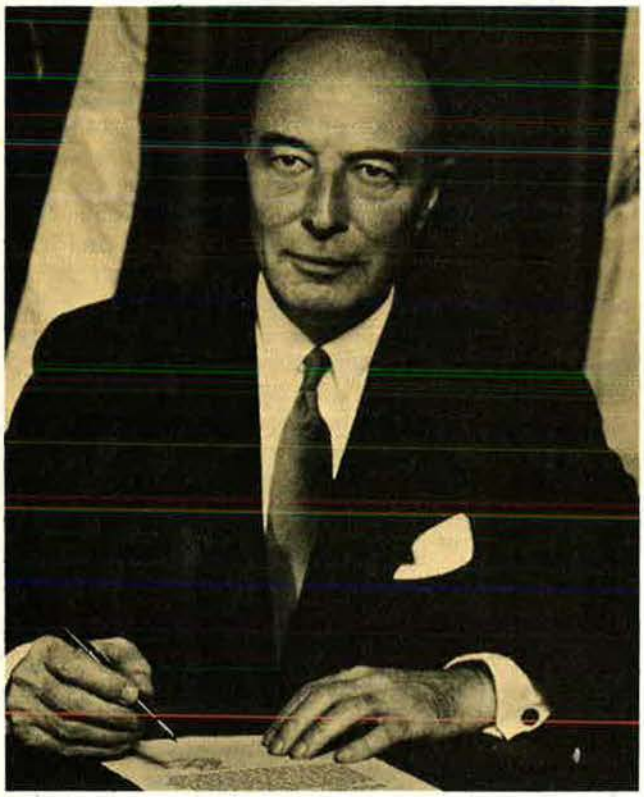
The turning point in the drive for independence was World War II. In 1938, the Air Corps had only 1,600 officers. By March 1944, 2,411,000 personnel would be serving in the AAF. In early 1939, long before the Japanese attack on Pearl Harbor, President Roosevelt had ordered a huge expansion of aircraft production. The Air Corps was ready with plans to produce four-engine bombers and with the plans and doctrine to employ them. Although GHQ had emphasized mobile air defense, the Air Corps Tactical School had formulated doctrine (high-level daylight precision bombardment of selected industrial targets) to use long-range bombers offensively. Subsequently, this doctrine was formalized in AWPD-1, devised by Col. Harold L.

brilliant, impatient Brig. Gen. Billy Mitchell called for an pendent Department of Aeronautics. He resigned to take his to the public after his court-martial in 1925.

George, Lt. Col. Kenneth N. Walker, and Majs. Haywood S. Hansell, Jr., and Laurence S. Kuter.

The increase in aircraft production affected all Air Corps activity. By early 1941, with Britain and Germany at war, air operations were already looming large in American war planning. Roosevelt was interested in air production and war planning. He was kept current by confidante Harry Hopkins, who enjoyed a mutually beneficial relationship with Maj. Gen. Henry H. Arnold, Chief of Air Corps. Arnold, an aviation pioneer who had learned to fly at the Wright brothers' school, had replaced General Westover, who had been killed in an air crash in September 1938.

One of the major problems facing Gen. George C. Marshall, Army Chief of Staff, was the difficulty of getting prompt action on air matters from the General Staff. Marshall and Secretary of War Henry L. Stimson decided to make changes. Staff work must be decentralized, Stimson ordered, "to permit Air Force autonomy in the degree needed." Acting expeditiously, in March 1941, Marshall told Arnold to coordinate all air matters. Marshall wanted direct lines of authority. The reaction to events in Europe began to change Army organization.



On the eve of World War II, Assistant Secretary of War for Air Robert A. Lovett agreed with General Marshall that support of an independent air arm would be premature.

Was it time to give the Air Corps independence? Marshall and Robert A. Lovett, ex-Navy World War I flyer who in April 1941 had been appointed Assistant Secretary of War for Air, thought not. They preferred a kind of quasi-autonomy to another potentially divisive debate while the Air Corps faced the formidable task of building its forces. And Arnold, with the opportunity finally to build a modern air arm and confident of his relationship with George Marshall, primarily wanted to succeed in creating a combat air force. The rest would follow. Thus was established one of the most effective top echelon combinations in wartime Washington—Marshall, Arnold, Lovett. It would be a relationship based on shared goals and trust—dedicated to the idea that mutuality of interest in a time when survival was at stake took precedence over the question of independence for the air arm.

On June 20, 1941, Army Air Forces was established by revision of Army Regulation 95-5. With provision for an Air Staff, the Chief of Army Air Forces—also to be Army Deputy Chief of Staff for Air—would coordinate the Office, Chief of Air Corps and an Air Force Combat Command, a redesignated GHQ controlling four continental air forces and their subordinate bomber and interceptor units.

Other developments reflected increasing recognition of the importance of airpower. In July 1941, the Joint Army-Navy Board added to its membership the Army Deputy Chief of Staff for Air and the Chief of the Navy Bureau of Aeronautics. In August, Arnold accompanied President Roosevelt to the Atlantic Conference meeting with British Prime Minister Churchill. Though Arnold's presence was due to the fact that the British were represented by their air, ground, and naval chiefs (the RAF had been an independent service, combining Britain's army and naval air arms, since 1918, and it was thus necessary for Roosevelt to have his chief airman present), the President had also ordered a buildup of military aviation and the AAF was drawing offensive air plans. The British Chiefs were naturally interested in Arnold's views.

Thus, Arnold took his place as a member of the US Joint Chiefs of Staff and the Anglo-American Combined Chiefs of Staff. This was tacit recognition that the air forces had become the equal of land and sea forces. Marshall trusted and frequently asked for Arnold's opinion. And when Arnold recommended, Marshall usually approved. "I tried to give Arnold all the power I could," noted Marshall, "and tried to make him as nearly as I could Chief of Staff of the Air."

Meanwhile, General Marshall had made the connection between the AAF's desire for more freedom and his own conviction that the General Staff's responsibilities should be decentralized. The Staff, he noted, had "lost track of the purpose of its existence. It had become a huge, bureaucratic, red tape-ridden, operating agency. It slowed down everything." Just before the attack on Pearl Harbor, Marshall assigned Air Corps Brig. Gen. Joseph T. McNarney of the War Plans Division as head of a group to reorganize the General Staff.

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ler McNarney were Col. William K. Harrison, Jr., Lt. Col. Laurence S. Kuter.

The result of this committee's deliberations was publion in March 1942 of War Department Circular by which the AAF achieved the kind of autonomy Stimson had envisioned. This document would be ctive for the duration of the war plus six months, er authority of the First War Powers Act of Dember 18, 1941.

Moreover, Circular 59 made the AAF one of three nomous Army commands, along with Army und Forces headed by Lt. Gen. Lesley J. McNair Services of Supply, subsequently Army Service ces, under Lt. Gen. Brehon B. Somervell. GHQ was tivated, and functions of the Commanding General, Q Air Force (now Air Force Combat Command) Chief of Air Corps were transferred to the Comding General, AAF. After March 1942, the Air ps continued to be the principal component of the F, but the Office, Chief of Air Corps and AFCC e abolished. Officers continued to be commissioned he Air Corps. This reorganization was a landmark the Army airmen, the AAF having been recognized equal with the Army's Ground Forces and Service es.

he AAF received another boost in July 1943 by lication—in which Kuter was instrumental—of War artment Field Service Regulations ("Command and ployment of Air Power"). "Land power and air er," it stated, "are coequal and interdependent es; neither is an auxiliary of the other."

AAF's Combat Record

he record made by the AAF in World War II ugh demonstration of the importance of all forms irpower made the drive for autonomy unstoppable. ical air forces made tremendous contributions to Army's offensive in Europe, and the performance en. George C. Kenney's AAF units convinced Gen. glas MacArthur of the crucial role to be played by wer in the Pacific.

ategic airpower, which Generals Arnold and An- had emphasized as the independent mission, demated its destructive power. Despite a slow buildup urope and diversion of forces to North Africa, in 1944 the bombers and their long-range fighter ts defeated the Luftwaffe and crippled Germany's roduction. A successful invasion of the continent hus assured.

the Pacific, Arnold all along had planned to have s show the ultimate power of the long-range er. During March–May 1945, these aircraft of Gen. Curtis E. LeMay's XXI Bomber Command Japan's urban areas a series of devastating blows. combination of the naval blockade and B-29 offenwas defeating Japan. Nevertheless, an invasion of was being planned.

e leading invasion proponent was General Marbacked by MacArthur. Accepting Marshall's view, ne 1945 President Harry S. Truman directed that ing proceed for invasions of Kyushu on November 45, and Honshu in March 1946. Arnold did not st Marshall's view. The AAF Chief was convinced the war would end by November. The AAF owed its quasi-autonomy to Marshall and, moreover, the Army Chief of Staff had promised Arnold support for independence once the war ended.

Because of his conviction that Japan would soon surrender, Arnold—alone of the Joint Chiefs—told Truman at Potsdam that it wasn't necessary to drop the atomic bomb to end the war. Arnold thus took a position different from Marshall, who advocated that the bomb be dropped in order to save lives that would be lost in an invasion.

Arnold thought that Japan's capitulation—without dramatically unleashing a new weapon—would demonstrate the decisive power of conventional strategic bombing. He also figured this would silence critics of air autonomy. The B-29 offensive, he emphasized, was aimed at "the defeat of Japan without invasion." Use of the atomic bomb "provided a way out for the Japanese government." The atomic bomb did not win the war. After Japan's surrender, Arnold expressed concern to General Spaatz that in the future "there will be certain people who will forget the part we have played."

Gen. "Hap" Arnold maintained a close relationship with General Marshall, and was confident of Marshall's support for air independence in the postwar period.

Conversely, the A-bomb could solidify the case for independence. The bomb had been carried to Japan by B-29s. Future wars would be of short duration. Great armies would not be needed. Strategic airpower was now preeminent. A separate air force was in the national interest. It would have its own budget and promotion system.

Despite AAF's contribution to victory, air leaders proceeded on the basis that autonomy was not assured. The legislative process would be long and complex. The Navy had opposed independence, fearing naval air would be lost to the new service. The Royal Navy, after all, had lost its air component to the RAF. However, by the end of the war, the Navy ceased to oppose a separate Air Force, provided the Navy and Marine Corps retained their air arms. Rather than a unified department, the Navy proposed three separate but equal departments coordinated through JCS.

Meanwhile, before the war ended, coordination deficiencies between the services and increasing discussion of unification forced military leaders to think about reorganization, which Congress had already considered and which had been studied by the services. During the war, major changes in the War and Navy Departments had been made under war powers granted President Roosevelt by Congress, the JCS had been organized, and the principle of unity of command in the field was adopted. However, integration was not complete. Consequently, military leaders were concerned lest the President's war powers lapse (six months after the war) without internal statutory changes having been made in the War and Navy Departments. Otherwise, the Departments would revert to their prewar organization. Understandably, AAF was much concerned, since during the war it had gained a substantial measure of autonomy.

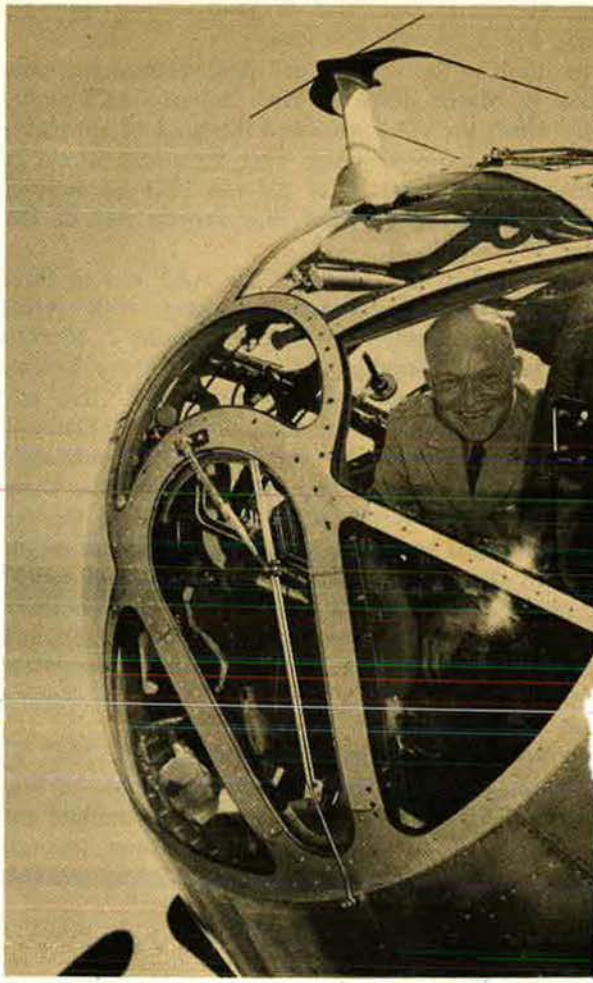
Prelude to Unification

In the spring of 1944, the Joint Chiefs had appointed a Special Committee for Reorganization of National Defense. Its report of April 1945 noted that "mutual lack of understanding between the several components has not been eliminated." It also stressed that anticipated postwar austerity would demand the most effective use of resources, a point General Marshall (remembering post-World War I) was fond of reiterating.

The Committee's major recommendation that a Department of the Armed Forces be established, headed by a civilian Secretary, was based on these premises: (1) the Navy would keep an aeronautical organization "commensurate with its needs"; (2) the Marine Corps would remain part of the Navy; (3) the Army would retain "such specialized aviation as forms an integral and essential part of its ground forces"; and (4) there shall be a United States Air Force, "coordinate with the Army and the Navy." According to the Committee, creation of USAF would accord with an already existing situation: "The present position of the Army Air Forces is not accidental, but has evolved through practical experience." The Committee believed the Secretary of the Armed Forces would have more influence as a member of the Cabinet (under the President as Commander in Chief) than three independent secretaries representing "separate and perhaps conflicting interests of their individual organizations."

Anticipating postwar demobilization, the Committee observed: "History . . . indicates that as funds grow tighter . . . each service withdraws into its own shell, as it has done in the past, and each concentrates on those things essential to its own profession without giving consideration to common problems." This report was not unanimous. The two Army members (one of them AAF Maj. Gen. Harold L. George) and one from the Navy concurred in the majority report. Adm. J. O. Richardson, Committee Chairman, filed a minority report opposed to establishment of a Department of the Armed Forces and a separate Air Force. Despite Richardson's opposition, the Committee's proposals remained a basis for future plans and recommendations.

Meanwhile, President Truman was convinced the services should be "unified" and that the Army Air



When General Eisenhower returned from Europe to becom Chief of Staff of the Army, he proved to be one of the mos effective supporters of an air arm coequal with the Army an Navy.

Forces should be made independent and coequal the Army and Navy. During the war, Truman served as Chairman of the Special Committee tc vestigate the National Defense Program, and he determined to make the services more efficient. Als had concluded that Pearl Harbor had been "as r the result of the inadequate military system which vided for no unified command, either in the field Washington, as it was any personal failure of Arn Navy commanders."

In October 1945, Lt. Gen. Ira Eaker, Deputy mander, AAF, acting on a memo from Col. Jac Smart, Secretary of the Air Staff, had asked th Judge Advocate to draft proposed legislation single Department of National Defense and a sep Air Force. Previously, Eaker had directed the Air to create a reorganization plan for the postwa Force. The Air Staff's Post-War Division, under Gen. Laurence S. Kuter, Assistant Chief of Air Plans, had been working on organization plans— on an autonomous postwar Air Force—since the mer of 1943 (as had the War Department's S Planning Division) and had successively devise eral plans. In August 1945, these had culminated plan for a seventy-group Air Force.

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Both exceeded the 80% operational readiness rate guaranteed by the contract, and both flew nearly twice as many hours per month as originally planned.

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Beechcraft

Then, in December 1945, Eaker established an Ad Hoc Committee on Air Force Reorganization. Its report of May 1946 concluded that organization of the postwar Air Force would be based on "parity" with the Army and Navy. This meant, among other things, addition of certain command, staff, service, and supply responsibilities equivalent to the Army's and Navy's. Moreover, as earlier specified by General Arnold, individuals would be distinguished by military occupational specialty instead of branch or corps, and promotion would be ensured by a single list, regardless of specialty.

Meanwhile, between August and December 1945, the services failed to agree on postwar requirements and roles and missions. The Bessell Board, formed to determine the Army's (and AAF's) postwar requirements, concluded it was "impossible . . . to envisage precisely the nature of the military establishment with which we will enter the next war." Frustrated by this lack of action, on December 19, 1945, Truman proposed to Congress creation of a Department of National Defense (three coordinate branches) headed by a civilian secretary. He recommended that the Navy keep its carrier aviation; that the Marines be kept as part of the Navy Department; and that there should be a Chief of Staff of the Department of National Defense, a post to be rotated among the services.

In addition to Truman and Marshall, support for a separate Air Force was voiced by Secretary of War Robert P. Patterson (the contribution of the air forces "was essential to victory") and Army Chief of Staff Gen. Dwight D. Eisenhower, who replaced Marshall in November 1945. Returning to the United States from Europe, Eisenhower was surprised and discouraged to find such intense controversy evoked by unification: "It appeared that all men wearing one color of uniform had one conviction while those wearing another color developed opinions to the exact contrary." Convening top Army and AAF officers, Eisenhower emphasized, especially to the Army leadership, that an Air Force should be created, equal to the Army and Navy. This would put the Air Force in its "legitimate place." He made clear he would actively support the necessary legislation. And Arnold observed that airpower's mission was preeminent: "Henceforth, those who develop the methods and equipment for its fundamental employment must have this as their major responsibility."

However, naval leaders were convinced that unification would place the Navy at the mercy of what they considered their two rivals, whose interests would frequently coincide. The Navy remained fearful that a merger would find the Army absorbing the Marines and the Air Force taking over naval aviation. The Navy held that each service should be self-sufficient in all areas in order to carry out its mission. The Army and AAF countered that such self-sufficiency was neither desirable nor attainable. In the spring of 1946, Chief of Naval Operations Adm. Chester W. Nimitz, Eisenhower, and Spaatz (now Commanding General, AAF) made another attempt to resolve roles and missions, but Eisenhower and Spaatz found Nimitz' views unacceptable. Thus, the JCS shelved this subject.

Meantime, prior to expiration of the President's war powers, the War Department reorganized in the spring of 1946 as directed by W. D. Circular No. 138. Based on Eisenhower's desire to strengthen the General Staff, this reorganization also established the structure under which AAF would remain until independence. This new organization was based on recommendations of a board headed by Army Lt. Gen. William H. Simpson, but it was also influenced by agreement between Eisenhower and Spaatz. Though Arnold and Spaatz had proposed that the Air Staff should be coequal with the General Staff until unification, the Air Staff was made coordinate with Army Ground Forces' Staff (Army Service Forces was abolished). However, the AAF would nominate about fifty percent of members of the War Department General and Special Staff divisions. Circular No. 138 stated that AAF "must be provided with the maximum degree of autonomy permitted by law without permitting the creation of unwarranted duplication in service, supply, and administration." Most administrative and technical officers would be furnished to the AAF; after separation, a quota of these officers would become members of the Air Force.

The National Security Act of 1947

By the autumn of 1946, Truman—frustrated and impatient—had made clear that the services had no choice but to agree on draft merger legislation. As a result, AAF Maj. Gen. Lauris Norstad, Director of Plans and Operations, War Department General Staff, and Deputy CNO Adm. Forrest Sherman—after conferring with Secretary of the Navy James V. Forrestal and Patterson—began a series of meetings to resolve roles and missions and establish a framework for unification. In December, Norstad and Sherman completed a directive, approved by the JCS, assigning to a single theater commander control of sea, air, and ground forces within his specific area. Such "unified" commands would be established in Europe and the Far East. This directive required unified commanders to establish joint staffs with members from the "various components of the

Meeting with Navy Secretary James Forrestal (seated at left) and Secretary of War Robert Patterson in 1946 to discuss unification are, from left, Maj. Gen. Lauris Norstad, Adm. William Leahy, Gen. Dwight Eisenhower, Adm. Chester Nimitz, and Vice Adm. Forrest Sherman.

services." Norstad and Sherman also drafted a roles and missions paper and proposed that these service functions be approved by the President after enactment of legislation.

Based on Norstad and Sherman's work, on January 16, 1947, Patterson and Forrestal sent a joint letter to Truman indicating they had agreed on draft legislation including a proposed Executive Order delineating service functions. The Forrestal-Patterson agreement recognized that a compromise was required if the unification bill was to receive support from the services and Congress. Patterson and Forrestal wrote Truman that they had agreed to support legislation which provided for: (1) a Secretary of National Defense; (2) an Army, Navy (including Marines and naval aviation), and Air Force, each with a military chief, under executive Departments of the Army, Navy, and Air Force; (3) a Council of National Defense, a National Security Resources Board, and a Central Intelligence Agency; (4) a War Council; and (5) a Joint Chiefs of Staff. Each service Department would be headed by a civilian secretary.

Patterson and Forrestal agreed that the proper way to delineate roles and missions was by Executive Order, concurrent with Truman's approval of legislation. They enclosed a draft Executive Order, which eventually became EO 9877, signed by the President on July 26, 1947. Truman replied to Patterson and Forrestal that "each of the services had made concessions. . . . The agreement provides a thoroughly practical and workable plan of unification." In January and February 1947, Norstad and Sherman completed a draft of a proposed National Security Act. On February 27, it was submitted to Congress.

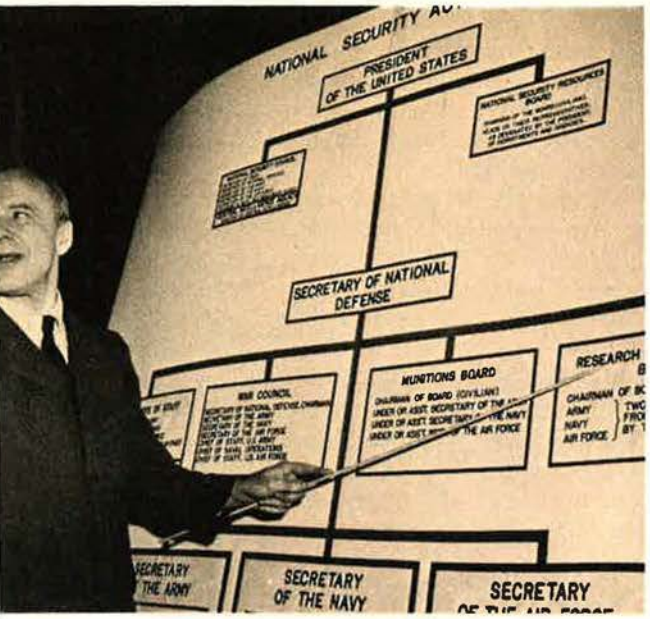
The AAF wanted a strong bill—an independent Air Force and substantial authority vested in the Office of the Secretary of the National Military Establishment. Both Spaatz and Assistant Secretary of War for Air Stuart Symington expressed confidence in a "super-secretary." Also, Spaatz testified that control of the air could best be gained by having air units operate under command of an independent air arm. All other major nations of the world, he emphasized, had organized air forces coequal with armies and navies. Unification would foster integrated strategic planning and unified action. It would create a more efficient and economical establishment. Spaatz accepted a role for aircraft carriers, but opposed duplication of the Air Force's "large land-based airplanes."

However, the Navy, desiring land-based reconnaissance and antisubmarine missions, wanted service functions written into the Act. Eisenhower and Spaatz, working closely, opposed a detailed Act, Eisenhower holding that "in vast human effort, good will is far more conducive to efficient operations than is any mere organizational detail." It was unrealistic "to establish the rules by which every service would operate in all its actions, functions, and responsibilities." Legislation should establish only fundamental principles.

Spaatz (to become the first USAF Chief of Staff) and Eisenhower thought the services could accept decisions by a Secretary of National Defense solely concerned with national interest. In March 1947, they signed a Memorandum of Understanding expressing their desire to grant substantial power to the secretary. Conversely, Forrestal espoused the concept of the secretary as coordinator. Eisenhower replied that the country needed a secretary with authority "to get things done."

Anticipating passage of the evolving unification bill, the War Department at Eisenhower's request convened a Board of Officers during January–March 1947 under Army Maj. Gen. William E. Hall to resolve administrative and organizational problems attending separation of AAF from the Army. AAF Maj. Gen. Hugh J. Knerr,

President Truman, an advocate of "unification" of the armed forces, with Gen. Carl "Tooey" Spaatz, who succeeded General Arnold as Commander of the AAF, and in September 1947 became the first Chief of Staff of the Air Force, and Lt. Gen. Ira Eaker. Here, the President signs a proclamation designating August 1, 1946, as Air Force Day.



Army Secretary Patterson explains the organization of the Department of Defense as it finally evolved in the National Security Act of 1947.

Director-General of the Air Board, was a member of the Hall Board. The Board's report concluded that an organization featuring unified control over a coordinate structure of three departments promised to foster "sound and efficient balance in development of each arm of service." Reflecting the Army and AAF view, it noted that the bill would be a first but necessary step. The Patterson-Forrestal compromise was "the best possible solution attainable at this time." Legislation should contain broad powers to enable the Secretary of National Defense to increase economy and efficiency: "It is impracticable and unsound administratively to attempt to fix by statute the details as to how an administrator is to accomplish this task."

Reorganization was tremendously complex. It would have to be evolutionary. Consequently, legislation would prescribe two years to transfer personnel, property, installations, and agencies between the Army and Air Force. Eisenhower and Spaatz had agreed that the Air Force would not immediately form separate special services. Eisenhower and Patterson were especially concerned about the Air Force possibly creating its own medical corps. Congress, convinced that separate service and supply agencies were wasteful, and attracted by potential elimination of duplication through unification, was watching the issue of special services closely.

On the other hand, some in the AAF doubted the Air Force would receive adequate support from the Army. The Hall Board report stated that the War Department would continue logistically to support the Air Force. Further, "determination as to what constitutes common items and services would be made by the Secretary of National Defense or through interdepartmental agreement in which cases, one of the departments will be designated as the common supply or service agency for those particular items or services."

In September 1947, Eisenhower and Spaatz would sign an agreement that stated "each Department shall make use of the means and facilities of the other departments in all cases where economy consistent with operational efficiency will result." Subsequently, critics charged that this agreement allowed the Air Force to create its own supply system. However, the Air Force did not consider the agreement to be binding indefinitely. After two years, air leaders knew the USAF would require its own professional services if it was truly to be coequal with the Army and Navy.

The National Security Act (Public Law 253), passed by Congress and signed by Truman on July 26, 1947, created the United States Air Force within the National Military Establishment (NME). The Act also established the National Security Council and the National Security Resources Board. It gave statutory basis to and redefined functions of the JCS, Research and Development Board, Munitions Board, and Central Intelligence Agency. Under the Act, the Secretary of Defense had great responsibility but lacked authority. Truman named Forrestal as Secretary after Patterson declined the post, saying it was necessary for him to leave government for financial reasons.

The NME comprised the Departments of the Army, Navy, and Air Force, to be administered as executive departments. Service secretaries held membership on the National Security Council. This lessened the authority of the Secretary of Defense (the services were downgraded to military departments by the Amendments of 1949, service secretaries no longer sitting on the NSC). Forrestal's control was also negated by a proviso that allowed service secretaries access to the President after first informing the Secretary of Defense. Powers and duties not specifically conferred on the Secretary of Defense would be retained by service secretaries. Consequently, the authority of the Office of Secretary of Defense was limited. Forrestal's charter only to exercise "general direction" put him in a weak position. Ironically, the Army and AAF had fought for a strong OSD; the Navy opposed.

The National Security Act of 1947 specified that USAF "shall include aviation forces both combat and service not otherwise assigned. It shall be organized, trained, and equipped primarily for prompt and sustained offensive and defensive air operations." Thus, the Act established USAF in broad terms. This gave the Air Force flexibility to organize its headquarters and field structures.

The Air Force was established as an executive department—the Department of the Air Force—headed by a civilian Secretary of the Air Force with an under secretary and two assistant secretaries, all appointed by the President, with consent of the Senate. The United States Air Force was established under the Department of the Air Force. The Army Air Forces, the Air Corps, and the General Headquarters Air Force (Air Force Combat Command) would be transferred to USAF. The Act provided that a Chief of Staff, USAF, would be appointed by the President for a four-year term.

The Realm of the Possible

The National Security Act created the Air Force, but this bill was not exactly what any of the services wanted. General Eaker noted that the Act "legitimized four

military air forces." However, the architects had to maneuver within the realm of the possible, which meant compromise. Prior to becoming Secretary of the Air Force on September 18, 1947, Stuart Symington observed that a "better bill" could have been drawn, but "a bill which we considered better could not have gotten everybody's approval; and therefore would not have given the President the opportunity to show agreement to the Congress and the people. I don't say this is a good book, but I do say it is a good chapter."

The Act was a compromise (which some argued reflected more the Navy's than the Army's views) designed to achieve a common goal—for the first time in American history placing the military within a national defense framework. At the time, it was probably the best attainable law. The result failed to resolve points of contention—roles and missions and lack of requisite authority in OSD. Thus, the Act contained the roots of future disagreement. A decade later, President Eisenhower would observe: "In the battle over reorganization in 1947, the lessons of World War II were lost. Tradition won. The resulting National Military Establishment was little more than a weak confederacy of sovereign military units . . . a loose aggregation that was unmanageable."

However, for a nation that fought wars with citizen-soldiers (then always demobilized), with a history of latent antimilitarism, passage of the Act was an extraordinary accomplishment. The war had demonstrated its need. The country required an Air Force. The substantial autonomy given the AAF in wartime reflected the growing opinion of civilian and military leaders that the growth of air technology and the increasing scope and complexity of air warfare demanded a separate service.

And so creation of USAF on September 18, 1947, culminated a long struggle. It was an uphill battle fought by men—for years, a small band of airmen—of vision and faith. Men who were the revolutionaries of their time. Symington called them "a tight-knit group of activists." It seemed as if they believed that perseverance and faith would ultimately create reality. The AAF leaders remembered the struggles of the prewar years. They led the Army Air Forces in World War II, an AAF swelled by citizen-soldiers who demonstrated rare courage and skill.

On the eve of war, the United States was fortunate to have an unusually competent core of military leaders in all services. These men directed a massive, unprecedented buildup of forces. It was a tremendously difficult task. A mission so great in magnitude and complexity that its enormity easily becomes elusive with the passing years. To Gen. Hap Arnold fell the awesome responsibility of leading the wartime air forces. He welcomed it. Arnold was an authentic air pioneer, going back to the Wright brothers' era. Over several decades, he demonstrated vision, will, and leadership. He was not alone. The Army had many unusually able airmen.

On September 15, 1947, speaking to the first annual convention of the Air Force Association in Columbus, Ohio, Stuart Symington (Secretary-designate of the Air Force) said:

> No Air Force can be created by legislative action alone. All the National Security Act of 1947 has done is give us the green light. It must be considered an opportunity and not an accomplishment.
>
> We cannot pass the buck—to the War Department, or to the Navy, or to the Congress, or the people. We certainly cannot afford to rest on any laurels.
>
> . . . . by being satisfied with nothing short of the very best we are capable of, the Air Force can fulfill with actual accomplishment the great opportunity it has now been given.

In the thirty years since September 1947, the Air Force has fulfilled this potential. That is a lasting tribute to the many founders of the United States Air Force. ■

On September 18, 1947, Stuart Symington, who had been Assistant Secretary of War for Air, was sworn in as the first Secretary of the Air Force by Chief Justice Fred Vinson. Witnessing the ceremony were, from left, Army Secretary Kenneth Royall, Defense Secretary James Forrestal, and Navy Secretary John Sullivan.

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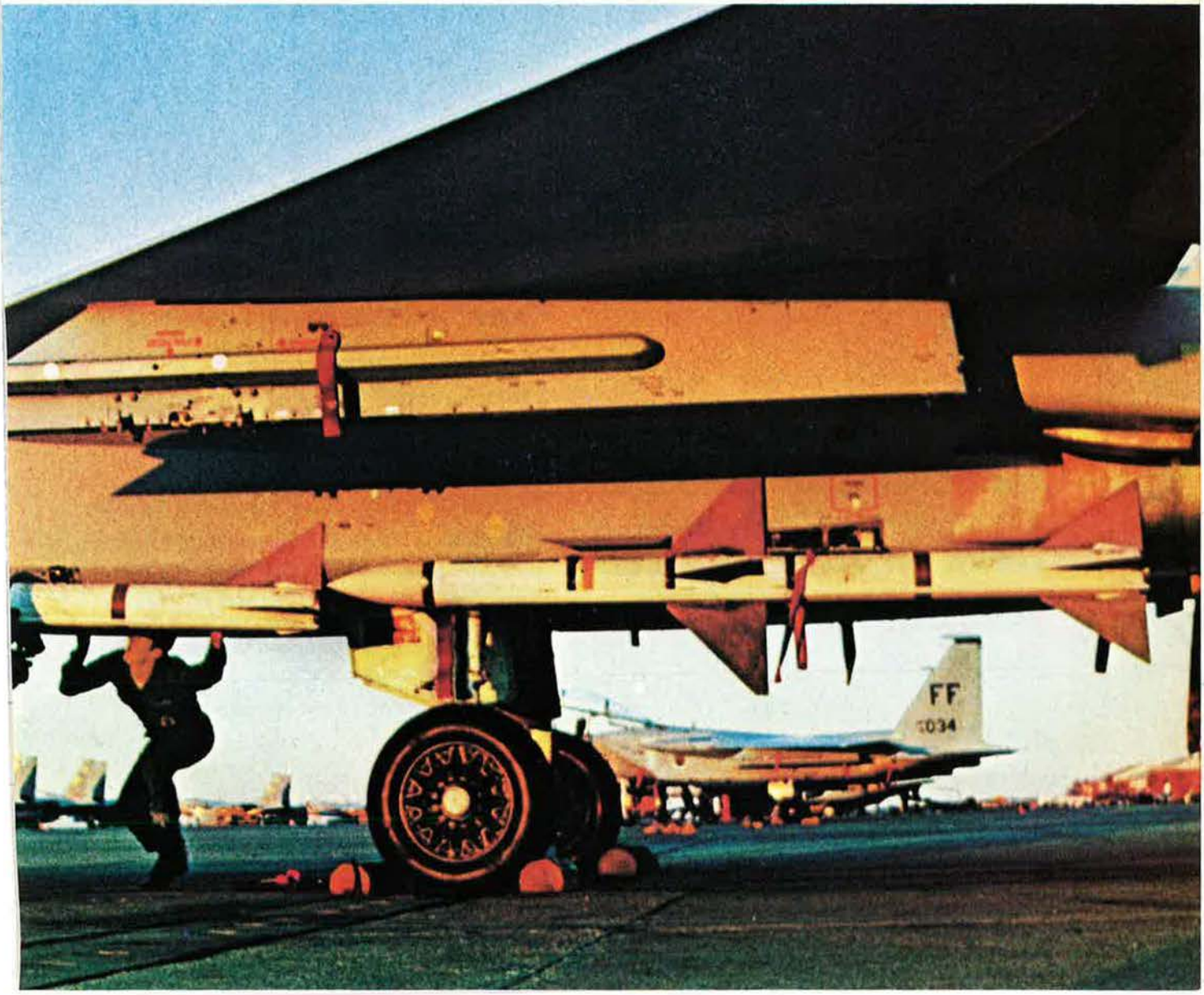

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HAP ARNOLD: THE ANATOMY OF LEADERSHIP

BY LT. GEN. IRA C. EAKER, USAF (RET.)

The author, a close associate of Gen. Henry H. "Hap" Arnold for three decades, reminisces about the character and qualities that enabled the father of the US Air Force to "turn adversity into advantage" and build the foundation for an independent air arm.

WHEN I first met Hap Arnold, in December 1918, he was a colonel, recently appointed commanding officer of Rockwell Field at San Diego. He had just returned from a brief tour of inspection overseas, in the closing days of World War I.

Colonel Arnold was thirty-two years old and was the most handsome Army officer, with the possible exception of General Pershing, I had ever seen. He was six feet tall, erect, wore his uniform with pride and grace. He had a quick, engaging smile, but a reserve and dignity of bearing that did not encourage familiarity.

During the next six months, our principal duty was to reduce the Rockwell Field garrison from its wartime strength of 12,000 to its peacetime complement of 250 men. Rockwell had been the advanced flying school for pursuit and aerial gunnery in World War I and was in the process of being transformed to a supply and maintenance depot. I had an opportunity at Rockwell to observe two men who later were to be successive chiefs of Army Aviation —Hap Arnold, and his operations officer, Tooey Spaatz. [*General Eaker's article on General Spaatz appeared in the September '74 issue of* AIR FORCE*—The Editors.*] I decided then that these two men were going places and that this would be a good team to join. I know of only one better long-range career prediction than this, and Arnold was its author:

In 1909, while serving in the Philippines as a second lieutenant on his first station out of West Point, Arnold returned from a mapping detail in the jungle and told Mrs. Arnold that he had met a first lieutenant who one day would be Army Chief of Staff. That lieutenant was George C. Marshall, the Army's great World War II leader who was made Chief of Staff thirty years after Arnold's prophetic prediction. The friendship and mutual respect and admiration formed then were to have profound consequences for the Army and for its Air Forces in the climactic, dramatic events of later years.

In 1919, Arnold became Air Officer, Western Department, and, along with others who held temporary wartime rank, was reduced to his permanent grade of major. While serving in the Western Department, he originated ideas to keep the Army's air arm before the public, keep its pilots busy, and promote the mission of military aviation. Among these efforts were the Forest Patrol, aerial refueling experiments, and the Border Patrol.

In 1923, Hap Arnold became Chief of Information in Washington under Maj. Gen. Mason Patrick, the Chief of the Army Air Service (which became the Army Air Corps in 1926). This appointment almost culminated in disaster.

Arnold had been a long-time admirer of the Assistant Chief, Brig. Gen. Billy Mitchell. As Chief of

Information, Arnold helped Mitchell in his public-relations campaign, which resulted in the famous Mitchell court-martial of 1925. Arnold and Spaatz were warned that if they testified in Mitchell's behalf, it might jeopardize their future careers. Despite this warning, both became witnesses for the defense.

A year later, a news release highly complimentary to the Air Corps but disparaging the Army General Staff appeared surreptitiously. It was traced by the Army Inspector General to Arnold. He had used a government typewriter and paper, and thus was charged with misappropriating public property in a project inimical to the Army. The Inspector General recommended Arnold's court-martial, but, at General Patrick's intercession, Arnold was relieved of duty on the Air Staff, banished from Washington, and assigned command of a single squadron at Fort Riley, Kan., a cavalry post.

Turning adversity to advantage, an Arnold characteristic that became his hallmark, he developed new methods of cooperation between air and ground forces, new signaling devices and techniques. He also formed close friendships with officers at Fort Riley who in later years would hold senior command and staff assignments.

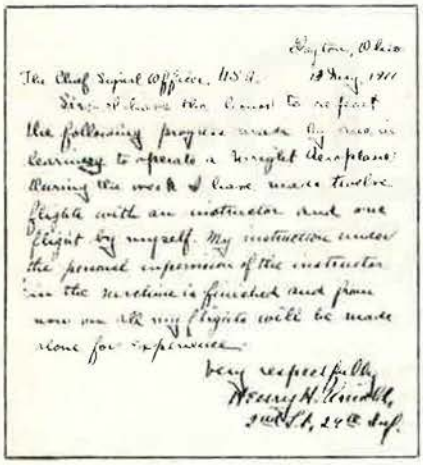
Arnold's next station was Wright Field, Dayton, Ohio, where he gained experience in supply and maintenance that was also to prove invaluable years later, when he came to manage the vast logistic buildup for World War II.

March Field: The Decisive Years

In 1933, Arnold was made Commanding Officer of March Field, Riverside, Calif. Here occurred a series of events, and at least one near tragedy, that were to play significant roles in Arnold's career and in the Air Corps's future. As one of his squadron, and later group, commanders, I had an opportunity to observe this important period in Arnold's career development.

For example, there was his appreciation for public relations. He called his squadron commanders in one day and ordered each of us to join one of the luncheon clubs in Riverside. Someone joined the Chamber of Commerce, another the Lions, the Rotary, etc. I drew the American Legion. We were to become well acquainted with the civilian community leaders and invite them to March Field for Saturday inspections and aerial reviews in their honor. The mayor, our congressman, the leading citizens thus all became aware of our activities and eventually were enlisted as active supporters and Air Corps partisans.

The value of this support soon became evident. Long Beach suffered a severe earthquake on March 10, 1933. Arnold heard of it on the radio that evening and took his customary prompt action. Before Long Beach stopped shaking and while bricks were still bouncing in the streets, March Field sent ambulances

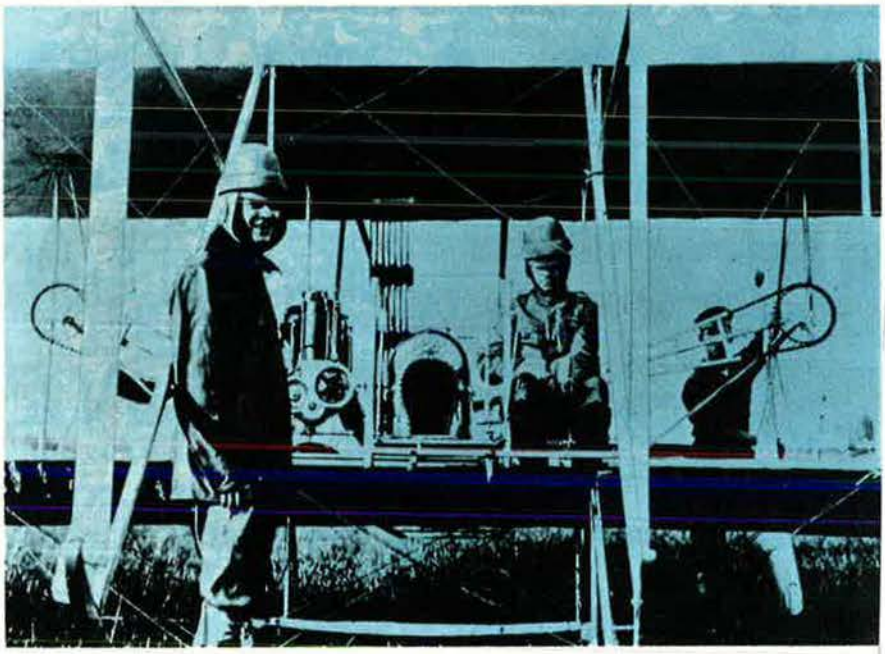


Dayton, Ohio
19 May 1911

The Chief Signal Officer, U.S.A.

Sir: I have the honor to report the following progress made by me in learning to operate a Wright Aeroplane: During the week I have made twelve flights with an instructor and one flight by myself. My instruction under the personal supervision of the instructor in the machine is finished and from now on all my flights will be made alone for experience.

Very respectfully,
Henry H. Arnold,
2nd Lt., 24th Inf.



Above, Hap Arnold's 1911 report on the completion of his pilot training. Right, 2d Lts. Arnold and Thomas Milling, in 1912. A year earlier, they were the only qualified, active pilots in the US Army.

and set up first-aid stations, soup kitchens, and tent shelters for the homeless.

The Coast Artillery commander at Fort MacArthur, who was much closer to the disaster area, took no similar action. He questioned Arnold's use of government property, and even complained to the Corps Area Commander, Gen. Malin Craig, in San Francisco. The resulting investigation, influenced by the enthusiastic reception of the effort by the civilian community leaders, not only cleared Arnold, but gained him a commendation. Had it gone otherwise, Arnold would undoubtedly have been charged with misusing several thousand dollars worth of government property.

Then in 1934 came the Air Corps's brief experience flying the airmail, when President Franklin D. Roosevelt canceled the civilian airmail contracts. Arnold was appointed commander of the Western Region, with headquarters in Salt Lake City. Within three hours after receiving the telephone call from Washington assigning him this task, he had outlined his organization, named his route commanders (I was given Route 4, from San Diego to Los Angeles and Salt Lake City), selected his staff, and moved to his new headquarters at Salt Lake City. Incidentally, he authorized each of his commanders to commit the US government for thousands of dollars in hangar rentals and communications with only verbal authority. Partly because of more favorable weather, but also because of foresight and organization, his became the most successful segment of the Army airmail effort, suffering the fewest casualties and with the highest rate of on-schedule delivery.

Another Roosevelt innovation was the Civilian Conservation Corps. Arnold was again designated Western Region Commander, administering thirty-three camps in the national forests and winning commendation for outstanding performance.

In 1935, when the GHQ Air Force was formed, Arnold was given command of its 1st Wing, as two of his groups at March Field comprised half of this experimental force. This brought him his first star. His wing of the GHQ Air Force participated in many maneuvers and worked out tactical formations and strategic doctrine that were later validated against the Luftwaffe.

During this period at March Field, Arnold was assigned to lead a flight of ten B-10 bombers to Alaska and back, and to map, photographically, large sections of that vast area. For this task he was awarded the Mackay Trophy, given for the year's leading exploit in aviation. He had also been the first winner of the trophy, in 1912, and is the only man to have received it twice.

Parables and Practices

During this time, Arnold visited the Royal Air Force in England to exchange views on military air developments in doctrine and technology. He formed friendships that

Left, Arnold as a Signal Corps captain, probably in 1916. Above, Lt. Col. H. H. Arnold (standing, center) led a flight of B-10 bombers to Alaska in 1934. In the front row, third from right, is Lt. Nathan Twining, who was to become USAF's third Chief of Staff and, in 1957, Chairman of the Joint Chiefs of Staff.

When Lt. Gen. Ira C. Eaker retired in 1947 from his position as Deputy Commander of the Army Air Forces, he had logged more than 12,000 pilot hours and had participated in many historic and record-setting flights. He was chief pilot of the Question Mark, which set an endurance record in 1929, and a member of the 1926 Pan-American Flight, which he described in the September '76 issue of this magazine. During World War II, General Eaker headed successively VIII Bomber Command, Eighth Air Force, and Mediterranean Allied Air Forces. He collaborated with General Arnold on three books and since his retirement has written a syndicated column on defense affairs.

were to become vitally important in World War II.

While in England, he attended a Dining-In ceremony as originated and practiced by the RAF, and was impressed with its value as a morale builder. Soon after his return, he instituted a similar dinner, a sort of an Americanized version of the British affair. This was the genesis of the Dining-Ins, now a standard custom of the Air Force with a ritual little changed from the March Field original of 1935.

General Arnold often told a story he had picked up while on that visit in England. Two English poachers had been arrested for killing the King's deer. They were brought before the Lord of the Manor. Before pronouncing the usual death sentence upon the hapless miscreants, he asked if either had anything to say. One of them stood mute, but the other said, "My Lord, you have in the courtyard a donkey, a favorite with the children of the Manor. I believe if I were given a reprieve for a year, I could teach that donkey to talk." The idea intrigued the Lord, and he granted the reprieve for one year. As the two prisoners were being returned to the dungeon, the one who had remained silent said, "You fool, you know you can't teach a donkey to talk." Whereupon the reprieved prisoner replied, "Let me remind you that tomorrow you'll be dead, while I will still be alive. Also, in a year many things can happen. The Lord may die. The donkey may die. And besides, with my life depending on it, I may just be able to teach that donkey to talk."

I didn't think that story very funny the first few times I heard General Arnold tell it. Then I realized that it explained much about the Arnold method and motivation. But it did leave me with the uneasy feeling that I might be one of the donkeys he was habitually teaching to talk.

There was another story he loved to tell to illustrate the importance of proper emphasis in proper places.

In the Gold Rush days, an Ohio family of comfortable circumstances was moving to California, at the insistence of the father, but with great reluctance on the part of the mother and children. The mother reported hearing their ten-year-old daughter's doleful prayer that concluded: "Good-bye, God! We are going to California." The father said, "That's not what she said or meant at all. What she actually said

Left, General Arnold (second from right in rear row) at the second Quebec Conference in September 1944. Seated, from left: General Marshall, Admiral Leahy, President Roosevelt, Prime Minister Churchill, Sir Alan Brooke, and Sir John Dill. Above, Generals Marshall and Arnold at one of the many wartime conferences.

SCIENCE/SCOPE

A new airborne minicomputer -- microprogrammable, highly modular and 100% expandable in memory -- will bring the versatility and low cost of the latest-type minicomputers to the severe environments of fighter aircraft. Designated the HMP-1116, the new Hughes computer, a 16-bit microprocessor, employs the latest large-scale integrated (LSI) semiconductor devices but retains the cost advantages of an established architecture and developed software. It is modular at the card level, allowing for reconfiguration to meet each unique installation.

This flexibility is a function of four capabilities: (1) a variable memory size utilizing read-only modules for program strength in place of volatile random access modules; (2) interchangeable memory module types; (3) a capacity for addition and deletion of interfaces, controllers and optional features; and (4) an ability to add, delete and change instructions by modifying the programmable processor's microcode. The 64,000-to-128,000 halfwords expandable memory ensures adequate space for support and simulation software and growth. The basic processor has been expanded by adding two optional cards that increase performance in coordinate conversion, and Kalman filtering that requires numerous double precision calculations. The extended arithmetic register increases the width of the arithmetic/logic unit from 16 to 32 bits, decreasing the time of executing instructions operating with 32-bit data.

The new HMP-1116 minicomputer is the heart of a new time-division multiple-access (TDMA) communications terminal for fighter aircraft. Dramatically reduced in size, weight and cost, this new Hughes Improved Terminal (HIT) will enable exchange among TDMA ground-sea-air users of real-time digital information on friendly and enemy forces. The first three HITs will be delivered in May 1978 under contract from USAF's Electronic Systems Division.

A software project produced for the USAF Tactical Air Control System/Tactical Air Defense System (TACS/TADS) has won Hughes four 100% award fees. TACS/TADS reconciles data exchange differences in communications systems used by the four US military services and provides real-time digital communications interoperability among them.

The TACS/TADS software provides the information that "translates" one service's system communications format into the format of another so the two can "talk" -- such as between the Navy's TADIL-A and the TADIL-B system used by the Air Force, Army and Marine Corps. An award-fee contract gives an incentive to a contractor to meet time, cost and specifications requirements while providing cost savings to the government.

NASA Landsats to inventory wildland resources in remote areas of Alaska, Arizona and Idaho. Included will be major water bodies, ground cover and vegetation, drainage patterns, reservoirs, fires and fire hazards. NASA will acquire and process data from the two Landsats now in orbit and transfer it to the Bureau of Land Management for extracting inventory information. Landsat passes over the same point on earth every 18 days at an altitude of 570 miles. Several of the satellite's instruments, including the Multi-Spectral Spin Scanner (MSS) camera, were developed and built by Hughes.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28. Apollo Lunar Descent Engines.
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49. Viking Meteorology Instrument on Mars.
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was, 'Good, by God; we're going to California!' " "It all depends," General Arnold would say, "on where you put the emphasis."

No one was ever in doubt for very long about Arnold's opinions or ideas. He always knew where to put the emphasis.

Preparing for War

In 1936, General Arnold was selected by his friend, Gen. Malin Craig, the Chief of Staff of the Army, to be the Assistant Chief of the Army Air Corps. He was back in Washington in triumph, just ten years after he had been banished in disgrace.

General Arnold became Chief of Air Corps in 1938. He saw World War II on the horizon more clearly than any of the rest of us, and he worked us all unsparingly to be ready and to have the Air Corps ready to play a significant role. He followed the Spanish Civil War closely and watched with special interest the latest weapons and tactics as the air action of that war unfolded between German and Russian air units. He selected our air attachés with special care and put them in sensitive spots in the European capitals. He arranged to have selected aircraft and engine manufacturers, like "Dutch" Kindelberger of North American Aviation, visit England, France, and Germany and bring back reports on the latest in aircraft and engine design.

I remember one typical experience of those years. One day, he called Colonel Spaatz and me into his office and said, "I am going to the White House to be with the President when he makes a national broadcast that will be very significant. Listen to it on my radio." That was the speech in which President Roosevelt announced his plan to build 50,000 military planes that fiscal year.

When General Arnold returned, in high spirits, we said to him, "How could you let the President make such a preposterous statement? The whole aircraft industry in this country built fewer than 2,000 planes last year. Fifty thousand next year is ridiculous!" He replied, "If I had asked for 25,000, I would have gotten 15,000. Now I have asked for 50,000 and if I don't get 25,000, you boys won't be here a year from now." We took the hint. Neither of us cared much about logistic matters anyway. Tooey Spaatz took off for France as US observer in the early days of the war—the German invasion of France, followed by the Battle of Britain. I took command of the 20th Pursuit Group in California, and followed Spaatz six months later as observer with the RAF in England.

Of course, General Arnold got only 10,000 planes that year, and most of those went to France and Britain, but he built the factories and laid the foundation for the phenomenal expansion that followed, and which ultimately pro-

General Arnold confers with General Eisenhower (above) and President Roosevelt (right) at Castelvetrano Airfield in Sicily.

duced 50,000 planes a year, which was the way he planned it all along.

A Proud Record of Accomplishment

During the war years, I saw General Arnold only when he came, as he frequently did, to visit the war theaters, but I corresponded with him regularly, answering his queries on our tactics, our losses, our target selection, and the results of our bombing. He summoned me from my Eighth Air Force headquarters in England to the Casablanca Conference, when our daylight bombing seemed doomed. His strategy proved effective for, after our conference, Prime Minister Churchill withdrew his request to President Roosevelt that the Eighth Air Force join the RAF in night bombing. We were allowed to continue, and the Luftwaffe was subsequently destroyed, making possible Eisenhower's Channel crossing in June 1944. The rest is history.

General Arnold's account of those war years in his farewell book, *Global Mission,* written shortly after his retirement, is a fascinating record of the US Army Air Forces' accomplishments in World War II, especially the extraordinary training and logistic efforts.

His leadership, drive, experience, and imagination were the primary factors in that unprecedented accomplishment. No other man could have done the job. The close relationship he was able to establish with President Roosevelt, General Marshall, Harry Hopkins, Robert A. Lovett (the Assistant Secretary of War for Air), and finally with the leaders of Congress was decisive.

Through the force of his personality, he won full membership on the US Joint Chiefs of Staff and the Allied Combined Chiefs of Staff. This gave the Army Air Forces parity at all military and political conferences where the important decisions were made—Quebec, Casablanca, Cairo, Yalta, and Potsdam.

When I returned from overseas in May 1945 to become his deputy while he spent a period in the hospital recovering from a severe heart attack, there was ample evidence of the frightful burden he had carried and of the influence he exercised on all major national decisions. Our Army Air Forces Chief was one of the eight or ten most influential leaders in Washington at the most dramatic period in our history.

A few months later, when he was retiring from active duty after eight years as our Chief, I admired a motto, carved in wood, that was prominently displayed on his desk. It read, "The difficult we do today. The impossible takes a little longer." I suggested that he leave this souvenir as an inspiration to those who came after. He said, "No, that's a little boastful and besides, the Army Air Forces people have performed all the impossible tasks in this war. Airmen won't need slogans in the future for inspiration. They will have that proud record of accomplishment to sustain them."

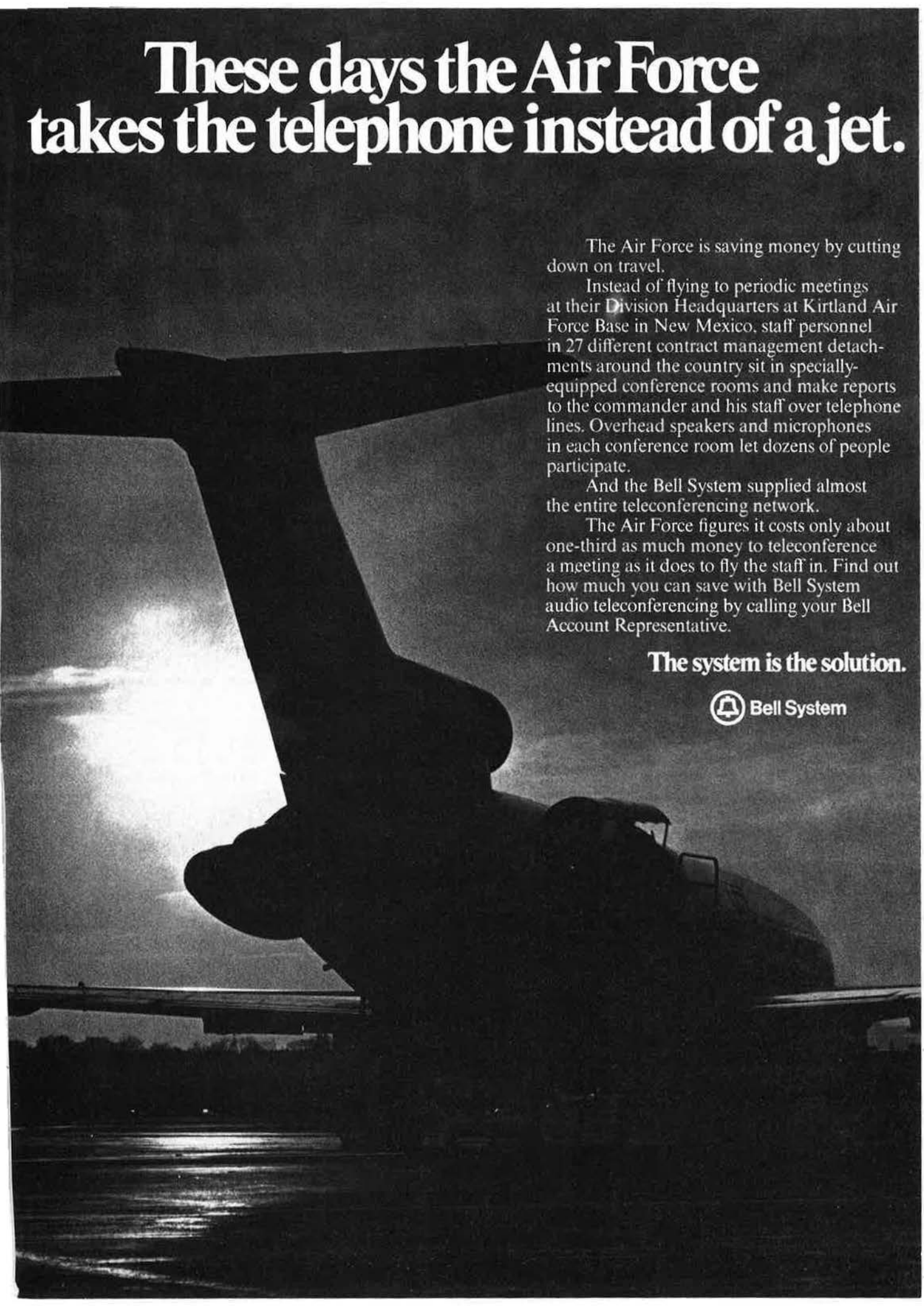
In 1949, three years after he retired, Congress made him General of the Air Force. He had been a General of the Army since December 1944, and is the only airman to have worn five stars.

Hap Arnold was an authentic genius in military management and leadership. Selecting and inspiring subordinate Air Force commanders and principal staff officers was his forte. His eight years as Chief of Air Corps and Commanding General of the Army Air Forces was the most significant period in US military aviation history. His great influence on airpower employment in World War II makes it vitally important that his biography, too long delayed, be published at an early date.

In the meantime, I commend to US Air Force leaders of the future a thorough study of Hap Arnold's extraordinary management techniques and his superlative qualities of leadership. ■

At this ceremony, which took place in Europe during the closing days of World War II, General Arnold was accompanied by Generals Spaatz (center) and Hoyt Vandenberg, who later would be USAF's first and second Chiefs of Staff.

These days the Air Force takes the telephone instead of a jet.



The Air Force is saving money by cutting down on travel.

Instead of flying to periodic meetings at their Division Headquarters at Kirtland Air Force Base in New Mexico, staff personnel in 27 different contract management detachments around the country sit in specially-equipped conference rooms and make reports to the commander and his staff over telephone lines. Overhead speakers and microphones in each conference room let dozens of people participate.

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In the fall of 1917, when pioneer airman Bob Copsey arrived at Kelly Field, the pilot training program of the Signal Corps's Aeronautical Division was a marvel of casualness. There were no flight manuals, proficiency checks, ground school, or formal curriculum. Before mounting a JN-4 "Jenny" (cost $5,500), it was standard procedure to . . .

HAND YOUR SPURS TO THE CREW CHIEF

BY JAMES R. PATTERSON

IF America's early aircraft had been flown with reins instead of a control stick, Maj. Gen. Robert L. Copsey, USAF (Ret.), would not have been surprised. Sixty years ago, when he learned to fly at Kelly Field, Tex., the influence of the cavalry was almost that pervasive.

"We reported to the flight line wearing riding boots, spurs, and a campaign hat," General Copsey recalls. "And we were instructed to mount the aircraft from the left side, as all horsemen are taught to do."

After it had been convincingly demonstrated that hats blew off, and spurs interfered with operating the rudders, the dress order was relaxed. The spurs and hat could be handed to the crew chief (a master electrician in the Signal Corps) just prior to flying.

Now retired in Colorado Springs, General Copsey is trim and vigorous at eighty-one years of age, and enjoying a unique status among the many active-duty and retired military pilots in this area. As a founder-member of the Order of Daedalians, and honorary captain of the local flight of that fraternity of pilots, the General has been a frequent luncheon and dinner speaker. Military personnel trained in the administrative and operational procedures of today's Air Force are astounded at how casually it all began.

"I was a junior at Nebraska University in 1916," the General relates, "when a recruiting officer came to the school offering the top athletes applications to an officer-training camp at Fort Snelling, Minn. I was a second-string tackle and was left out."

Although the United States was not yet at war with Germany the bands were playing and a martial spirit was sweeping the campuses. Bob Copsey fumed on the sidelines, as luckier college heroes marched off to Snelling with hugs, kisses, and tearful farewells from the Nebraska coeds.

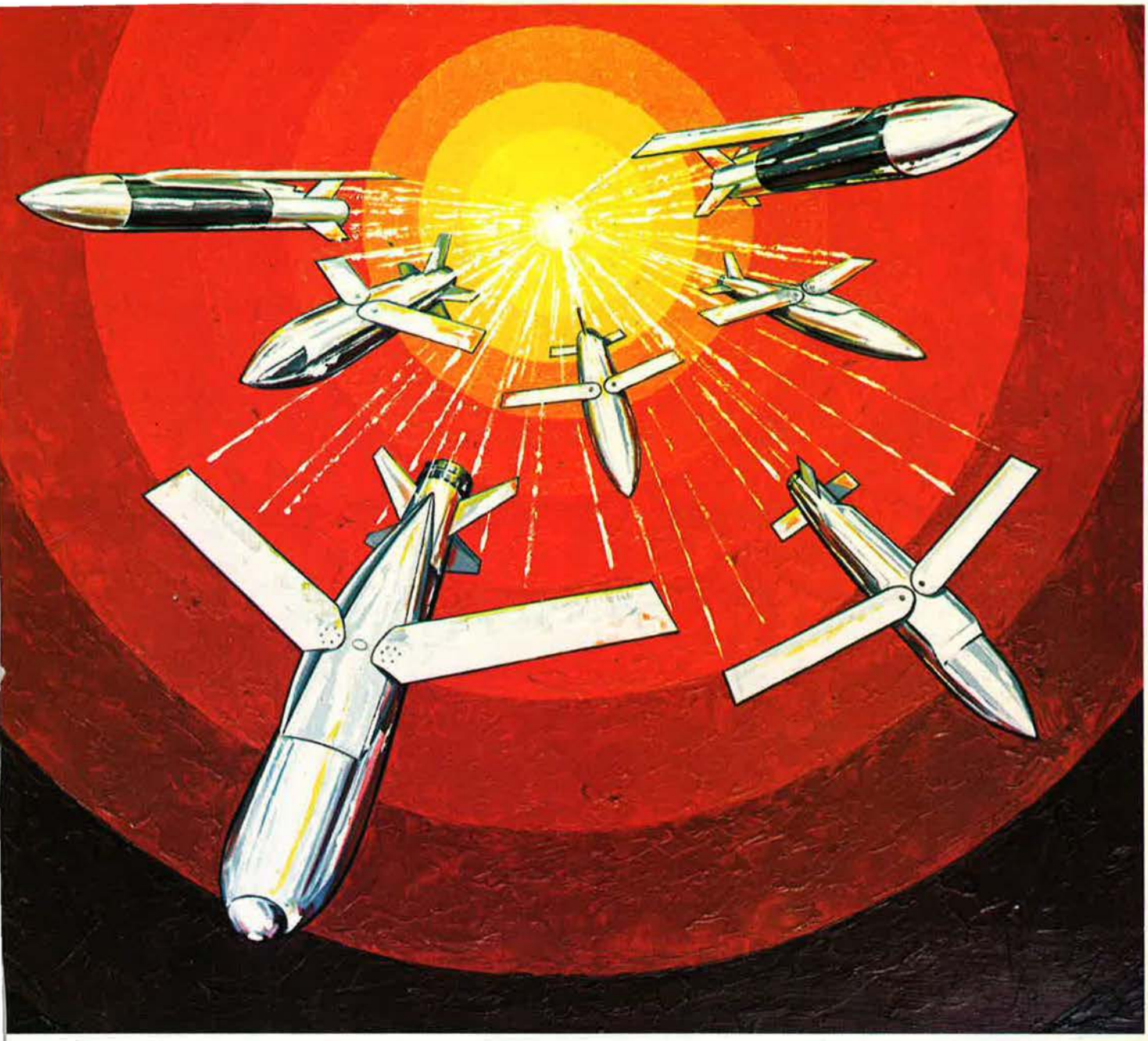
It was too much for the second-string tackle. Copsey, with two Kappa Sigma fraternity brothers, Charles Keyes and Wob Ralston, took off from the university for the nearest Army recruiting office in Omaha.

Lieutenant Copsey, a well-dressed Army pilot of 1918—minus spurs.

Snafu, World War I Style

"The recruiting officer seemed to be a little impressed that we were college boys," the General said, "and told us the Signal Corps was looking for some men. He wanted to know if we had any mechanical ability. I said I was a medical student but owned a motorcycle. We were asked to read an eye chart, and then put in a barber chair and spun around."

The significance of the whirl in the barber chair as an early-day test



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The C-101, being developed by CASA (Construcciones Aeronauticas S.A.) for the Spanish Air Force, is a basic and advanced trainer, with an air-to-air and air-to-ground weapons delivery capability. Armed recon, ECM and photo recon missions are also planned because of the CASA's maneuverability and long endurance at low level.

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Northrop Corp. and Messerschmitt-Boelkow-Blohm (MBB) are partners in the development of the C-101.

"The sergeant . . . said we would have to take off the officer's braid and the lieutenant's bars...."

flying aptitude entirely escaped e young recruits. They were sworn and told to return to Lincoln to vait orders.

"A few days later, I got a postal rd from the War Department," eneral Copsey said. "On the card ere instructions to present it to the cal railroad station agent for transrtation to Austin, Tex., and there should report to the dean of the niversity of Texas. That was all. figured I would at least get a ride Austin."

After Copsey surrendered the rd for a railroad ticket, he had no ritten orders, identification, or any ea of what might be his ultimate ssignment. In Kansas City, on the ay south, he encountered another onfused young man, Guy Rudd, so a recruit ordered to report to ie Texas university. Arriving in ustin, they learned that the dean's ffice knew nothing about any Army rogram.

Undisturbed by this reception, opsey took his new friend and ought out the Texas chapter house his fraternity. Made welcome by ie brothers, the two enjoyed bed id board until they could deterine how they were to start their ilitary careers. Two or three days ter, they heard an Army sergeant as on the campus, who—after they und him—referred them to a ewly commissioned lieutenant and rmer history professor named ennybacker.

Lieutenant Pennybacker accepted eir story that they were Army reuits and told them he would try find out where they were suposed to go. Meanwhile, the sereant would teach them some drill, id they could start learning the lorse code. Copsey and Rudd were not much impressed by the professor, but they admired his new uniform. After some prodding, Pennybacker disclosed the name of the Austin store where he had bought it. They hurried down to outfit themselves.

"We felt real proud in our new uniforms," the General related, "but as soon as the sergeant saw us he said we would have to take off the officer's braid and the lieutenant's bars. That didn't bother us much as hardly anyone knew the difference anyway."

Copsey and Rudd might have been content to remain as the glamour boys of the university campus had not orders finally filtered through after they had been at the school for about two weeks. They were instructed to report to South San Antonio, but to whom or for what was not made clear.

"I recall we wandered into a camp where there were a lot of tents," the General said. "The only thing we found out was that we didn't belong there, but someone lent us a couple of mess kits so we could eat, and assigned us cots for the night.

"The next day we learned that

An unscathed Lieutenant Copsey ponders the wisdom of split-S landings on small fields after he rolled up this Jenny while attempting that maneuver.

"There was no voice communication between instructor and student . . . and, of course, no parachutes. . . ."

we were supposed to be at Kelly Field, which was just across the road from the camp. We saw four or five airplanes parked in front of a hangar, and a little later we were told we were going to be taught to fly. Rudd and I were dumbfounded. It had never entered our minds that we were going to be made to get in one of those spruce and fabric-covered flying coffins. All I had wanted to be sure of when I enlisted was that I didn't get in the Navy.

In the 1930s, Copsey, then a National Guard officer, became Commissioner of Aviation for New Jersey. Here he is shown with his friend, humorist Will Rogers (left), at Newark Airport.

"That night Rudd and I talked it over. I said, 'To hell with it; I'm going home.' Rudd said he was ready to go, too. And then some fellows came in our tent and told us if we left we would be shot as deserters. We had second thoughts then. We decided we shouldn't disgrace our parents by being shot as deserters, so we might as well stay and get killed in an airplane."

UPT (Unorganized Pilot Training)

At this point in our conversation, General Copsey reached for a battered, leather-bound logbook and flipped the yellowed pages back to the first entry. There it was: his first flight, on November 7, 1917, at Kelly Field. His instructor had been Earl Hoag, who was later to become a major general; the aircraft, a Curtiss JN-4A, popularly known as the "Jenny."

"I remember, when I reported to the flight line, telling Hoag I wasn't interested in learning to fly, but Hoag just told me to shut up and climb in the rear cockpit. I got in and scrunched way down in the seat so I couldn't see out. I never knew when we left the ground. We made several takeoffs and landings before I finally got up the nerve to look out.

"Somewhere along the line, I sort of got an idea of what we were doing. There was no voice communication between instructor and student while in the airplane. We had only hand signals. And, of course, no parachutes." The General paused to glance at his logbook again before continuing. "Yes. There it is. I had seven hours of flying time on D cember 4, 1917, when I soloed. won't ever forget it.

"Hoag stopped the airplane ar got out. 'Take it around,' he sai I thought to myself, 'You SOB! don't know how to fly this thin and I'll kill myself.'

"I took off and made three lan ings. I don't know how I did it, t I marveled that I was still the After that flying was in my blood

A flying student, after soloin was pretty much on his own. The was no specified course of instru tion, and there were no proficien checks, flight manuals, or groun school. Winning your wings was some extent a matter of survival

On January 18, 1918, with a tot of forty hours and twenty-three mi utes in his logbook, Copsey w awarded the aeronautical rating "bomber pilot." The next day started instructing students himsel and ten days later was commissione a first lieutenant (contrary to t later practice of making graduati aviation cadets second lieutenant in the US Army Signal Corps.

With no precedents to follow- least of all regulations—the instru tors gradually developed the gener outline of a training program. T student pilot was taught through t solo stage, then allowed ten to f teen hours to sharpen his skill. Aft that, he was given a few hours dual instruction in recovery from i tentional spins, and such elementa aerobatics as wingovers and loop With the completion of three cros country flights, each an hour to hour and a half in duration, h training at Kelly Field was finishe Although he had no tactical trai ing, and only thirty to forty hou

"The prospect of being killed at Kelly was certainly very real to both students and instructors...."

in his logbook, he was considered ready to be sent to France for his first gunnery practice, and then combat.

Crashes and Dust-offs

Meanwhile, an "advanced" version of the Jenny had arrived at Kelly with such new features as a control stick instead of a wheel, and a more powerful engine.

"It was the JN-4D, and we considered it quite an improvement over the earlier model," General Copsey related. "It had an OX-5 engine developing ninety horsepower. Top speed was seventy-five to eighty miles an hour, and it landed at fifty-five to sixty. The only flight instruments were a tachometer, an altimeter, and an oil pressure gauge. We also had a little compass we strapped to our thighs, but it was almost worthless.

"To fly level we sighted the engine radiator cap on the horizon. For maximum climb we aimed the radiator cap six degrees above the horizon. We judged airspeed in landing by the feel of the controls and the singing of the bracing wires on the struts.

"The aircraft were maintained by Signal Corps master electricians, which was not as crazy as it sounds. Nobody else around knew anything about airplanes, and there was a lot of trouble with the magnetos on the engines. Besides, the electricians learned very quickly and became damn good. It was probably the first example of on-the-job training in the military."

Nevertheless, accidents were frequent. General Copsey estimates (no records were kept) that there were at least two crashes a week, with half of them fatal to the occupants of the aircraft. Engine failures and involuntary spins were primary causes of such disasters, as airmen learned largely from trial and error.

"I have seen it stated," General Copsey said, "that in World War I more American pilots were killed in training accidents than in combat. The prospect of being killed at Kelly was certainly very real to both students and instructors—so much so that we developed a philosophy of resigning ourselves to what probably was the inevitable."

The young instructor-pilot himself survived a crash that easily could have proven fatal. It happened on December 4, 1918, the first anniversary of the day he soloed.

"I was leading a flight of three JN-4Ds down to Alice, Tex., for a Liberty Loan rally," the General related. "When we got there a big crowd had assembled at a field just outside town. Airplanes at that time were still a rare sight and drew large crowds.

"I wanted to give them a good show, so I came in downwind over the field, rolled the aircraft on its back and split-essed down for a landing. But I had too much airspeed to set it down, and found myself too low to pull up in time to miss some high-tension wires at the end of the field. The Jenny was a complete wreck, but I didn't get a scratch."

Lieutenant Copsey did, however, get a physical examination following the crash. He had amassed almost 600 hours flying time, which then was the highest accumulated by anyone in the Army. He was not grounded, but was taken off instructional duty and made an engineering officer, which required him to inspect but only to test-fly aircraft.

By that time, with the war over, Kelly Field was winding down. At the peak of operations the flying facility had about eighty airplanes and some 200 students in training, as General Copsey remembers it. His biggest disappointment had been not getting to France. He had seen students he had taught become aces while he was held to the grinding routine of flying school.

Copsey not only had pleaded repeatedly for a combat assignment, but he and another frustrated instructor had taken a desperate measure toward that end. One day when there was a spectacular artillery pa-

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James R. "Jimmy" Patterson, a newspaper man and military pilot, is twice retired: once from the Air Force Reserve with the rank of colonel, and once as a United Aircraft Corp. public-relations executive. Now living in Colorado Springs, he is a free-lance writer and has been a frequent contributor to this magazine.

"You flew in over the center of town and circled until the people ran out in the streets to see you...."

rade scheduled at nearby Fort Sam Houston, with many high-ranking officers attending, Copsey and his friend saw their chance. Each took an airplane and dove it low over the parade ground just at the height of the ceremonies. Hats went flying, the horses stampeded, and clouds of dust rose from the field.

—PHOTO BY WALT BASEDOW

General Copsey, who retired in 1955, remains an ardent golfer at the age of eighty-one.

Only the excellent records of the two pilots saved them from a general court-martial, but their worst punishment was that they failed to receive the expected banishment to an overseas combat assignment.

From Barnstormer to the Stars

Copsey was released from active duty late in January 1919. A few days later, he bought a war-surplus Jenny and started barnstorming around the Middle West. There was no thought of returning to college and completing his formal education. What could compare with the life of the free-lance flyer? In season, he followed the country-fair circuit, performing in front of the grandstand, and then landing on the infield of the racetrack to give passengers rides at $15 a head. At other times, he flew from town to town selling rides.

"You flew in over the center of town and circled until the people ran out in the streets to see you," the General said. "Then you headed for a nearby pasture or field. A few minutes after you landed you had a crowd. The farmer who owned the land never asked for any money for its use. He was always too proud and excited that you had chosen his property, but sometimes I would give him a free ride if I had caused quite a bit of crop damage."

When the Bureau of Air Commerce (predecessor to the CAA and the FAA) was established in 1926, Copsey saw it as the end of an era and gave up barnstorming to become an inspector for the new agency. He was acting in that capacity in May 1927 when Charles A. Lindbergh was preparing to take off from Roosevelt Field for Paris.

"I tried to talk him out of it," he recalls, smiling wryly. "I told him he would never make it."

In 1928, Copsey became the first manager of the Newark, N. J., airport, and later was appointed Commissioner of Aviation for the State of New Jersey. He continued as an active pilot, flying such notables as Will Rogers and President Herbert Hoover. He also maintained his military flight proficiency as an officer in the New Jersey National Guard.

Recalled to active duty in 1942 as a lieutenant colonel, he was made commanding officer of Baer Field at Fort Wayne, Ind., and subsequently commander of the 1st Troop Carrier Command with headquarters in Indianapolis. Despite his vast experience as a pilot, an overseas assignment again eluded him. In 1950 he was made head of the Office of Reserve Affairs at US Air Force Headquarters in the Pentagon, a position he held until retirement in 1955.

Now General Copsey is content to enjoy the thrill of driving a golf ball flying down the fairway instead of an airplane down the runway. Often when he plays, the contrails of high-flying jets lace the sky above Colorado Springs. The General is well aware that a new breed of airman is up there, in pressurized cockpits, surrounded by a galaxy of instruments, warning lights, and switches.

"It makes me a little sad," the aviation pioneer muses, "to see the evolution of pilots from individualists into today's highly disciplined and controlled monitors of electronic devices. I have the greatest respect for their ability, but they will never know the freedom that was so precious to the men who flew the Jennies."

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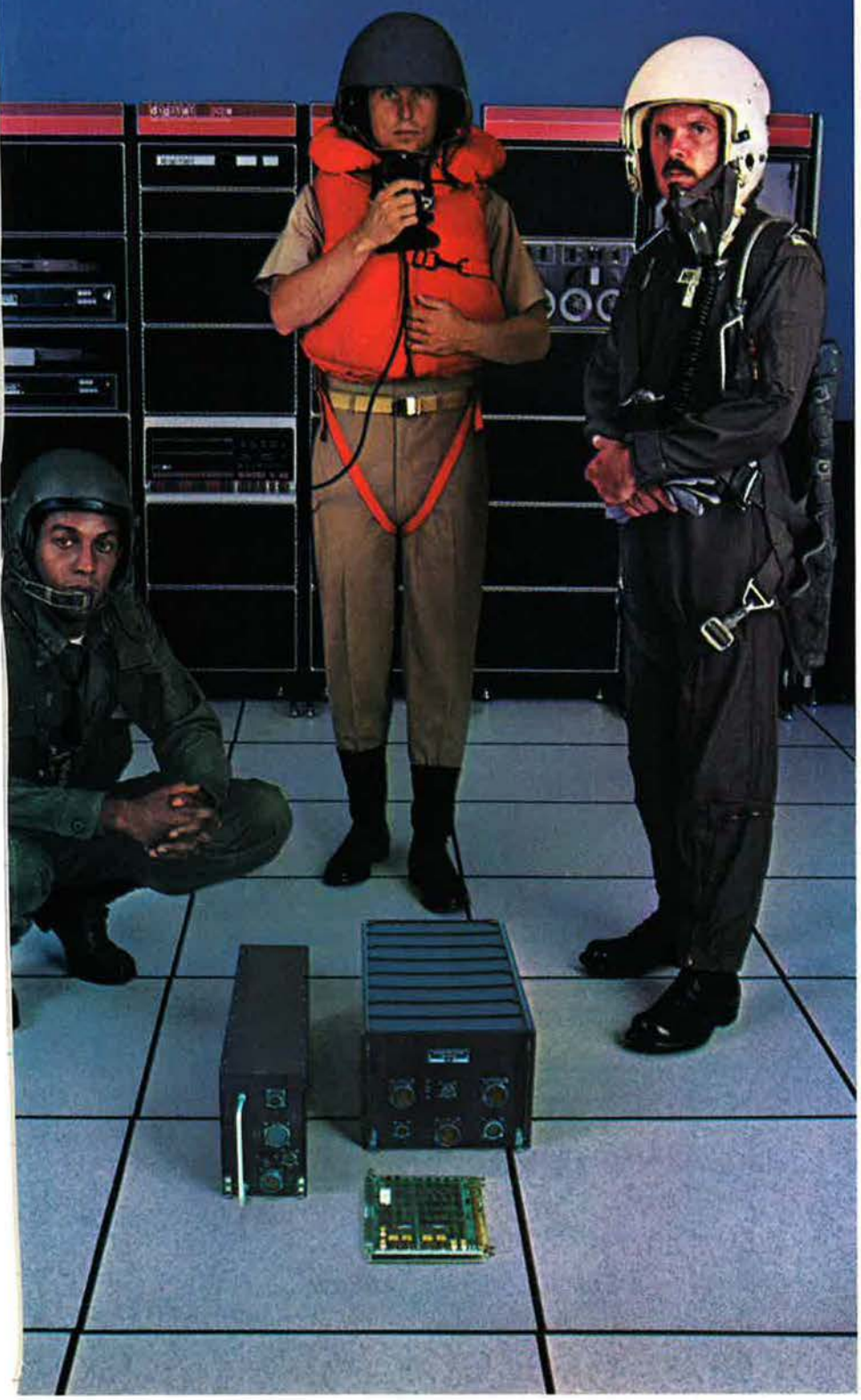

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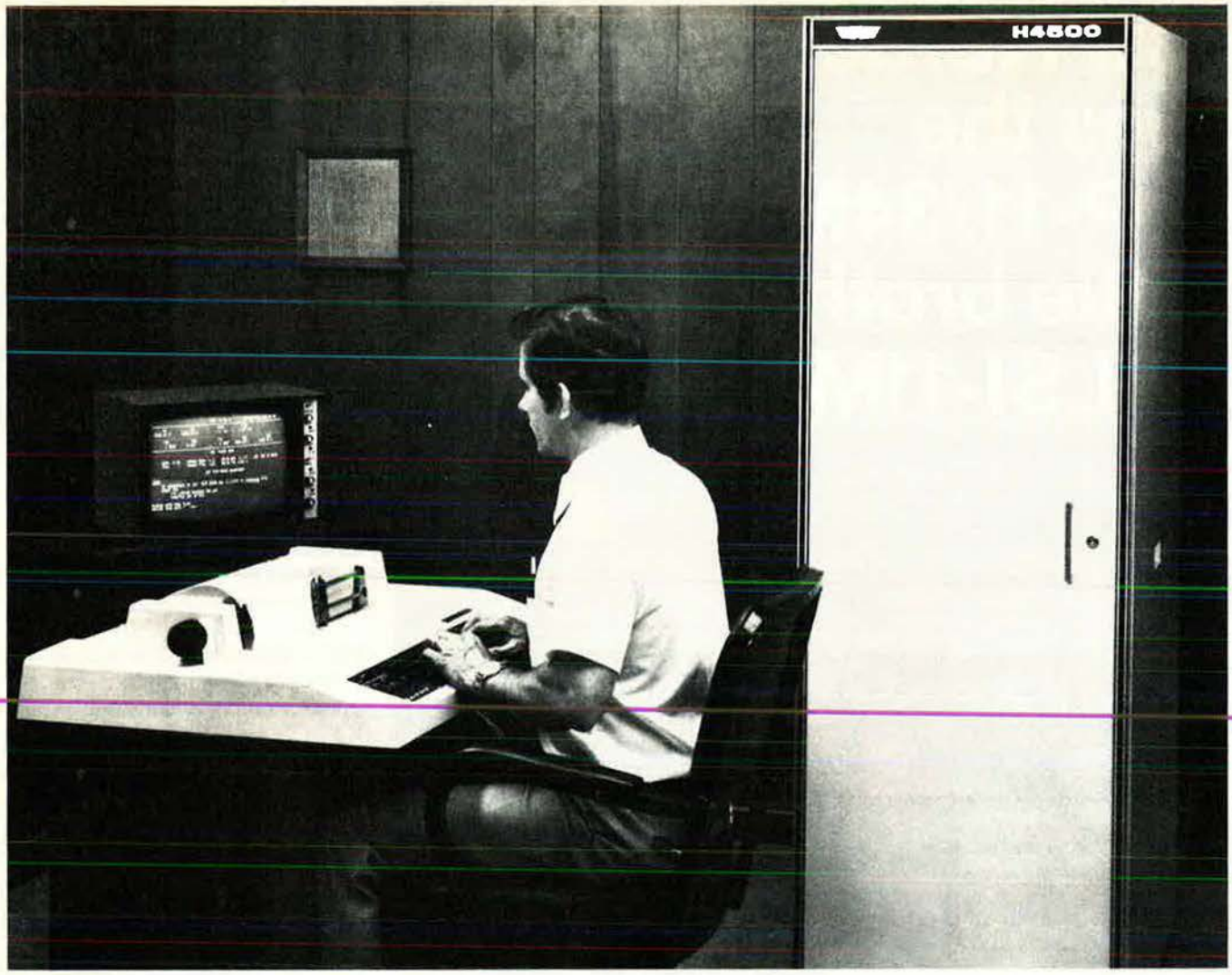

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GRUMMAN AEROSPACE CORPORATION

Women cadets at the Air Force Academy came there determined to make it on their own with no favors. So fully—and successfully—have they entered into the life of the Academy that "sometimes it seemed to a casual observer there were at least as many women as men cadets."

THE AIR FORCE ACADEMY'S FIRST COED YEAR

BY GEN. T. R. MILTON, USAF (RET.) **Photos by Bill Madsen**

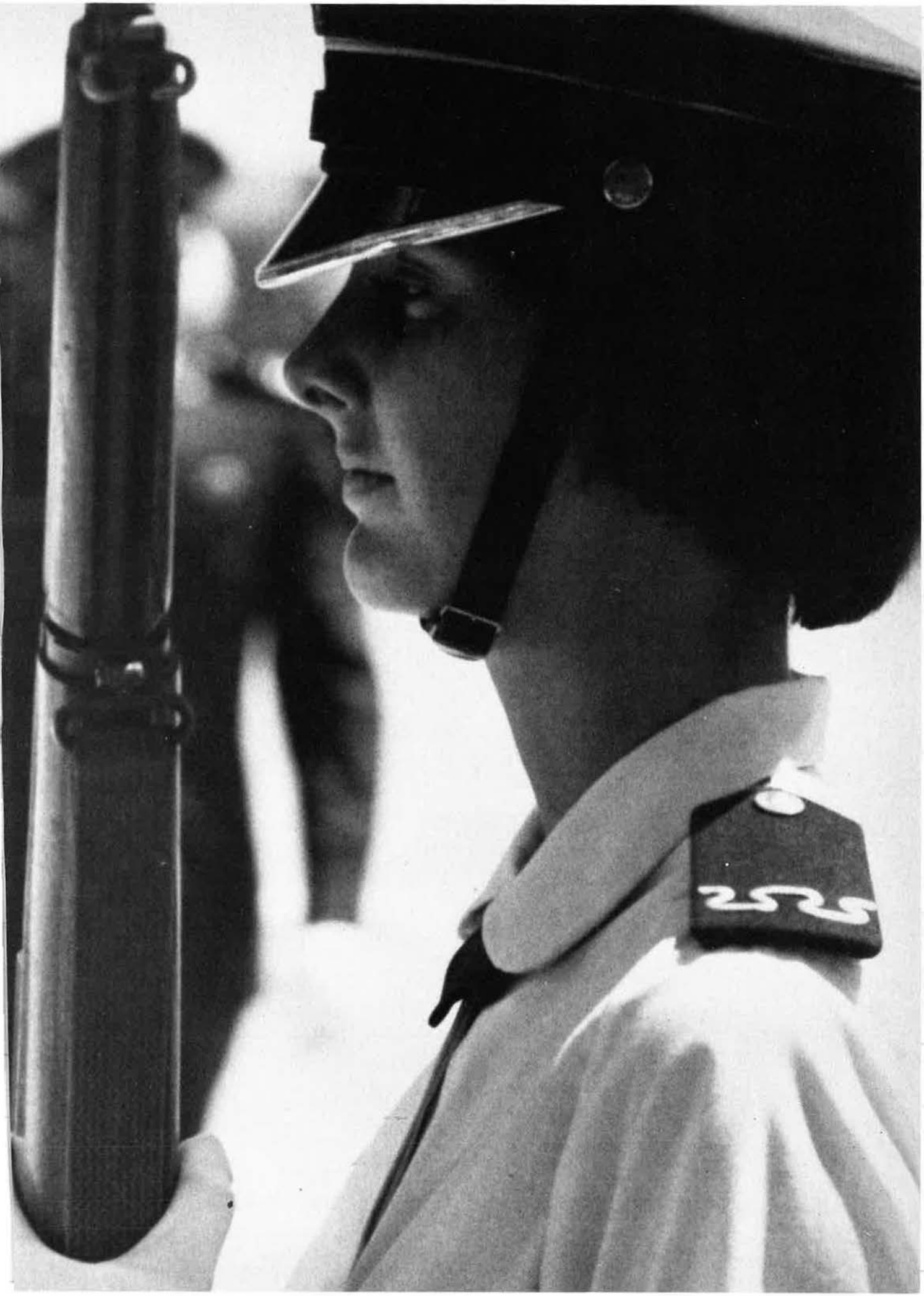
A CADET remarked to a visitor the other day, with all the earnestness of youth, that the Air Force Academy still looks pretty good for a place almost twenty years old. He was right. That complex of modern buildings nestled against the Rocky Mountains gives every indication of looking good for any number of twenty-year spans. And, like all good things, it did not come easily. The Chapel alone, that celebrated modern edifice with its seventeen tepee spires—the cadets claim they represent the twelve apostles and the five members of the Joint Chiefs of Staff—caused nearly as much controversy as the B-1. If there was one thing most members of Congress were sure of, it was how a church should look. The Academy Chapel very definitely did not meet that criterion.

However, there were stubborn people on the other side of the argument as well. The chief designer of Skidmore, Owings and Merrill, Inc., the Academy's architects, was one. He was professionally and emotionally committed to the design. The Chapel would have its seventeen wigwams or he would commit the architectural equivalent of falling on his sword, an act he might well have had to perform had it not been for the support given the design by the Secretary and Under Secretary of the Air Force, Harold E. Talbott and James H. Douglas, and also of Gens. Nathan Twining and Thomas White, two of the truly wise generals in Air Force history.

Harold Talbott's tenure was like the man himself, sometimes stormy and controversial. Talbott was not a man to be bothered with details or with the legal niceties that might stand in the path of progress. Those were the things you hired lawyers to deal with. And so Harold Talbott went all out to get an Air Force Academy, bulldozing where he could, cajoling where he could not. He also managed to talk a reluctant James H. Douglas, an eminent and principled Chicago lawyer, into becoming his Under Secretary. The two men, poles apart in their basic philosophies, were prime movers in getting the Air Force Academy under way.

The Academy became Harold Talbott's overriding interest, even down to the way cadet rooms would be laid out. When the matter of a golf course came up, Talbott twisted a few businessmen's arms—one hundred, to be exact—and the One Hundred Club was formed. Its only function was to donate the money for what is now the Eisenhower Golf Course, truly one of the best in the Rockies.

Harold Talbott resigned following his indiscreet mixing of private business and official letterheads, to be succeeded by Donald Quarles. James Douglas stayed on as Under Secretary. The Academy thus enjoyed unbroken continuity of support in a critical period. And when Secretary Douglas, having succeeded Quarles, presided at the first graduation in 1959, he could look back as a participant over the entire history of that school: congressional authorization in 1954; President Eisenhower's signature on the bill; the commission, including Spaatz and Lindbergh, that chose the site; the temporary location at Lowry AFB in Denver; and, finally, the first commencement at the permanent site. Sadly, the first Superintendent, Lt. Gen. Hubert Harmon, did not live to see that first graduation. Well, all that took place eighteen years ago. As the cadet said, the place looks pretty good, considering its age.



They have been an interesting eighteen years. In that time, the Air Force Academy, to quote a few statistics, has turned out 11,150 graduates. There have been, in the Academy's brief history, nineteen Rhodes scholars, a figure exceeded only by Harvard, Yale, Princeton, and West Point. The Guggenheim Scholarship Award is a sort of engineer's Rhodes, at least in terms of prestige. This past year there were forty Guggenheim Scholarships awarded. The Air Force Academy won fourteen of them, not bad when you consider the competition included MIT, Cal Tech, and the rest of the nation's outstanding engineering schools.

These scholarships are splendid tributes to the Academy, its faculty, and its students. However, they are neither the reason nor the justification for the place. Scholarships are fine, and they do contribute to attracting good students, but the real measure of the Air Force Academy's value lies in the overall quality of its product. Since it costs about $90,000 to put a young person through the school, does the government get its money's worth? Because the answer to that question is, to some extent, a matter of opinion, it seems fair to postpone the answer until later. There are some other factors, tangible and not so tangible, that should be considered. A primary factor in evaluating the worth of this expensive education is the one of motivation. How, in short, do these young people view themselves and the career they have, at least tentatively, embarked upon?

Challenge and Response

As nearly as I can determine, based on what appeared to be uninhibited group discussion, there is a general feeling of pride, a sense of accomplishment, in having taken on the challenge of a disciplined environment. In the cadets' own view, it sets them apart from the other young people of this permissive age. A few years ago, they say, their friends back home considered them oddballs for choosing this relatively cloistered and severe life. Now, these same friends not only accept them but seem often to envy their orderly existence and the clear goals that accompany an Academy education.

It is particularly interesting to remember that these men and women went through their impressionable early teenage years during the worst of the Vietnam uproar. In many cases they chose the Air Force Academy in the face of family skepticism and even outright disapproval. Some turned down tempting offers of free education at comfortably permissive civilian colleges, just to see what a tougher challenge might be like. The fact that they seem to relish the challenge and welcome the discipline may tell us, as a nation, something, for the cadets at the Academy are a true cross section of Middle America.

In a way, the Academy is a sort

Women cadets went through three weeks of tough field training at Jack's Valley, learning, among other things, about the M-16 rifle. In academics, their average at the end of the year was identical to that of their male classmates.

of throwback to another time, an attempt in 1977 to produce Americans typical of a less libertarian age. Naturally enough, the attempt cannot be wholly successful. It is still 1977, and the movies, the magazines, the sexual mores are not those of 1937. To some extent, then, these young people with their short haircuts and military bearing are deceptive. They are products of this generation, not any other, and we older types should not be confused on that point. The haircuts and clean shaves are simply cosmetic. Given their choice, the cadets would doubtless look a little different. The real measure of the change the Academy works on its charges is best seen in such things as the Honor Code and the responsibility given cadets for running the place.

The Honor Code itself is at once the heart of the Academy system and the source at times of great controversy. Since the Code derives pretty directly from that of West Point, this past year's agony at the old school on the Hudson has naturally raised some questions about honor systems in general and the Air Force Academy's in particular. The questions are all from the outside world, not from the cadets themselves. Within the Cadet Wing, the Honor Code seems not only unchallenged but, on the contrary, fiercely defended. The fact that much of a cadet's activities are governed by acceptance of his word is, in the opinion of the cadets I have questioned, one of the great things about being a member of the Cadet Wing.

The Code is administered by the cadets with careful but only rare interference from the authorities. Since West Point's troubles appear to have had their source, at least in part, in an overburdening of the honor system, the Air Force Academy has kept in close touch with the West Point affair, and the Borman Report has been carefully studied. There is a determination on the part of the authorities to keep the Honor Code and to avoid any future honor scandals, of which the Air Force Academy itself has had two. Meanwhile, the occasional cheater or liar is dealt with within the Cadet Wing, with never a question as to the value of the Honor Code. A few thus leave every year, quietly and without official stigma. Those who measure up to this self-enforced code of ethics feel a very strong bond with one another. That, then, is one of the intangibles in measuring the worth of the Academy. Assuming that bond of mutual esteem and trust carries over into the Air Force, and the graduates feel it does, it is a distinct plus for the taxpayer.

A more tangible measure of the Academy's value lies in how its graduates have done in the Air Force itself, the only reason, after all, for having the school. Once again, a few statistics seem in order. In the competitive arena of Air Force promotion boards, the Academy graduates are doing well. They are not running away with promotions, but they are clearly doing better, as a group, in below-the-zone promotions than their peers commissioned from other sources. In the critical matter of career commitment, about seventy percent of the Academy graduates are staying on after their required five years. Again, that is a better retention rate than the average, although we could wish it were higher.

There are other statistics that say something about this school. There is the somber list of killed and miss-

The summer's basic training was the same for new women cadets as for men. "They were not there as mascots." Then came the Acceptance Parade when upper classmen pinned on their shoulder boards and became full members of the Wing.

ing in action, 159 in all, mostly lieutenants and captains with a sprinkling of junior majors. Fifteen of the graduates won the Air Force Cross; one, Capt. Lance P. Sijan, the Medal of Honor. The South Dormitory is now named Sijan Hall, and a striking portrait of Captain Sijan in flying clothes hangs in the entrance way. The portrait is by Maxine McCaffrey, an artist with an unmatched talent for capturing the true essence of America's combat airman.

All in all, then, it seems we are getting more than our money's worth with the achievements thus far in academics, in combat, and in advancement of its graduates up the promotion pyramid.

The Playing Fields in Perspective

There are, of course, a few areas where the Academy would like to do better. Because football, however meaningless it may be as a measure of a college's worth, is the great American spectator sport, the Air Force Academy aspires to greater things on that field of combat. Since we all know it takes more than true grit to win in serious college football, the Academy, like West Point and Annapolis, does a certain amount of recruiting. It is not an easy task these days to convince a likely football prospect to attend the Air Force Academy. First of all, he must have marks well above average just to slip in at the minimum acceptable level. He must also forego any real thought of a professional football career when he takes on the five-year service obligation that will come with his diploma. Thus, it is not surprising that the Academy does not, year after year, beat the likes of UCLA, Notre Dame, or Arkansas, and go on to some bowl. Still, they always register a few upsets, and the team is invariably exciting to watch.

Ben Martin has coached Academy football now for twenty years. As a Naval Academy graduate, he understands the problems of service academy football. The Director of Athletics, Col. John Clune, is another Naval Academy product, and an All-American basketball player while there. Such athletic recruiting as there is, then; is done under the guidance of men who keep things in perspective.

There are other sports, naturally, and the Air Force Academy does well in them. Nowhere do students have better facilities, whether for ice hockey, tennis, golf, swimming, or whatever. Everyone plays something, either varsity or intramural. "The Battle of Waterloo," said the Duke of Wellington, "was won on the playing fields of Eton." Perhaps that gives insufficient credit to old Marshal Blücher, who, with his Prussian army, fell on Napoleon's right flank at a crucial moment, allowing Wellington to counterattack, but it does make a point about the importance of athletics to a fighting man's upbringing.

Now, at this juncture, having dwelt mainly on the male side of things, it is time to discuss the Academy's

A cadet is briefed on cockpit procedures before her jet orientation ride. Women cadets became cheerleaders, participated in a wide range of cadet extracurricular activities, and fielded varsity teams in several sports.

most publicized feature, its newly acquired coeducational status.

First Coed Year

A year ago last June the first women entered the Academy. It was a day long dreaded by many people, and not just men, who saw in this piece of equal rights legislation the start of a downhill slide for the Air Force Academy; indeed, for all the service academies. To the great credit of Lt. Gen. A. P. Clark and his successor as Superintendent, Lt. Gen. (now General) James R. Allen, the Air Force Academy had for years been planning for the day. The planning showed both imagination in providing young women officers as a surrogate upper class, and discretion in giving the women cadets a separate dormitory.

The surrogate upper class has proven a great success, and the experiment is being repeated this year. The sophomore women, like their male classmates, will not have anything to do with the summer training of new cadets. Next year, however, the first women cadets will be juniors. That year's new crop will face a genuine, not surrogate, female upper class.

The other bit of planning, that of segregating the women in their own living quarters, has caused some griping, and not for the reason you might imagine, either. The complaints stem from the fact that isolated living also means a certain isolation from participation in the camaraderie of squadron life. The women cadets seem determined to go through the Academy as full-fledged members of their class, and this separation rankles some of them. Nonetheless, they have had a remarkably successful first year, beginning with the negotiation of a tough three weeks in Jack's Valley, the Academy's summer finishing school for new cadets. It is a remarkable sight, even a little disturbing, to see these intelligent and well brought up young women sweating through an obstacle course, beating each other with pugil sticks and giving off soprano cries of "Kill!" as they attack the bayonet targets. Still, it is part of the drill of basic training, and the women are there as full-fledged cadets, not mascots.

When last summer ended and they returned to barracks and academics, these first women cadets moved right into cadet life. They became cheerleaders, assistant football managers, members of the drum and bugle corps, the Protestant and Catholic choirs, almost every activity, in fact, that they could join. Sometimes it seemed to a casual observer that there were at least as many women as men cadets. There were, in fact, only about 130, scarcely ten percent of the class.

In varsity sports the women did surprisingly well, as they fielded teams in swimming, tennis, gymnastics, and basketball. The basketball team, incidentally, playing five women for the whole game, gave Colorado College's basketball team its only regular season loss. In academics, the women were about average, in fact, almost precisely so. So far as attrition, through resignations or for whatever reason, the women were again about at the men's average, even slightly better.

So the Academy enters its second coeducational year with considerable experience, most of it reassuring. The women come there determined to make it on their own with no favors. According to a visiting woman professor from a civilian university who has just completed a year of teaching cadets, the Air Force Academy women are, like male cadets, task oriented to a degree not found in civilian institutions. When given an assignment they do it, and they do it on time, evidently a refreshing experience for a teacher coming in from the outside world.

In the view of this same professor, perhaps the biggest single problem the women cadets have had to face has been one of acceptance by the cadet men. There is, understandably in a school like the Air Force Academy, a machismo streak in a good many of the men who go there. These men are thus apt to feel that there has been a calculated softening of the physical side of the first year on behalf of the women. Some of this resentment still lingers—although it seems to be lessening—mainly in the upper two classes. The members of these classes are proud of being the last of the all-male classes, and the chauvinism will doubtless diminish, even vanish, when they graduate. Women are in the Cadet Wing to stay, and everyone had better get used to it.

The Road Ahead

The fact remains, if I dare say it, that the military is still a man's world, and these women cadets have a tough road ahead to achieve real equality, not necessarily at the Academy, but in the years after graduation. They will have equal pay with their classmates when they get out, but pay is not the basic measure of success in the military. Traditionally, the main highway to success in the Air Force has been clearly marked. Pilot training, operational experi-

They came determined to succeed in a service academy world that, for 174 years, had been a bastion of male supremacy.

Gen. T. R. Milton, a USMA graduate who led the Schweinfurt mission of October 1943, is a regular contributor to AIR FORCE Magazine. Immediately prior to his retirement in 1974, General Milton was US Representative to NATO's Military Committee. Previously, he served as commander of Thirteenth Air Force, Chief of Staff of TAC, and as Comptroller of the Air Force. General Milton now lives in Colorado Springs.

ence, command, and, as a clincher, combat. If the success road stays marked the same way in the future, the women will have a hard time getting on it. There will be some who get pilot training, but as things now stand, the prestige operational assignments afterwards will be closed to them.

If this were twenty years ago, that would seem an almost automatic guarantee that women in the Air Force, Academy graduates or not, could not hope to progress past a certain point except on a token basis. However, it is not twenty years ago and the future looks somewhat different from the past. In the first place, there appears to be an irreversible downward trend in pilot training and in the active pilot inventory. Never again, apparently, will we have an Air Force dominated to the degree it has been in the past by the pilot fraternity. It is a fact that has already been recognized in the physical standards of the Air Force Academy. This year only sixty percent of the cadets admitted had to meet the physical requirements for pilot training, a drop of ten percent since last year. Twenty years ago, the figure was close to ninety percent. The Air Force, in other words, is going to need more other skills and fewer pilots down the road.

Since there must be some continuing incentive for Air Force ROTC recruiting, and pilot training is by far the main incentive, all the pilot slots cannot be taken by Academy graduates. Nevertheless, a desire to fly still ranks very high on the list of reasons for entering the Air Force Academy. Flying is the glamour attraction the Air Force has to offer, and it is clear, from the record thus far, that some of the Air Force's finest pilots will continue to come from the Academy. Some of us may thus, perhaps, be forgiven for wishing that the shrinking number of pilot training spaces would be reserved for the men who must, in any event and under the law, do all the combat flying.

However, that is just a view that need not be given any importance. What is important is the attractiveness the Air Force Academy has for large numbers of our youth. This year, there were more than eight thousand qualified applicants competing for fifteen hundred places in the entering class. Those admitted are very much out of the top drawer of American youth, if past achievements, demonstrated traits of leadership, and scholastic excellence qualify for that description. It is a pattern that has gone on for a good many years excepting, perhaps, a slight fall-off during the height of the Vietnam troubles and the virulent antimilitarism that accompanied that era.

For these pioneer women cadets, does the road ahead lead to unlimited careers in an Air Force that will be less dominated by the pilot fraternity?

The desire of some young people to get into the Academy accounts for the competitive entrance situation at the Academy Prep School. Here, successful aspiring candidates for the Academy are given a year of intensive academic training along with the usual military training, to bring them up to Academy entrance levels. Then there is a privately financed organization, the Falcon Foundation, that underwrites civilian preparatory school costs for about forty candidates each year. The Falcon Foundation is in no sense an adjunct of the Athletic Department. On the contrary, very few Academy athletes have come in by way of Falcon Foundation help. It is simply designed to give those whose motivation and potential are high, but whose schooling and finances are deficient, a chance at an Academy education and an Air Force career. The results over the years are ample justification for the money spent.

For whatever reason or combination of reasons, there are a great many very good people who want to go to the Air Force Academy. The Academy catalog gives pretty strong hints to its prospective students that the place is no bed of roses, but each year, applicants turn up in droves. Part of the incentive is furnished by the academic excellence of the school. The faculty, from its dean, Brig. Gen. William T. Woodyard, Ph.D., on down, is made up of military officers with impressive academic credentials. Then there is the pay, $345 per month, an obvious inducement. There is the attraction of the Rocky Mountains, and the marvelous facilities of the Academy itself. The chance to fly has still, as we have noted, a great appeal to the young. All these things contribute to the Academy's ability to get its share of the best this country has to offer year after year.

In all fairness to the cadets themselves, there is one other thing that seems to be a powerful factor in their decision to enter the Academy. It is the sense of challenge and the desire to see if they are up to it.

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Exotic New Weapons: Reality or Myth?

BY EDGAR ULSAMER, SENIOR EDITOR

Revolutions in military technology, from the crossbow and first use of aircraft in war to nuclear weapons and ballistic missiles, occur unpredictably and often after long gestation periods. Some scientists and planners believe that the nucleus of the next revolution in weapons technology is now emerging in both the US and the Soviet Union.

As reported previously in these pages and two years ago in AFA's Statement of Policy, there is no doubt that the Soviet Union began several years ago to augment work on high-energy lasers with major research on technologies of yet greater potential lethality, the charged-particle beam/high-energy physics sector. First "weaponized" in Greek mythology by Zeus as a force to hurl against intractable lesser deities, charged-particle beams are basically lightning on a grand scale put to military and other uses.

The highly instrumented NKC-135 Airborne Laser Laboratory shown here serves as the Air Force's principal test-bed for research on laser weapons.

Like the laser death ray, the charged-particle beam weapon that could incinerate a spacecraft, aircraft, or ballistic missile is the stuff that a TV scriptwriter's dreams are made of. Over the long run, this reaction could be tragic for both technologies, which should be taken seriously but not huckstered as immediately realizable total revolutions in weapon systems. The day of the operational laser weapon is probably about ten years away, although there is substantial evidence that the US initially was tardy in exploring its potential. Most defense scientists are chary of even tentative forecasts about when beam weapons might become feasible. Secretary of Defense Harold Brown, pointing out that the laws of physics are the same for the Soviets as for the US, asserted recently: "I am convinced that they and we can't expect to have such a weapon system in the foreseeable future, [but] I can't predict how things will be twenty or thirty years from now."

Earlier this year, then Director of Defense Research and Engineering Dr. Malcolm R. Currie expressed "concern" about Soviet activities in the area of directed-energy (lasers and particle beam) weapons, saying, "We know few technical details of the Soviet programs, but the scope and degree of commitment of their interests in these weapons of the future is quite large, as judged by their investments in physical plant for research and development. There was an increase in the size of Soviet facilities that we know to be engaged in high-energy laser research and development from 1971 to 1975, and there are indicators which point to Soviet interests in particle beam technology which may have advanced weapon applications."

Anatomy of the Charged-Particle Beam

A charged-particle beam is a stream of atomic or subatomic-size particles, such as electrons, protons, heavier ions, or in the case of one approach, neutrons. Beams of this type differ from the laser, which consists of radiant energy in the form of filtered, phased light waves.

Two basic approaches to charged-particle beams are known to exist. One technique centers on high voltage/low current combinations involving a billion or more volts and currents in the milliamp range; conversely, the second approach uses currents of thousands of amperes and voltages below the billion-volt level. The former is more suited for nuclear physics and basic research while the latter shows greater promise for technology applications. Included here are nuclear fusion energy generation associated with proposed new nuclear reactors that emulate the sun's way of power generation, nuclear weapons simulation by means of an X-ray flash, generation of high-intensity microwaves, energy transmission, and weapons.

Charged-particle beams can now be produced only with huge, complex machines called accelerators that in turn require vast amounts of electricity. Beam weapons, like their model in nature—lightning—make formidable effects possible. Among the several fundamental problems associated with transforming charged-particle beams from laboratory experiments to weapons is their tendency to behave like lightning—that is, their paths are jagged and hard to control. The solution to that problem, in the view of some scientists, may be the operation of such weapons in concert with high-powered lasers that blaze a trail for them, either through the atmosphere or through magnetic fields in space that otherwise could deflect them.

Other formidable hurdles that need to be cleared include scaling up the power of accelerators by at least a factor of one thousand; achieving stable, long-distance beam propagation; and steering and tracking the beams. There is wide consensus among defense scientists that solving these and other problems could lead to a revolutionary weapon that would deliver enormous amounts of lethal energy over great distances at almost the speed of light and under adverse weather conditions.

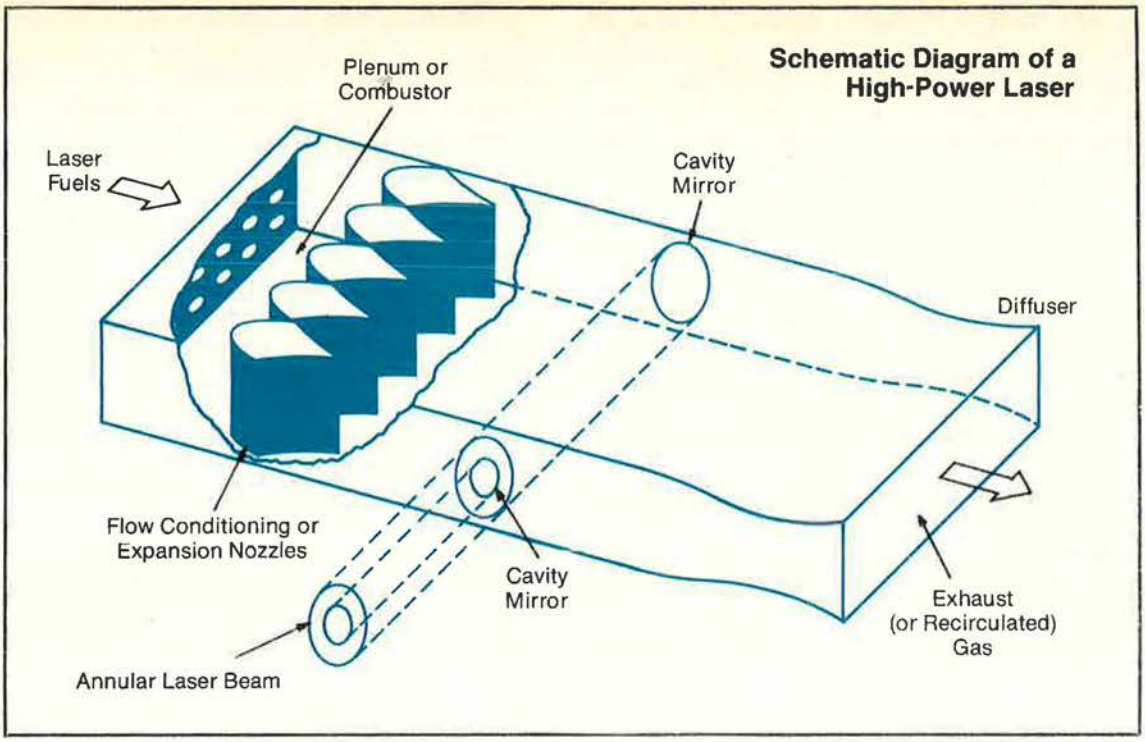
"Beam weapons, like their model in nature—lightning—make formidable effects possible."

Where Does the USSR Stand?

It is difficult to assess the US capability to track precisely Soviet progress in research involving the range of scientific and technological disciplines associated with high-energy physics and to sort out those that relate to weapons applications. The efficacy of technological "sleuthing" from standoff positions in space or elsewhere may well be the scientific marvel of the period, but it still can't find out what goes on behind closed doors. Categoric assertions by Defense Department scientists about the comparative strengths and weaknesses of Soviet and US charged-particle beam and laser weapon competence seem to run afoul of the intelligence community's admission that US knowledge of what goes on inside Soviet laboratories, prior to observable tests, is speculative at best.

DoD executives, nevertheless, make definitive comparisons concerning the two countries' ability to develop and produce exotic weapons of this type. Secretary Brown, at a recent press conference, for instance, cited the problem of beam steering through the atmosphere and through the earth's magnetic field, along with "four or five other such obstacles." He concluded that from the point of view of either country "not now nor in the foreseeable future would that particular weapon system be a useful one in terms of really changing the balance."

Other senior DoD officials state publicly that,



Lasers, like all forms of light, depend on the collision of "excited" particles. The gas dynamic laser assures a rich, concentrated supply of such particles by using rocket-like nozzles.

following detailed reviews by the Defense Science Board, the Air Force Scientific Advisory Board, and the Central Intelligence Agency, consensus was reached that "no direct correlation has been shown between Soviet work on high-current acceleration and weapon applications." They see no evidence of technological breakthroughs in any of the key areas of beam-weapon design, and no basis for believing that Soviet development of such weapons is imminent. These same officials also assert that long-standing Air Force intelligence claims about Soviet progress in beam weapon development could not be substantiated. On the other hand, research funded by the Air Force appears to have accelerated this country's own work on beam-weapon technology and caused wider acceptance of at least the theoretical feasibility of such weapons by US scientists and defense analysts.

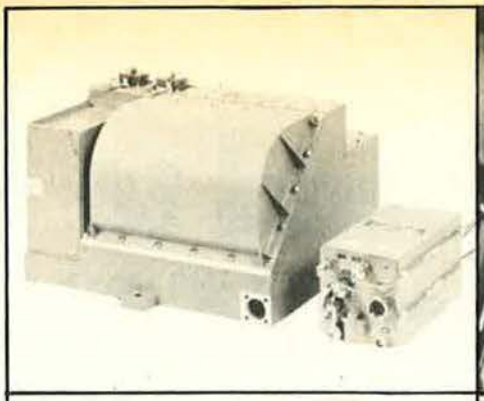
Defense Department experts concede that "the Soviet effort on charged-particle beams is judged to be larger than ours, particularly in the area of accelerators for fusion applications. However, their state of the art [energy levels achieved] is approximately comparable to ours. In some areas they lead, and in others the US leads."

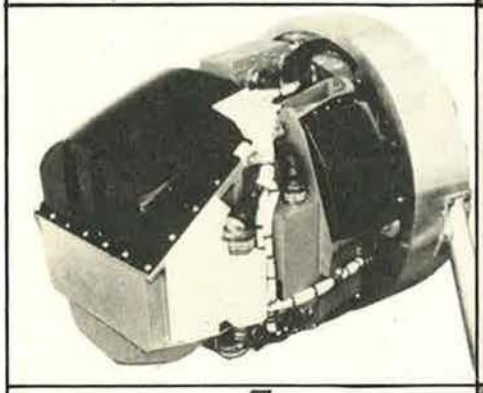
The larger Soviet effort is manifest in more people spending more money and time in larger facilities on beam research than in this country. The Soviets, according to DoD, lead the US in such areas as inductive storage, size and weight reduction, and beam interaction, while the US is ahead in capacitive storage, diode technology (essential for electron flow control), and computer capability.

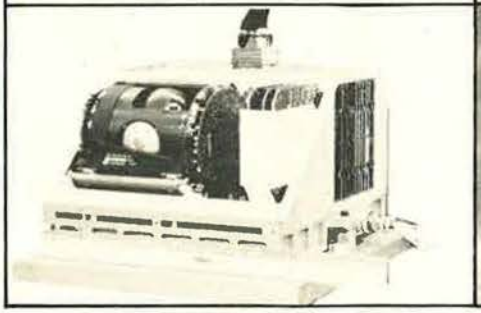
This country's charged-particle beam weapons technology program is funded at an annual rate of about $7.5 million, or one-twentieth the level of laser weapons research. The program is in a research and exploratory development stage and, according to Defense Department experts, is "making good progress and growing appropriately." These officials caution that "a weapons prototype is many years away, and a massive effort now would be expensive, premature, and potentially waste

KEY DEVELOPERS OF HIGH-CURRENT SOVIET ACCELERATOR TECHNOLOGY

SCIENTISTS	ORGANIZATIONS
L. I. Rudakov Ye. P. Velikhov	Kurchatov Institute of Atomic Energy Moscow
M. S. Rabinovich A. A. Kolomenskiy	Lebedev Physics Institute Moscow
G. I. Budker D. D. Ryutov	Nuclear Physics Institute Novosibirsk
Ya. B. Faynberg Yu. V. Tkach	Physico-Technical Institute Khar'kov
G. A. Mesyats	Institute of Atmospheric Optics Tomsk
V. A. Glukhikh	Yefremov Institute of Electrophysical Equipment Leningrad
Ye. A. Abramyan	Institute of High Temperatures Moscow
A. I. Pavlovskiy	(unknown)







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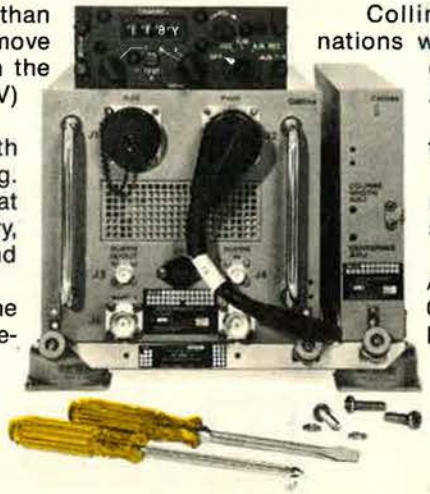

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ful." While most defense scientists agree that charged-particle beam technology is not yet ready for massive investments, some believe that current funding is inadequate to keep up with the Soviet program.

Emphasis on High-Energy Laser Weapons

The laser (short for Light Amplification by Stimulated Emission of Radiation) is an ingenious marriage of optics and electronics that generates and channels photons (fundamentally, bullets of light) into a coherent, unidirectional, and mutually reinforcing stream of radiation energy. Its basic appeal to the weapon designer stems from its ability to focus large quantities of energy over great distances with the speed of light and, when desirable, to compress these energy bursts into extremely short pulses. At least in theory, laser weapons suffer by comparison with charged-particle beam weapons because the latter use much larger "bullets"—electrons, protons, or even neutrons in contrast to the laser's photons—and, therefore, can be made more lethal.

By delivering precisely focused energy rapidly, the laser can melt the surface of targets, destroy structural components, ignite flammable materials, and incinerate vital components as well as people.

Principal types of high-energy lasers under investigation by the Defense Department include the carbon-dioxide gas dynamic laser, the carbon-dioxide electric discharge laser, the carbon-monoxide electric laser, the deuterium fluoride chemical laser, and the krypton fluoride laser.

This year, the Defense Department is investing about $150 million in laser weapons research, with the Air Force receiving roughly half of the total. The Department's laser weapons technology development programs should lead to a series of feasibility demonstrations in the near future. "Based on the results of these demonstrations, the DoD plans to decide in the early 1980s whether to build one or more prototype systems. Thus, if the technology developments are successful, and the laser is proven to be a useful weapon, it will not appear in the field until the late 1980s," according to a senior Pentagon official.

Concurrently, the Department also is "devoting significant resources to an investigation of techniques by which we could harden our weapon systems to increase their survivability in a laser weapon environment," he added.

That same official also disclosed that the individual services are engaged in a series of laser weapon technology demonstrations: "The test-bed for the Air Force program is the Airborne Laser Laboratory (ALL), a highly instrumented NKC-135 aircraft. The Air Force is investigating not only the integration and operation of high-energy laser components in a dynamic airborne environment, but also the propagation of laser light from an airborne vehicle to an airborne target. The Army test-bed is the Mobile Test Unit (MTU), and consists of a moderate power laser system mounted on a USMC LVTP-7 tracked vehicle. The Army is examining the feasibility of laser weapon concepts in uniquely typical Army warfighting scenarios. The Navy is conducting a unified field test program at the San Juan Capistrano facility near Camp Pendelton, Calif. The Navy program places particular emphasis on the integration of an advanced beam control system with chemical lasers.

IMPORTANT SOVIET HIGH-CURRENT ACCELERATORS

IMPUL'S	Lebedev Physics Institute, Moscow
ESU-1	Lebedev Physics Institute, Moscow
NEPTUN	Kurchatov Institute of Atomic Energy, Moscow
TONUS	Tomsk Polytechnic Institute
TEREK-2	Institute of Atmospheric Optics, Tomsk
RIVS-5	Institute of Nuclear Physics, Novosibirsk

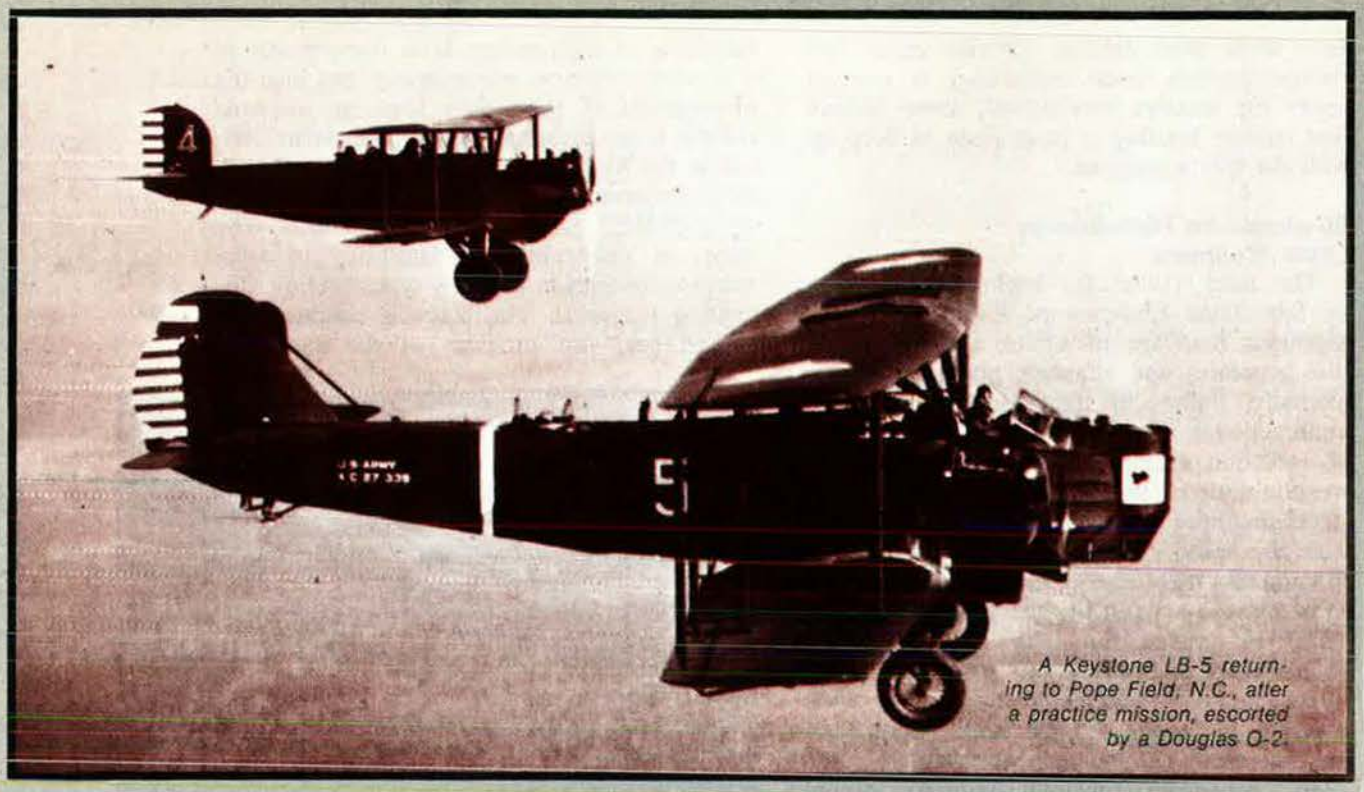
IMPORTANT UNITED STATES HIGH-CURRENT ACCELERATORS

GAMBLE-II	Naval Research Lab, Washington, D. C.
CASINO	Naval Surface Weapons Lab, Washington, D. C.
HERMES-II	Naval Research Lab, Washington, D. C.
REBA	Sandia Lab, Albuquerque, N. M.
AURORA	Harry Diamond Lab, Washington, D. C.
PROTO-I	Sandia Lab, Albuquerque, N. M.

"At this time, it is far too early to identify a military application for which a laser weapon system is uniquely suited. On the other hand, there are numerous applications for which such a weapon system appears attractive. Most obvious is the defense of aircraft, ships, and ground installations against aircraft and missile threats. The use of a laser system to defend satellites also merits consideration since space, having no air, is a natural environment for the propagation of laser radiation over long distances."

The fundamental characteristics of laser weapons, the Pentagon official said, are the potential for great firepower, multiple kills, rapid retargeting, expanded field of fire, the ability to engage high-speed targets, low susceptibility to electronic countermeasures, and low cost per shot. Some lasers may require as little as ten pounds of fuel per shot, he said.

In DoD's view, laser weapons could "eventually revolutionize some aspects of tactical warfare and also may have long-term strategic implications. But we still have a long way to go before the technology reaches operational status." ■



A Keystone LB-5 returning to Pope Field, N.C., after a practice mission, escorted by a Douglas O-2.

THE "LBs"—the LB-1, LB-5, LB-6, and their followers—were truly the Early Birds, and they got not only the proverbial worm but the gremlins and a lot of disgruntled crews as well.

My introduction to the species took place at Langley Field, Va., in March 1929. I was fresh out of Kelly Field where, as a member of the exalted Pursuit Section, I shared the contempt that all fighter pilots shed upon other types, especially bombers. About twenty of us from the Pursuit Section were sent to Langley, where a new pursuit group was to be organized. En route we speculated on the new-type fighters we would get—P-6s or maybe the new P-12. On arrival we were filled with dismay to learn that the pursuit group had been canceled and we would be assigned to the 2d Bombardment Group. The dismay turned to despair when we saw the bombers: Keystone LB-5As.

The LB-5A (Light Bomber—2,000-pound bomb load) was a descendant of the late and unlamented LB-1, built by the Huff-Daland Co., soon to be reorganized as Keystone Aircraft Corp. Both resembled the clumsy old flying kites of World War I. They were awkward and unlovely biplanes made of wood, wire, linen fabric, and a few steel tubes. The LB-1 had a single 800-horsepower Packard "Pegasus" engine. It would make 114 miles per hour at 5,000 feet and had a service ceiling of 11,150 feet. Ten of them were built in 1925, and all were declared obsolete in 1927.

The LB-5A, also built by the Keystone Aircraft Corp., which later became a division of Curtiss-Wright, had two Liberty water-cooled engines which, together, produced about as much horsepower as the Packard Pegasus. Since the airplane would barely fly on one engine, the availability of two engines did not provide an added safety factor; it simply doubled the likelihood of forced landing by engine failure. But the warehouses of the Air Corps were filled to overflowing with Liberty engines produced in World War I, and somehow they had to be used up before modern engines could be produced. I suppose that approach appeared to be as good as any.

Thirty-five LB-5As were produced. They were declared unsatisfactory and dangerous and were out of service by 1930. They were replaced by the LB-6, of which 117 were built. In the LB-6 and its successor, the LB-7, the water-cooled Liberty engines were replaced by air-cooled radial engines. The LB-6 had two Wright "Cyclones" of 525 horsepower each; the LB-7 had two Pratt & Whitney "Hornets" of similar power. Both provided direct drive to the fixed-pitch propellers. The LB-8s, 9s, 10s, and 11s were all LB-6s and LB-7s with geared, air-cooled radial engines.

Progress in the performance of these Keystone bombers was marginal and was due almost entirely to gearing the engines:

	LB-6 and LB-7	LB-8
Maximum Speed, mph	114	126
Rate of Climb, ft. per minute	660	977
Service Ceiling, ft.	13,325	16,800

Keystone Maneuvers

The LB-5A was a particularly unpleasant flying machine. It was underpowered, and the ignition had a tendency to short out during a rainstorm. It was not unusual to see a pilot and copilot wrapping handkerchiefs around the ignition switches in the hope of keeping them dry.

If adjectives should be limited in describing the bird, I think a con

They were slow, unreliable, cold, and short-legged, but many of the men who laid the foundation for our great bomber armadas of World War II cut their teeth in . . .

The Keystone Bombers

UNHONORED AND UNLOVED

BY MAJ. GEN. HAYWOOD S. HANSELL, JR., USAF (RET.)

nsus would agree upon *slow, un-able, cold, uncomfortable,* and *ıort-legged.* The pilots sat in an pen cockpit, side by side. The wind swirled around them from every di-ection. It was not too bad in the ropical summer of Langley Field at ,000 feet but in the winter at 10,000 eet it was simply insufferable.

We did our bombing practice at ,000 feet and 10,000 feet against a arget laid out on Plum Tree Island. The bombardier knelt in painful iscomfort and peered alternately hrough a circular drift sight and a ıechanical bombsight, which had to e wound up like an alarm clock. To stablish a collision course over the ırget, taking care of the wind drift, e called instructions by intercom to ıe pilot, up above, who endeavored ı make flat turn corrections. The ıonologue went something like this: Right . . . right . . . steady . . . left . . hard left . . . HARD LEFT . . . AMN! Let's go round and give it ıother try."

I had only been with the group ɔout three months when we went ı a maneuver. The maneuver area as centered around Wright-Patter-ın Field at Dayton, and the group ok off for Wright-Patterson by way Washington, refueling at Bolling Field. We ran into foul weather and heavy rains over the mountains after leaving Bolling. Our only flying instruments were a magnetic compass, airspeed indicator, and bank-and-turn indicator. The group commander, Maj. Hugh Knerr, tried unsuccessfully to find a hole in the front, and, with night approaching and fuel diminished, he finally decided to land the group in a small sod field at Cumberland, Md. We got in all right, but we filled the field to overflowing with our clumsy, biplane boxcars and the place was deep in mud.

The next day, Major Knerr was most anxious to go on to Dayton. His anxiety to get going was stimulated by the discovery that the Assistant Chief of the Air Corps, Brig. Gen. "Benny" Foulois, had also departed from Bolling Field and had flown through the storm and landed at Wright-Patterson while his combat troops were bogged down in the mud at Cumberland.

Opinion was divided as to whether or not the LB-5s could get out of the small, muddy field. There was a railway embankment at the end of the longest dimension, with multiple telephone lines beside it. Major Knerr was not a man to be deterred by indecision. He resolved to find out whether the LB-5 could make it or not. He called Lt. "Bosco" Schmidt and told him to try it. "Bosco" had been a great lineman at West Point and was something of a celebrity. I was "Bosco's" copilot. We poured the coal to our laboring Liberties and went slithering and sloshing down the field. With a great heave, "Bosco" got her off the ground at the last moment, and we cleared the embankment by several feet.

After this demonstration, the other LBs lumbered into the air, their effort made easier by the fact that we had cleared out the telephone lines for them.

The whole process resembled a practice that I am told is followed by the penguins of Antarctica. A host of penguins assembles in a quacking semicircle near the edge of the ice shelf. Presently some young, imprudent, curious penguin ventures forward to see what all the commotion is about, whereupon a couple of his elders push him over the rim and into the water. At this point the whole gaggle rushes forward and peers intently into the water. If the young penguin comes up, there is no shark lurking there and all the pen-

This later version of the Keystone, designated B-6, had a single fin and rudder and Wright R-1820E engines.

guins plunge joyfully in for their morning swim. In due time, the 2d Bombardment Group joyfully flew to Dayton, where its enthusiasm was somewhat diminished on encountering the jaundiced gaze of General Foulois.

Testing Tactics and Techniques

The LB-6s and their successors with the air-cooled engines were an improvement over the LB-5s, but they brought with them a new annoyance: noise. The first of the series had no collector rings and exhaust pipes. The exhaust came out of short stacks directly into the ears of the pilot and copilot, who sat between the engines. It was literally deafening. And the bombing arrangements were no better.

It is simply amazing that out of this welter of frustration and faulty equipment should come the seeds of American airpower. The answer la not in the machines, but in the mag nificent men who led and manne them. In this regard no one deserv equal eminence with the Command of the 2d Bombardment Gro Maj. Hugh Johnson Knerr. He w one of the true crusaders of strategi bombardment, and, with Billy Mitch ell, one of its first martyrs.

Hugh Knerr was handsome, digni fied, stalwart, charismatic, and

Wingspan of the Liberty-engine-powered LB-5 was sixty-seven feet. Its empty weight was about 7,000 pounds.

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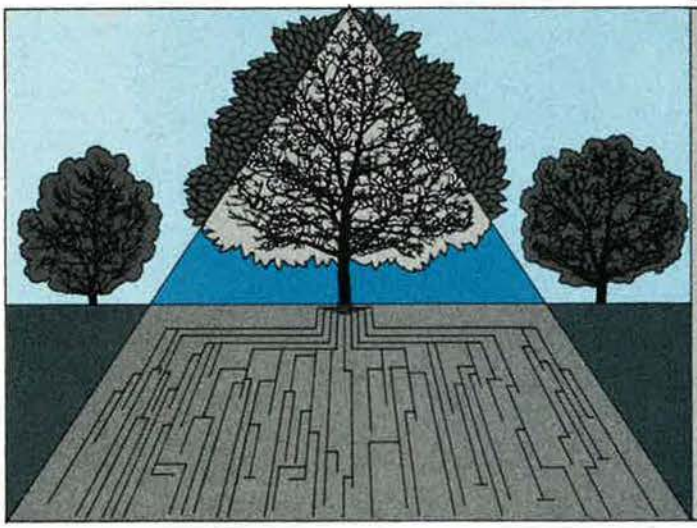

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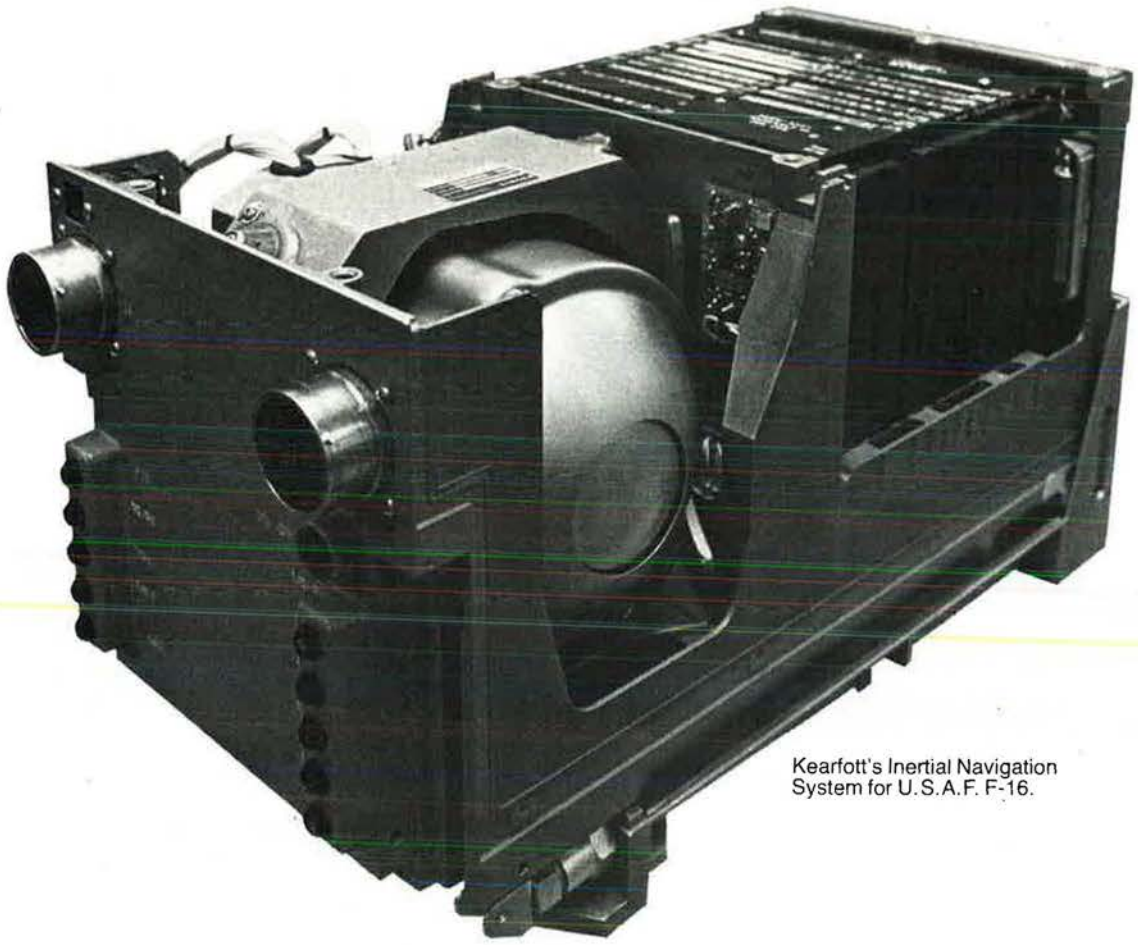
'HANGING THE COURSE OF MANAGEMENT

THE STANDARD FOR INERTIAL NAVIGATION SYSTEMS



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- Aircraft Attitude—Pitch, roll, Heading (True and Magnetic)
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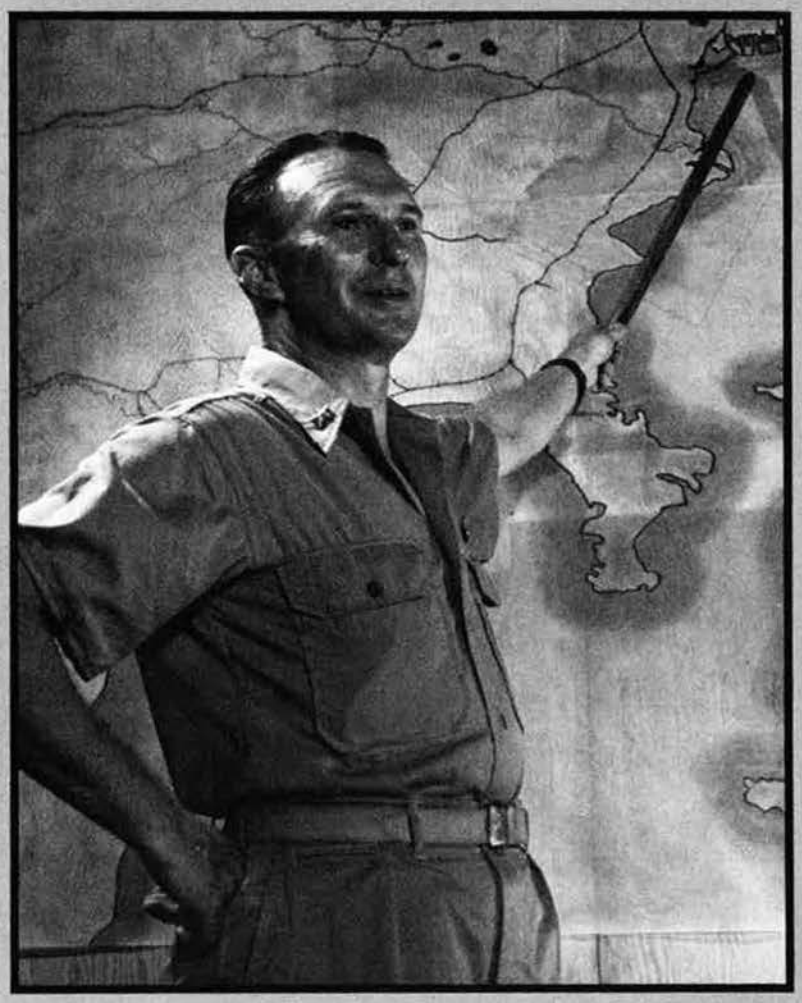
courageous leader of men. A graduate of the Naval Academy, he devoted his great abilities without stint to the development of the air striking force. His idea of leadership was to *lead*, an idea I admired at the time and have admired ever since. Under his leadership, tactics and techniques were developed that proved invaluable when modern bombers made possible the attainment of his vision. As one example, the 2d Bombardment Group developed two types of formation that saw service in World War II. One was "attack column," in which the group formed a column of three-airplane elements, closely flown and stacked *down*. This gave a clear field of fire for all the top gunners to concentrate against pursuit attacks from the most vulnerable direction—the rear. But it was not a satisfactory bombing formation.

Another was "javelin," in which the lead flight was followed by a flight on its right, stacked above it, and a flight on its left, stacked below it. On turns, the two side flights simply swung into column behind the leading flight and then slid out again when the turn was completed. It provided great flexibility. This same concept was developed into the standard formation of the Eighth and Twentieth Air Forces in World War II.

But, despite our loyal contentions, those slow, clumsy, ill-defended LB-5s and 6s were no match for a well-trained and well-equipped pursuit force. Our bombers were woefully deficient in defenses. There were two possible antidotes: night operations and improved defensive firepower. Emphasis was placed on the first. Since there were no night fighters to contend with, elaborate tactics were worked out for penetration of anti-aircraft defenses at night. The primary effort was to cause confusion or the sound locators that directed the searchlights. The guns could not operate unless the target-airplane was illuminated. This was, of course, before the days of radar. But the emphasis of bombing was still directed toward destruction of selected targets—not area targets. Flares were used to illuminate the targets for the bomb-sighting operation.

Unfortunately, the alternate approach—greatly improved defensive firepower—was neglected. Tables of organization included gunners, but the slots were never filled. In those days of small budgets there simply was insufficient money to pay for gunners. Crew chiefs and armorers were designated "gunners" in addition to their other duties. This was entirely inadequate. They were plenty busy with their ground jobs, and were never trained in aerial gunnery. For that matter, there were no gunnery instructors who were proficient in that most difficult art—flexible aerial gunnery. And little attention was paid to turrets and improved guns. Great strides were made in pilotage and navigation, and in bombing, but none in gunnery. It was an oversight for which we later paid dearly in the early months of the air offensive against Germany.

But the most outstanding characteristic of the 2d Bombardment Group was its morale—and that was a product of Hugh Knerr. We made several cross-country flights to the West Coast and back, and we paid in fatigue for our lack of speed in the air. Ten to twelve hours of flying a day for three or four days in a row might be expected to take their toll. But the group always tightened up its formation and passed in review at each stop. In fact, the group acted just as though it were flying fine bombers and could do all the things Hugh Knerr and the other commanders said it could do.



Pursuit pilot Hansell survived the traumatic transition to Keystones and became a big bomber man. Here he briefs his XXI Bomber Command for the first mission from the Marianas.

Eagles From the Keystone Rookery

Hugh Knerr himself paid a heavy price for his leadership. After a mag-

Maj. Gen. Haywood S. "Possum" Hansell received his wings and commission in February 1929. During the early 1930s, he was a member of Claire Chennault's aerobatic team, "Three Men on a Flying Trapeze." After tours of duty in the Air War Plans Division, AAF, and the Joint Strategic Committee of the Joint Chiefs of Staff in 1941–42, he commanded the Eighth Air Force's 3d Bomb Wing and 1st Bombardment Division, and later the XXI Bomber Command (B-29s) in the Pacific. General Hansell retired in 1946 but was recalled in 1951, becoming Senior Air Force Member of the Military Studies and Evaluation Division, Weapon Systems Evaluation Group, of OSD. He is the author of The Air Plan That Defeated Hitler *(1972), and of many articles on military affairs.*

nificent career, he was cut down at the very height of his contribution to the development of strategic airpower. He suffered the fate of many principled pioneers who have refused to compromise with their perception of truth and national need. When the GHQ Air Force was established in 1935, under Brig. Gen. Frank M. Andrews, Hugh Knerr was chosen to head its staff. It was a superb staff: Knerr as Chief of Staff; Harvey Burwell as A-1; Follett Bradley as A-2; George Kenney as A-3; Joseph McNarney as A-4. But Hugh Knerr found himself at cross-purposes with his superiors in the War Department. The GHQ Air Force was divorced from Air Corps control and placed directly under the War Department General Staff, probably in order to keep it closely under Army control. Many on the General Staff viewed the GHQ Air Force as they viewed GHQ Artillery—a pool to be parceled out to meet emergencies or to support the main thrusts of an Army campaign.

The staff of the GHQ Air Force, on the other hand, considered it a strategic striking force to be operated as a unit for attaining strategic objectives beyond the reach of surface forces. Knerr's insistent advocacy of this concept aroused the animosity of the War Department, and Knerr was summarily dismissed from his post and sent to an Army Corps Area where his aviation command consisted of one observation plane. He retired from the service before the outbreak of World War II.

But his talents as a leader in the theory and practice of aerial bombardment were too precious to waste. When Gen. Carl "Tooey" Spaatz became Commanding General, US Strategic Air Forces in Europe, he succeeded in bringing Hugh Knerr back to a high position, as Deputy Commanding General for Administration and Logistics on the team whose other Deputy Commanding General was Maj. Gen. Frederic Anderson, Deputy for Operations.

Behind Hugh Knerr in the early 1930s ranged a host of great leaders who served their time in the LBs: Harold George, Ken Walker, Gene Eubank, Bob Olds, Bob Williams, Tommy Power, Larry Kuter, Hamp Atkinson, Frank Armstrong, to name a few who flew the old LBs and laid the foundations for the great and decisive air armadas of World War II.

Perhaps the final accolade should go to Ken Walker, who fashioned the precept that he gave his life to uphold:

> A well-planned, well-equipped, and well-organized bombardment attack, once launched, cannot be stopped.

Brig. Gen. Kenneth N. Walker, Commanding General, V Bomber Command and Medal of Honor winner, was shot down over Rabaul on January 5, 1943, while flying a B-17 Flying Fortress. He, too, believed in Hugh Knerr's idea of personal leadership. His magnificent contributions found their roots in those awkward fledglings—the old LBs.

It may be unkind and unfair to judge the early bombers so harshly. They served a useful purpose, and the people who procured them made the only sensible decision in facing a choice between two undesirable alternatives: Keystone bombers at less than $50,000 each, or no bombers at all. Money for airplanes was very scarce indeed, and the War Department favored buying pursuit types that would provide air superiority over the battlefield. Without the old LBs there might have been no development of a bomber force at all. They did make training possible.

The LBs were unique in one respect: They did not engender the affection that aviators normally lavish on their planes. The Curtiss fighters the contemporaries of the LBs, received the love and loyalty of their pilots. They were beautiful to look at and to fly. But the old bombers were neither, though they proved to be the progenitors of the later types that made airpower a proud reality. They deserve our appreciation, even if they failed to arouse affection.

All this set the stage for a giant step, to the all-metal monoplane, the B-10, by way of the B-9, and on to the Flying Fortress, the Liberator and the Superfortress. The old LBs should at least be limned in the reflected glory.

This LB-6A, still another version of the Keystone, had twin tails and two Wright Cyclone engines.

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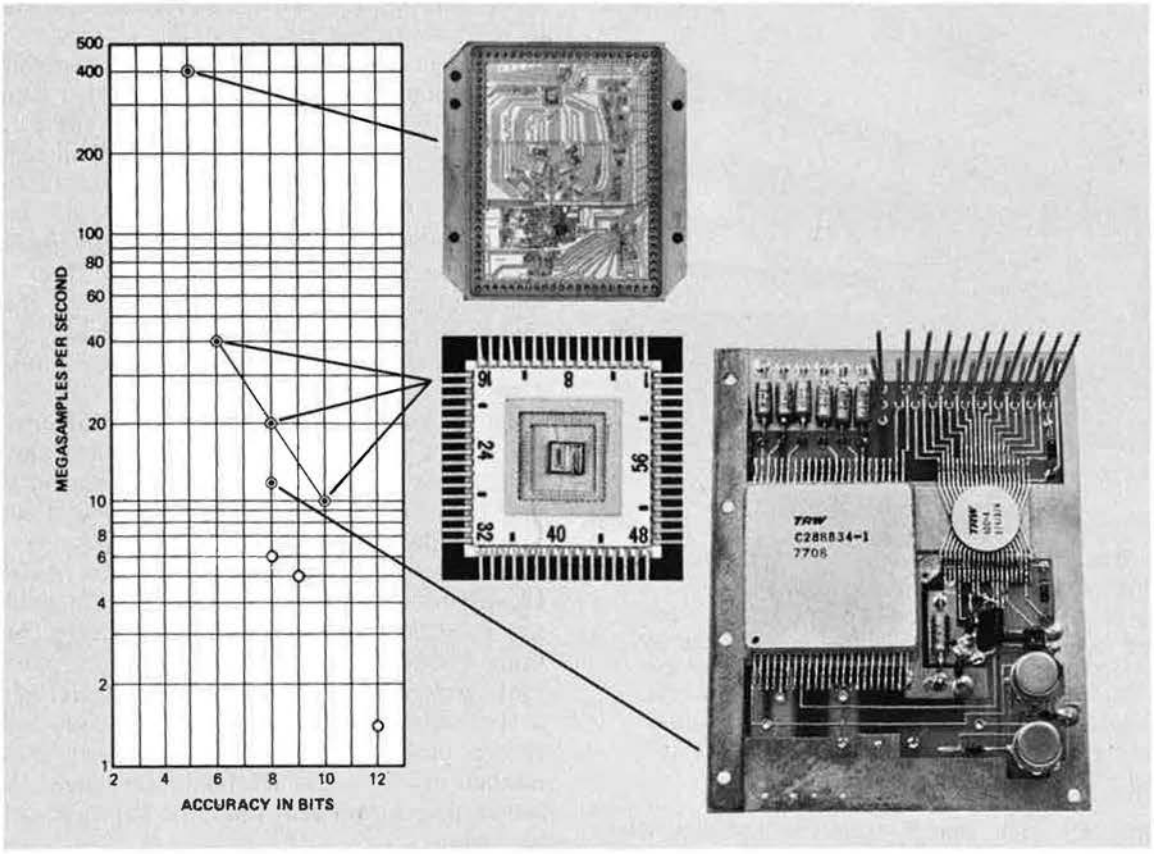

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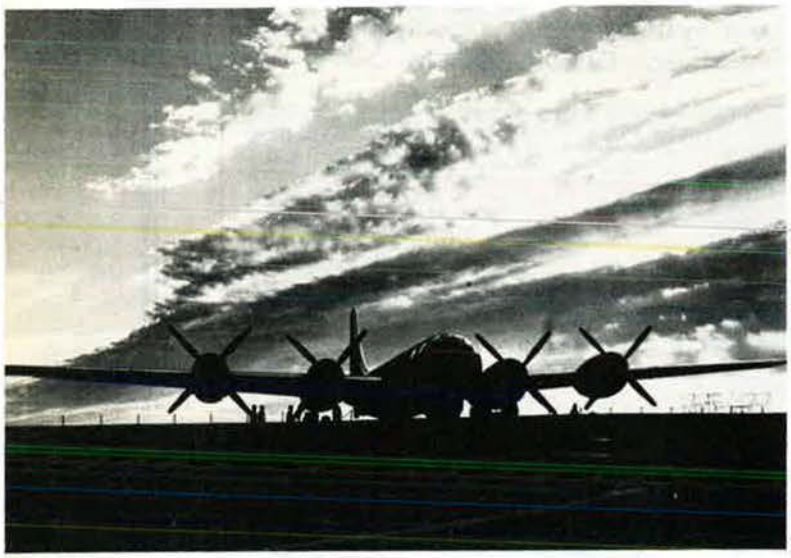
The men of the 73d Bomb Wing who took the B-29 to war met recently for their second reunion. In retrospect, that long-ago experience in the Pacific against Japan was, as one of them put it . . .

'The Biggest Year of My Life!'

BY DAVID A. ANDERTON



The B-29 Superfortress brought the war home to Japan.

"My boot got caught up on the escape hatch, and I was hanging down the side of the fuselage. . . ." "We never dared put the nose up to climb until the airspeed read 210 miles per hour. . . ." "Had to bow to the guard every time I wanted to go to the latrine, ask his permission in Japanese. . . ." "Fighter cut right through the tail of the B-29 ahead of us, and the airplane just flat pitched on its nose and turned into pieces of tinfoil."

REUNION talk: The shared experiences of men who went to war together, fought together, and lived to talk about it years later.

The 73d Bomb Wing, USAAF, one of five that took the Boeing B-29 Superfortress to war over the home islands of Japan, met for a reunion—their second—late in May at Colorado Springs. They came from Searchlight, Nev., and Anamosa, Iowa; from Brown's Valley, Minn., and Mexico, Mo. Eighty of them, they shared a common bond that spanned the thirty-two years since they had been part of the victory of airpower over Japan.

In that war, long ago and far away, there had been a Superfort named *Irish Lassie*. Rammed twice by defending fighters, once before and once after bomb drop, she lost eight feet of left aileron, one-third of the left landing flap, the complete left stabilizer, and all of the control cables on the left side. She spiraled down, slowly and upright, far out of formation, to be jumped by a stream of fighters.

Wrestled under control, she headed home after more than an hour under attack and with two wounded on board. It was 1,200 long miles back to Saipan, and *Irish Lassie* was badly hurt. On the final approach at Saipan, she mushed straight for the face of the cliff at the end of the runway. At the last second, brute force on the controls hauled her nose up just enough. *Irish Lassie* touched the runway. The nosewheel collapsed, the number one engine flamed suddenly, the wingtip caught an embankment. She spun partway around, the burning engine tore off, and the careening mass slid to a stop.

Three Air Medals, two DFCs, two Silver Stars, and two DSCs came out of that wild ride. The crew of *Irish Lassie* survived, not without permanent scars, and nine of Lieutenant Avery's wartime crew of eleven were at Colorado Springs.

Wartime crew references—Lieutenant Avery's crew, Lieutenant Arbon's crew (seven of them made the reunion)—were the only mentions of rank you migh hear. The 73d Bomb Wing Association policy is tha ranks were left on Saipan. And so a major general an a thrice-busted master sergeant reminisce loudly in corner, profanely, with much backslapping and muc mutual use of very informal nicknames. They ha served time in adjacent cells in a Japanese prisoner-o war camp.

"He saved my butt; he did my work detail as well as his and saved me from getting beaten to death when I was too sick to stand up. . . ." "I figured that my daughter was born about when we were over the target, so I painted her name at my tail turret position. . . ." "It was lonely up there, pitch black except for those damned searchlights, and I kept praying they wouldn't find us."

Retired Maj. Gen. Haywood Hansell, "Possum" the 73d and, in their eyes, maybe just a couple of ste lower than God, spoke at the banquet. As the first co mander of XXI Bomber Command, and a long-ti

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strategic planner, he was able to look back on the history of the wing and its reasons for being.

"In October 1944, I got a call to go see General Marshall. He said the joint strategy for the Pacific had been laid out, and he wanted to know whether we could carry out our first attack on Japan in the month of

Nine of the eleven crew members of Irish Lassie, *a tough lady from the 497th Bomb Group who got back home, at the reunion of the 73d Bomb Wing Association. Left to right, CFC gunner James F. McHugh; copilot Leonard Fox; radar operator Lewis E. Nellums; left gunner Clarence O. Leach; tail gunner Charles Mulligan; bombardier Corral Gage; radio operator Walter Klimczak; right gunner Marvin E. Meyer; flight engineer Robert Watson.*

November. He wanted a commitment on that. Now obviously I couldn't very well tell him we couldn't do it, so I told him, yes, we could. And I said we not only could, but would."

Hansell described arriving on Saipan, having been led to believe he would find two bases, each with paired 8,500-foot runways, 100 hardstands, and the necessary shops, warehouses, and storage facilities. But *Joltin' Josie,* piloted alternately by Hansell and Maj. Jack Catton, touched down on the only half-finished runway, paved for 6,000 feet. The other base was useless for B-29 operations. There were no buildings, not enough hardstands. And the first attack was thirty-five days away.

It had been planned as a joint operation with the Navy, but Adm. Chester A. Nimitz later called off the Naval units for action elsewhere. He also requested that the Joint Chiefs of Staff stop the B-29 operations until the Navy could furnish the support they would so obviously need.

Then, said Hansell, Gen. George C. Kenney, MacArthur's top air officer in the Pacific, came up with some very persuasive arguments why we couldn't do the mission. Gen. H. H. Arnold said that all of his senior air commanders seemed to agree with that view. Nimitz further requested that the entire B-29 operation be assigned to aerial mining under his direction. And as the last straw, Brig. Gen. "Rosie" O'Donnell, then commanding the 73d Wing, told Hansell frankly that he thought the wing was unprepared to do the daylight precision bombing mission, and proposed that the mission be changed to night operations.

"So at that time, the entire weight of the future was resting on the 73d Wing: The air offensive against Japan proper, the future of airpower in the Pacific until the Korean War, the future of the United States

Writer/photographer Dave Anderton spent thirteen years on the staff of Aviation Week and Space Technology *before turning to free-lancing. Among his books is* Strategic Air Command, *published last year by Charles Scribner's Sons. He is now at work on the story of the B-29 in World War II and Korea.*

Air Force. I took a deep breath and decided to take a chance, and we did issue the orders to go ahead with the mission.

"You know what happened from then on. It was successful. It did open the way. It did lead to victory over Japan by airpower."

It's good to be reminded of these things periodically; the memory tends to gloss over the grand concepts and strategies as accepted facts, and to concentrate on the details, like the sound of bullets hitting the fuselage, or the buoyant lift at bombs away, or the smell of the cockpit.

The basic concepts of strategic airpower, the idea of independent command and control of air units, and eventually the independent air force, were nurtured in such organizations as the 73d Wing. The ideas were older than the wing, older than the war. But they needed the force of successful examples to make the point clearly at the highest levels of government.

The 73d—and the other wings during that war—laid

Arbon's Angels, *a combat crew from the 500th Bomb Group, flew that airplane and another B-29 named* Homing Device. *Left to right, left gunner David Walker, aircraft commander and pilot Harold Arbon, radar operator Melvin Johnston, crew chief Glen Bond, flight engineer James Dambold, navigator L. K. Walker, and copilot Myler Bivins.*

the foundations for an independent United States Air Force by showing that it could work, that airpower, properly applied, could hammer an enemy to his knees, could force a surrender, could enforce a peace.

Directly, these men were the major factor in the defeat of Japan. With their comrades-in-arms, they became the reason there was to be a United States Air Force soon after the war.

". . . all of a sudden, the searchlights caught him. . . ." "They said the flak and the fighters couldn't reach us. I'd like to know where the hell all the holes in the fuselage came from. . . ." "That APQ-13 radar worked part of the time most of the time. . . ." "Queen of the skies—there never was an airplane like her. . . ." "The biggest year of my life, and that's a fact!" ■

Airman's Bookshelf

Aftermath of Tet

The Unmaking of a President: Lyndon Johnson and Vietnam, by Herbert Y. Schandler. Princeton Univ. Press, Princeton, N. J., 1977. 419 pages, including appendices, bibliography, notes, index. $16.50.

In the year 1789—in a feat renowned in Vietnamese military annals—the Emperor Nguyen Hue shattered the sacred festival of Tet with a devastating surprise attack on Chinese forces holding Hanoi in support of a puppet government. Nearly two centuries later, in January 1968, Vietnamese Communist forces once again destroyed the peaceful sanctity of the Tet holiday with a series of coordinated and unexpected assaults on major population centers in South Vietnam.

Unlike the earlier blow, the 1968 Tet offensive was a military failure. But it was a political and psychological victory of such magnitude that it opened the way for the final overwhelming triumph of Communist arms more than seven years later.

How this came to pass is told fully and dispassionately in what is probably the best analysis of Tet and its impact yet to appear in print. The author, a retired Army officer with former service in Vietnam and in the Office of the Assistant Secretary of Defense, International Security Affairs, brings to his subject detailed knowledge, perceptive analytical ability, and a clear, simple literary style.

His study is based on a wealth of new material: the *Pentagon Papers* (for which he wrote the two sections on the Tet offensive), previously unavailable military records, the recently published memoirs of key figures, and interviews and personal correspondence with most of the main participants in the decision-making process.

From these sources, Herbert Schandler has developed a fascinating and convincing picture of the post-Tet reevaluation of American means and objectives, of subsequent crucial decisions, and of the self-imposed new limitations that led to ultimate American withdrawal from Vietnam. He explains and clarifies the role of each decision-maker, correcting earlier misperceptions and oversimplifications. Particularly welcome is his revealing discussion of General Westmoreland's famous 200,000-man troop request, of which so much has been written, with so little understanding.

Dr. Schandler's analysis of Vietnam policy- and decision-making has been called a "second-generation" study, because it utilizes new sources and, more importantly, strives to be objective rather than simply impressionistic or emotional. Nearly a decade after the trauma of Tet, it is evident that only a cool, deliberate, and balanced approach will do justice to the complexities and passions of this subject. Clearly, the second generation is better than the first.

—Reviewed by Dr. Stanley L. Falk, Chief Historian, USAF.

The Road Ahead

Defending America: Toward a New Role in the Post-Détente World, with an introduction by James R. Schlesinger. Basic Books, New York, N. Y., 1977. 255 pages with index. $13.95.

The flavor of this book can be gained by a sampling from several of the fourteen eminent authors:

"Negotiations must not proceed on expectations that the Soviets have had a change of heart or are willing to embrace our Western beliefs regarding stability."—James R. Schlesinger

"We can be sure that it is imprudent and implausible to conduct a foreign policy based on holding back new Soviet expansionism without getting rid of the last vestiges of the illusions bred by détente."—Theodore Draper

"Communism in Western Europe will be one of the central issues facing US foreign policy in the years to come, perhaps the most important issue. . . . There may be coalition governments in the years to come in one or two West European governments in which the Communists will be represented. But there is nothing inevitable about this process, and through its continued military and political presence America certainly has the power to guarantee that the process will not be irreversible."—Walter Z. Laqueur

"In our time the oil, the people, and the space of the Middle East are more obviously a key to the control of Europe than at any previous point of history."—Eugene V. Rostow

"We should not delude ourselves with the comforting thought that 'trade is the road to peace'; the converse is more correct, if history is an indication."—Gregory Grossman

"A clear distinction should be made between the two aspects of nuclear strategy: the counterforce aspect and the countervalue aspect. Neither can be ignored; both are essential to meaningful deterrence. . . ."—Paul H. Nitze

"The single issue of human rights tells us the essential nature of the Soviet political culture and its attitude to aberrant nations as well as individuals. And therefore the human rights issue is the crucial test when it comes to establishing peace in a durable sense."—Robert Conquest

"Détente might have done much to improve the quality of life in the Soviet Union. In actual fact . . . increasing military budgets have reduced opportunities to improve living standards while repression of dissidents has actually increased under the protective mantle of détente."—Leonard Schapiro

"The crucial question about Soviet-American relations is not so much the matter of Soviet actions intentions, and capabilities as it is

the matter of American staying power in a long and obdurate game. . . ."—Paul Seabury

Students of military affairs or, indeed, anyone interested in fortifying himself intellectually to discuss US defense policy, will find this book a useful resource.

—Reviewed by Maj. Gen. Robert N. Ginsburgh, USAF (Ret.).

New Books in Brief

All Quiet on the Eastern Front: The Death of South Vietnam, edited by Anthony Bouscaren. The author has compiled an impressive collection of writings on what went wrong in Vietnam and why. Included are opinions of high-ranking diplomats, senior military officers, Vietnam correspondents, and academicians. Most believe South Vietnam was worth saving and that it could have been saved, but they disagree on the reasons for failure. Problems facing the US in Africa, the Middle East, and other areas can be better understood once one reads their critical evaluations of a policy that failed but one that could be repeated in the future. Devin-Adair Co., Old Greenwich, Conn., 1977. 164 pages. $5.95 paperback.

Battle of Bull Run, by William C. Davis. Some optimistic Washingtonians packed a picnic and traveled to Manassas to watch what they thought would be the first and last battle between North and South. "The twilight of America's innocence," the author calls it. But the mood would blacken when the Union's humiliating defeat signaled that a long and bloody war was at hand. Notes and index. Doubleday & Co., Garden City, N. Y., 1977. 298 pages. $9.95.

Brassey's Artillery of the World, edited by Shelford Bidwell. Design, performance, and specifications of the world's artillery are described in text and photos in this large-size volume. The book is intended for staff and instructors of third world and independent armies. Westview Press, Boulder, Colo., 1977. 274 pages. $39.50.

Defence Yearbook 1976/77, by Royal United Services Institution and Brassey's. This eighty-seventh edition of Brassey's includes contributions by distinguished US, British, and German authors who discuss the application of technology in modern war; conflicts in Angola, Northern Ireland, and Lebanon; transnational terrorism; internal security; NATO's maritime forces; and the relationship between Iran and CENTO. Includes defense literature published between June '75 and May '76 and a chronology of major events. Westview Press, Boulder, Colo., 1977. 377 pages. $27.50.

Destination Disaster, by Paul Eddy, Elaine Potter, and Bruce Page. This book purports to be "investigative" reporting by three British journalists who spent two years studying the March 3, 1974, crash of a Turkish Airlines DC-10, outside Paris. All aboard, 346 persons, were killed. McDonnell Douglas, the aircraft manufacturer, is among those blamed for the disaster. Quadrangle/New York Times Book Co., 1976. 284 pages plus appendices. $12.50.

The Development of Naval Thought: Essays by Herbert Rosinski, compiled by Lt. Cmdr. B. Mitchell Simpson, USN. One of the early authorities on military and seapower theories analyzes their application before and during WW II. Commander Simpson, who compiled these essays and who edits the *Naval War College Review,* says the author's writings were a logical continuation of his forebears, particularly Mahon and Corbett. Naval War College Press, Newport, R. I., 1977. May be ordered from the Superintendent of Documents, Government Printing Office, Washington, D. C. 139 pages. $2.75.

Final Approach: The Crash of Eastern #212, by William Stockton. Two veteran pilots thought their separate altimeters read 1,650 feet. Incredibly, both were wrong. The plane's altitude was 650 feet, but dense fog and other problems prevented the pilots from realizing their fatal error until too late. Here is a meticulously researched and chillingly suspenseful account of an avoidable plane disaster that took place in September 1974. Doubleday & Co., Inc., Garden City, N. Y., 1977. 276 pages. $7.95.

Fourteenth Air Force Story, by Kenn C. Rust and Stephen Muth. Here is the story of the Fourteenth Air Force in WW II, with combat photos, maps, tabulations of squadron movements, and activities from combat readiness to the close of the war. Historical Aviation Album, P. O. Box 33, Temple City, Calif. 91780, 1977. 64 pages. $6.95.

The Guerrilla Reader, edited by Walter Laqueur. Two centuries of guerrilla warfare, from eighteenth century Prussian thinking to key works of today's third-world guerrillas, are covered in this comprehensive anthology. Theories, ideology, strategy, and tactics are explained. Bibliography. The New American Library, New York, N. Y., 1977. 746 pages. $5.95.

Historical Aviation Album, produced by Paul R. Matt. This fifteenth volume in the All American Series features the Douglas "Havoc"; Berliner-Joyce XF3J-1; and the Aeronca Models K and L. Last chapter is a biography of Rex Beisel, former aircraft designer and Vought executive. Historical Aviation Album, P. O. Box 33, Temple City, Calif. 91780. 355 pages. $7.50.

A Hostile Sky: The Mediterranean Airwar of the 79th Fighter Group, by Don Woerpel. The author has produced a well-written and well-researched account of the AAF's 79th Fighter Group from its activities in early 1942 until the end of hostilities in Europe three years later. Includes more than 200 photos. Index, bibliography, appendices. The Andon Press, P. O. Box 374, Marshall, Wis. 53559. 260 pages. $19.50 postpaid.

The Instrument Flight Manual, by William K. Kershner. Completely revised, illustrated, and updated from the second edition, this manual offers everything an advanced pilot must know to earn an instrument rating. Appendices, index, bibliography. Iowa State University Press, South State Ave., Ames, Iowa 50010, 1977. 220 pages. $10.95.

Lonely Vigil: Coastwatchers of the Solomons, by Walter Lord. Some were planters and traders while others were drifters before the war. During it they were "guardian angels" and legendary figures to the Allied troops. They were the eyes and ears of the Allies in Japanese-held territory. Each lived in constant danger and often alone. Here in rich narrative is their story. Pho-

Airman's Bookshelf

tos, index. The Viking Press, Inc., New York, N. Y., 1977. 322 pages. $12.50.

The Medley of Mast and Sail: A Camera Record, by Frank G. G. Carr. Here are 407 photo-illustrations of many of the world's vanished sailing ships, both great and small, accompanied by comment and description, printed on high-gloss paper. Naval Institute Press, Annapolis, Md. 21402, 1977. 328 pages. $21.95; *Victorian and Edwardian Sailing Ships From Old Photographs,* by Basil Greenhill and Ann Giffard. The elegance of the old sailing ship is depicted in photos and text in this volume that scans British and Scottish ports for stunning views of ships, shipbuilders, wrecks, disasters, and the sailor's life. Naval Institute Press, Annapolis, Md. 21402, 1977. 144 pages. $7.95.

The Moon Book, by Bevan M. French. In layman's language, the author discusses what scientists have learned from the Apollo program and its investigation of the moon. Since 1969, twelve men have walked the moon, and now about a fourth of its surface has been photographed, mapped, and chemically analyzed. Here are the results. Photos, index. Penguin Books, New York, N. Y., 1977. 287 pages. $4.95.

The Observer's Book of Aircraft, compiled by William Green. Twenty-sixth edition of this annual pocket reference details in text, specifications, photos, and three-view drawings the world's aircraft currently in production or under test or scheduled to begin testing during 1977. Index. Charles Scribner's Sons, New York, N. Y., 1977. 254 pages. $2.95.

The Psychopathic God, Adolf Hitler, by Robert G. L. Waite. This book tells the ordinary reader more than he wants to know about Hitler. But for the serious student of the German dictator and his times, it is required reading. Not a biography so much as a personality study, this book will make your flesh crawl. On the bookshelf, it belongs next to Walter C. Langer's 1972 study called *The Mind of Adolf Hitler,* which was a secret psychological report actually written in 1943 for the OSS. Basic Books, Inc., New York, N. Y., 1977. $13.50.

RAF Fighter Units, Europe, September 1939–March 1942, by Bryan Philpott. This is first in a new series (AIRCAM/AIRWAR) written and illustrated by leading military aviation specialists that, when complete, will be a history of the operations of the world's major combat air forces. While the men who flew, serviced, and supported the aircraft are described, major emphasis is on the aircraft themselves. Other volumes now available: *USAAF Heavy Bomber Units, Europe and Mediterranean, 1942–45,* by Jerry Scutts; *Spanish Civil War Air Forces,* by Christopher Shores; and

uftwaffe Ground Attack Units, 939–45, by Martin Pegg. Sky Books Press, Ltd., New York, N. Y., 1977. Each volume 48 pages, large format. $6.70 postpaid.

Service Etiquette, by Oretha D. Swartz. A completely revised and updated guide to the military social scene. It answers such questions as how to address an invitation to a married military couple when the woman outranks her husband. Naval Institute Press, Annapolis, Md. 21402, 1977. 582 pages. $14.95.

Spitfire at War, by Alfred Price. Spitfire was the most famous aircraft ever to serve in the Royal Air Force. The author, recently retired from the RAF, objectively analyzes the Spitfire legend. Photos. Charles Scribner's Sons, New York, N. Y., 1977. 160 pages. $10.95.

Strategic Survey 1976, by The International Institute for Strategic Studies, London. Each April, the Institute publishes a review of the events and trends in world security and arms limitation that occurred during the previous year. Latest edition finds several new elements affecting world security, from Soviet civil defense and military competition in space to international arms transfer and Soviet weapons development. The International Institute for Strategic Studies, 18 Adam St., London WC2N 6AL, England, 1977. 134 pages. $4.

A Subject Bibliography of the Second World War, by A. G. S. Enser. This volume will help the enthusiast or researcher find WW II books published in English throughout the world, from the beginning of the war to the end of 1974, and will be updated with periodic supplements. Westview Press, Boulder, Colo., 1977. 592 pages. $25.

The Tale of Two Bridges and *The Battle for the Skies Over North Vietnam,* edited by Maj. A. J. C. Lavalle. This first volume in USAF's Southeast Asia Monograph series documents the story of airpower and the people behind it. Photos, index, glossary, 1976. 193 pages. $2.20. *Airpower and the 1972 Spring Invasion,* edited by Maj. A. J. C. Lavalle. Second volume in the Air Force series recounts events and operations that took place during North Vietnam's spring invasion of the South. Photos, index, glossary, 1976. 113 pages. $1.60. Both books available from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

Understanding the Soviet Military Threat: How CIA Estimates Went Astray, by William T. Lee. A specialist on Soviet military and economic affairs and a contributor to AIR FORCE Magazine's Soviet Aerospace Almanac issue describes how official US estimates of Soviet might were reached and why they were wrong. He argues in part that the bias for underestimating Soviet intentions resulted from an overreaction to what the intelligence community perceived as "past mistakes" and the tendency to align Soviet intentions with our own. Appendices. National Security Information Center, Inc., New York, N. Y., 1977. 69 pages. $2.

—Reviewed by Robin Whittle

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Europe: Brussels, Belgium

In early summer of 1943, the future of the US precision bombing campaign in Europe—and perhaps of an independent US Air Force—hung in the balance. Whether daylight precision bombing could be effective and how the campaign must be conducted were largely decided by the . . .

Decision Over Schweinfurt

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

A BOOK has just come out, after all these years, that tells the Eighth Air Force story pretty straight. It is called, somewhat ambiguously, *Decision Over Schweinfurt* (David McKay Co., Inc., New York, N. Y., 1977. 373 pages. $12.50), and it is by Thomas M. Coffey, a writer whose painstaking research provides a solid foundation for this well-written account of a decisive period in Air Force history. More than that, the book is a nostalgic trip for those of us who served in the Eighth Air Force during that spring and summer of 1943.

In the bleak days that followed those missions where the Luftwaffe seemed the winner, we used to wonder if someone higher up had a plan, and if the plan made any sense. It was hard, looking at all the empty breakfast chairs, to believe there was any real logic behind what we were doing. The B-17 groups all had resident amateur actuaries ready to prove, over a glass of beer, that your chances of completing a tour were somewhere between slim and zero.

This book clears up the doubts. There was a plan, and the Eighth Air Force Commander, Lt. Gen. Ira Eaker, was fighting in 1943 for the existence of daylight strategic bombing. In a very real sense he was also fighting for the recognition of airpower as an equal partner in the war. Eaker's opposition was everywhere he looked. The British had no confidence in the precision daylight theory, and they were losing patience with the slow American force buildup and the inconsequential targets the Americans seemed to be focusing on: shallow penetration into France while the RAF hammered German cities by night.

Across the Atlantic, there was opposition to the Eighth by those who believed the resources being spent on a B-17 buildup in England could be better used in other ways. The Navy wanted the effort diverted to naval aviation; the Pacific commanders wanted more of everything, including B-17s, for that war; and even the Mediterranean theater was making claims on Eaker's force. As the spring of '43 turned into summer there in England, the future of the Eighth and the whole precision bombing campaign against Germany was in the balance. Things had reached a decision point. Without adequate fighter escort, without, in fact, an adequate bomber force, the time had come to prove that daylight bombers could go deep into Germany. Thus, the August 17 Schweinfurt/Regensberg mission.

The book tells the story of that day in fascinating detail and very much as I remember it. Among the few in each group who knew of this impending deep strike there was no doubt as to the importance attached to the targets, especially the ball-bearing works at Schweinfurt.

The morning of August 17 came up foggy all through the Midlands country north of London, and Coffey tells of the growing suspense in the grounded 1st Division—the Schweinfurt force—as the Regensberg-bound force of Col. Curtis LeMay took off from its 3d Division bases. When the 1st Division did get off and head for Schweinfurt, the diversionary value of LeMay's force was lost, and the Luftwaffe was again ready. The 1st Division took a beating.

Coffey is kind in his description of the bombing results that day. Whereas the strike against the Messerschmitt factory at Regensberg was a superb example of what daylight precision bombing was all about, my own recollection of the Schweinfurt results is that there was considerable disappointment when the post-strike photos were analyzed. Still, according to Coffey's research, thirty-four percent of Schweinfurt's production was knocked out.

However, the American theory of how to fight the air war was still very much in doubt, for it seemed clear the Eighth had received unacceptable damage on August 17. The subsequent missions to easy targets in the next few weeks seemed to confirm the skeptics' questions as to the viability of daylight deep-penetration.

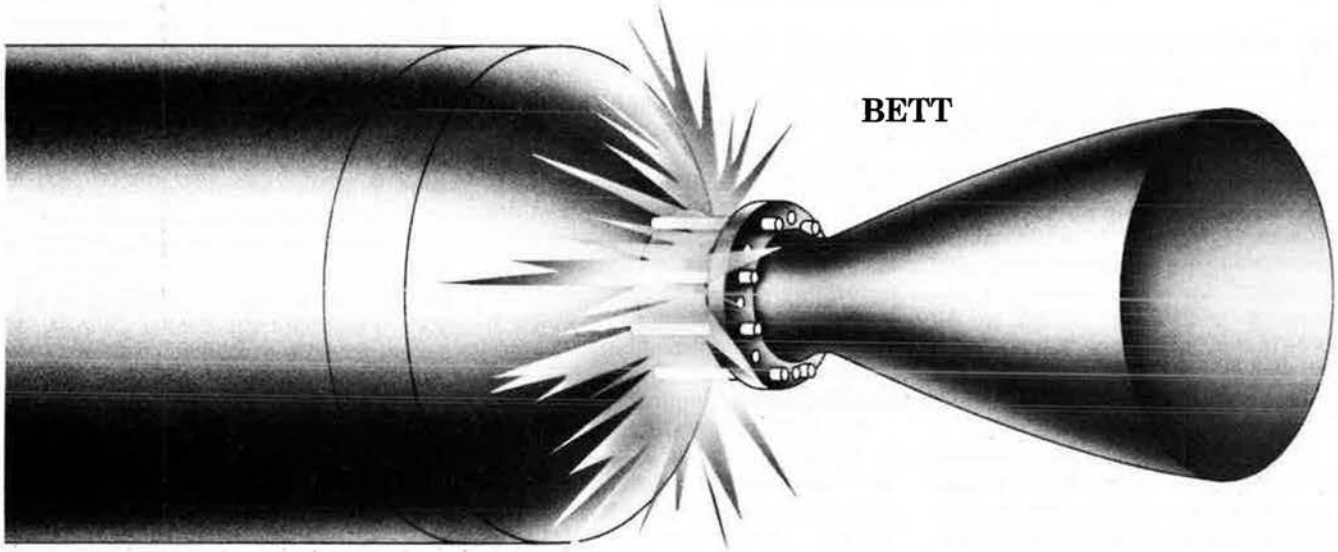
The second Schweinfurt mission, on October 14, marks the climax of the book. [*General Milton, then a lieutenant colonel, led this mission.*] Coffey skips quickly, and in truth mercifully, over the confusion that accompanied the assembly of bombers for what would be history's greatest air battle. It was confusion brought on in part by bad weather and compounded by the fearsome reputation of the target. The abort rate, for these and other reasons, was very high. At any rate, we crossed the coast of Europe in fair order and managed, as the book relates, to survive with enough airplanes to do an excellent job of bombing at Schweinfurt. It was, in fact, a great vindication for the theory of precision bombing of strategic targets, and a great defeat for the theory of unescorted daylight bombers.

With the infallible hindsight that always comes with the passing years, it now seems incredible that Eaker had so much difficulty getting long-range escort fighters. Other priorities, and a certain amount of not-invented-here indifference at Wright Field toward an airplane originally developed by J. H. "Dutch" Kindelberger for the British, had slowed quantity production of the P-51. Even more incredible, Eaker had been continuously frustrated in his efforts to get drop tanks for what fighters he had.

Eventually, of course, the P-51s arrived, and by the summer of '44 the bombers could go where they pleased with acceptable losses. Then, with a larger bomber force and no worries about attrition, some of the emphasis on precision began to give way to mass attacks, RAF style. However, that is another story. The book *Decision Over Schweinfurt* ends with the arrival of the first P-51s and Ira Eaker's notice of his transfer to command the Mediterranean Allied Air Forces. It brought back a last memory.

While I, like the rest of my colleagues stationed out in the Midlands, habitually avoided Eighth Air Force Headquarters at High Wycombe, once in a while a visit was required. Thus, in late December 1943, whether for a board or some other business, I found myself in the stately old building that had once been—and is again—an English girls' school. In the hallway was a footlocker marked J. H. Doolittle. Jimmy Doolittle, as we soon learned, was taking over the Eighth. ■

Propulsion technologies for advance



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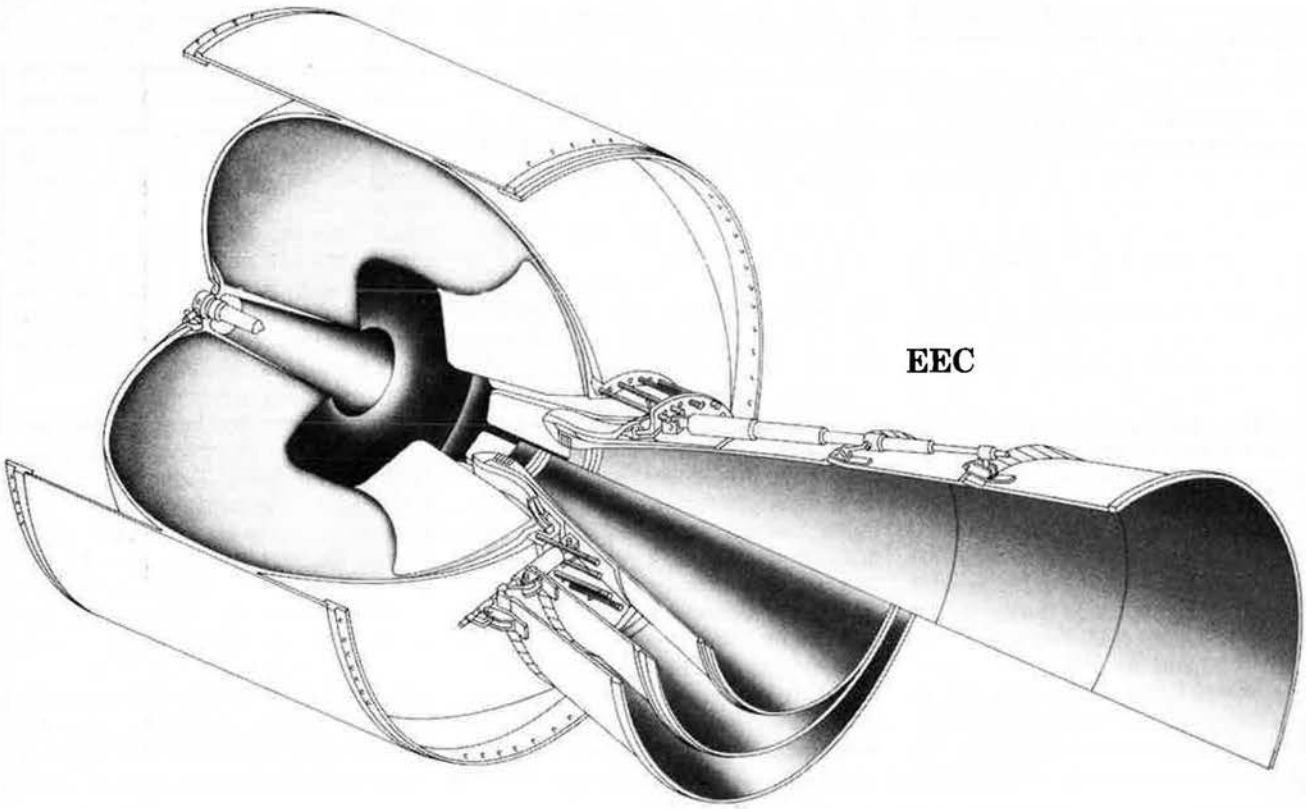

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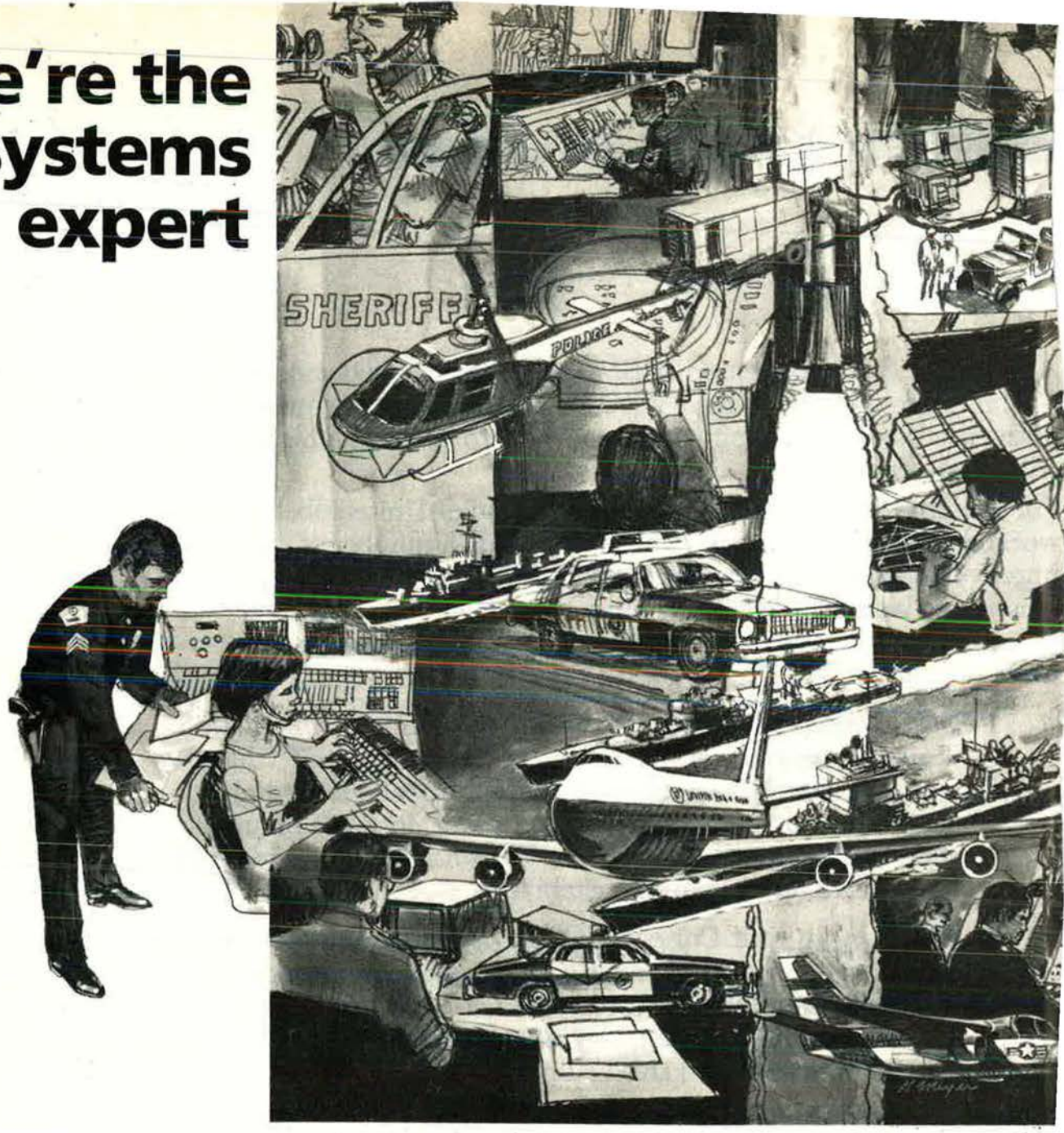

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The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Dual Comp Battle Rages

Although Congress knocked the anti-"double-dipping" amendment from the FY '78 military appropriations bill, the threat to future government employment of military retirees has not diminished *(see "AFA Believes," August '77 issue).* And the military community's bitterness over the threat has intensified.

All this became clear when the House Post Office and Civil Service Committee, headed by Rep. Robert N. C. Nix (D-Pa.), held late July hearings on the dual-compensation and military retirement laws. Significantly, Nix's major witness was the lawmakers' favorite military officer, Adm. Hyman G. Rickover, who at seventy-seven is by far the oldest person on active duty.

Admiral Rickover denounced all forms of dual compensation. In industry and Civil Service, employees cannot receive both salary and retired pay from the same employer, so retired military people shouldn't either, he declared.

He and Nix zeroed in on what they said are ten retired star officers whose combined retired pay and federal salary exceeds the pay of the US Vice President and the Chief Justice of the Supreme Court, and "as many as twenty-five more who receive more than the members of the President's cabinet." Admiral Rickover indicated that most of them are retired Regular officers working for NASA who are exempt from the pay restrictions of the dual-compensation law.

At a subsequent hearing, representatives of military-oriented groups fought back. Former Chief Master Sergeant of the Air Force Don Harlow called the plan to deny military retirement pay to those working for the government "rank discrimination." He noted that the growing flap and headlines over the issue have had a tremendous adverse impact on the morale of active-duty people and that "even our retirees are beginning to believe that union representation is what is going to be needed" to protect pay and benefits. Harlow represented the Air Force Sergeant's Association.

Retired Army Col. John P. Sheffey of the National Association for Uniformed Services agreed with Rickover that early retirement—the twenty-year option—is the basic problem, not the dual-compensation law. That is, if members served longer, retirement pay problems would diminish. "Most military jobs can be performed by people fifty-five or older," Admiral Rickover declared in a statement that Air Force officials disagree with completely.

The organizational witnesses said they and their members are incensed over the ridicule and constant publicity about the few whose dual compensation puts them in a high-income bracket, and the aspersions cast on service personnel generally.

AFA earlier told Congress that it opposes changes in the present system and that any congressional action at this time would be premature.

Authorities hope the Nix group will hold off on any adverse legislation, since the President's Blue Ribbon Commission is expected to include the dual-compensation question in its overall examination of military pay and benefits. Chairman Nix said his group would study carefully all facets of the dual comp question. While he didn't lay down a timetable, he said he thought changes in the law "are necessary to some degree."

Robert D. Gaylor, who served sixteen of his twenty-seven Air Force years as an air policeman, became the new Chief Master Sergeant of the Air Force August 1. He succeeded CMSgt. Thomas N. Barnes, who retired the previous day. Chief Gaylor, forty-seven, came to the Pentagon from the Military Personnel Center, Randolph AFB, Tex., where he was a traveling leadership instructor and advisor to the commander.

Antiunion Directive Near

A new regulation barring strikes, slowdowns, and collective bargaining within the military is being prepared by the Defense Department and should be in force by mid- or late September.

That's the message Secretary of Defense Harold Brown sent the Senate Armed Services Committee, which is considering an antimilitary union law Sen. Strom Thurmond (R-S. C.) and other committee members want. A directive can be put in effect sooner, will be more flexible, and should survive any court challenge on constitutional grounds, Secretary Brown told the committee.

A parade of witnesses, including Kenneth T. Blaylock, National President of the American Federation of Government Employees, testified on the unionization issue during July hearings. "The military needs union representation, and it is inevitable sooner or later. Rather than being harmful, unionization would make a positive contribution to the success of the All-Volunteer Force, military discipline, command authority, and the readiness of the armed forces," Blaylock said.

The Bulletin Board

Results of AFGE's poll of its membership, to decide whether to proceed with unionization, will be announced no later than October 1, he added.

Army Chief of Staff Gen. Bernard Rogers told the committee he doubted the union drive presents a threat at this time. The rhetoric of union supporters "is out of proportion to the threat," he said. Thurmond, who called Secretary Brown's stand "weak-kneed," disagreed.

CMSgt. of the Air Force Thomas N. Barnes, on the eve of his retirement, said he feels interest in unions among airmen has subsided. However, he contended the government "must address and correct" the conditions that make military unions attractive to some members.

Academy Enrolls 153 More Women

The Air Force Academy's new class of 1,499 cadets includes 153 women. With 126 distaff cadets remaining from last year's first coed class, the school now has 279 women students. *(See also p. 116.)*

The Academy liaison office at Hq USAF said 261 of the more than 800 women applicants for the new class were fully qualified. Invitations went to 190 of them, and 153 accepted. That's a lofty eighty percent acceptance rate that most schools must envy.

Last year's freshman class included 157 women. As of June 30 thirty-one, or 19.8 percent, had departed for various reasons. That's better than the men's dropout rate of 23.7 percent (340 out of 1,436). The women in the class matched the men academically and in the Order of Merit leadership rankings, an official in the liaison office said. "We're very pleased" with the overall performance of the first-year

AFA Believes . . .

Stop Studying and Start Learning

Washington, D. C., July 25

The threat of piecemeal hacking at pay and benefits still exists and accounts for a continuing and pervasive uneasiness among military people. A number of military leaders, including the Air Force's Chief of Staff, Gen. David C. Jones, have decried the piecemeal approach. At one point, the leaders asked for a moratorium on erosion of benefits until the total system can be sorted out. And, indeed, it is a *total* system we're talking about. What touches one part affects the whole.

These points are raised as preface to AFA's renewed concern as we watch the tortuous progress of the Fiscal Year 1978 Defense Appropriations Bill. (It still is wending its way as of this writing.) This concept of totality is only dimly understood, if at all, on Capitol Hill or, to some degree, within the Administration itself.

During the debate on the FY '78 Appropriations Bill, both in the Senate and House, a host of nitpicks surfaced. Cut the commissary funding—again. Cut back on nonappropriated fund support employees. Axe AFROTC money. Take away the right of military retirees to draw their retired pay and also work for the government. And on and on and on.

While some of these inroads on the total compensation package will, surely, be restored in the final bill, the point is that some in Congress do not understand—or insist on ignoring—the effects on active-duty morale of scatter-gun, headline-grabbing attacks. Yet—in other hearings—the same legislators express concern about recruiting men and women in sufficient numbers to carry out the nation's defense policies—or worry about military people listening to the siren call of the unions.

Another factor—not as widely recognized—is that certain government agencies besides Defense also promulgate policies and issue regulatory decisions that have a piecemeal impact on the military member's total income.

For example, IRS rulings often affect service people. One such ruling, which now requires students receiving Health Profession Scholarships to pay federal income tax on the value of these scholarships, could have an incalculable negative effect on the availability of military physicians down the road.

HEW, OMB, the Postal Service, and other agencies sponsor changes that affect the military system. The Civil Service Commission has issued a ruling that denies favorable cost-of-living allowances to military dependents employed overseas. Obviously, Veteran's Administration actions many times impact on active force benefits, real or perceived. And each of these agencies operates without worrying about the overall effect.

The Air Force has, for many years, talked about weapon systems, which the Air Force Dictionary defines as:

> a total entity consisting of an instrument of combat, such as a bomber or guided missile together with all related equipment, supporting facilities, and services, required to bring the instrument upon its target or to the place where it carries out the function for which built.

Doesn't it make equal sense to consider the military pay, benefits, and imputed advantages as a "compensation system" and recognize that it is damaging to the whole to tamper with any part of it without considering the impact on the whole? We think so. We think Congress and the Administration ought to think so.

In defense of Congress and others grappling with the compensation system, what obviously is needed is *one* comprehensive study of the whole system. Unfortunately, there have instead been several, to which little attention seems to have been paid. One source estimates there have been some fifteen major studies of compensation since World War II.

The Defense Manpower Commission labored two years. It was charged with taking an overall look, for Congress. Its findings so far are gathering dust.

At about the same time, the Third Quadrennial Review of Military Compensation was laboring. A copy of its final report sits now on my desk, the ten volumes rising almost that many inches high. No action has been taken on its findings.

Instead, President Carter has created a Blue Ribbon Commission to take the findings of the DMC, the Third QRMC, and other studies, do some investigation of its own and—again—come up with "the" answer. Although off to a slow start, the panel's membership finally has been appointed. Let's hope (without much conviction) its findings will not then be turned over to still another new panel.

The topic has been studied to death. The time has come to stop studying and start learning. It is past time to come up with some recommendations—for the whole system—that accurately reflect Congress's and the Administration's responsibility to both the American taxpayer and the long-suffering military man and woman.

Meanwhile, the nit-picking has got to stop.

—James A. McDonnell, Jr.

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"Just take plenty of spare parts and teach yourself to fly."

–General James Allen, 1909

Lt. Benjamin D. Foulois had logged exactly 54 minutes in an aircraft, all as Wilbur Wright's passenger. But soon he and a Wright brothers' "Flyer" would be bundled off to San Antonio to pioneer military aviation. Gen. James Allen sent Foulois for "flight training" in the military's first flying machine with these blithe words: "Your orders are simple. Just take plenty of spare parts, and teach yourself to fly."

Foulois hastily fired off a letter to Orville Wright for instructions on how to fly a plane. Then he and his helpers waded into the crates containing Aeroplane No. 1 and painstakingly reassembled the craft.

On March 2, 1910, townspeople eagerly gathered to witness the inaugural flight of the intrepid "crazy birdman." For 7½ triumphant minutes Foulois flew the 25-hp. contraption round and round the parade ground. Landing it was another matter. Just as he switched off the engine for a dead-stick landing, a car chugged into his path. Foulois gave the control stick a ferocious yank, leap-frogged the car with the last of his flying speed, and fluttered down safely for a hero's welcome.

The do-or-die spirit that lifted Benjamin Foulois' one-man air force into the sky back in 1910 spawned a magnificent new breed dedicated to the challenge of the wild blue yonder. The United States Air Force was off and flying.

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/omen cadets, the official added. Headquarters, meanwhile, said en more women will be chosen for ilot training this fall. The applica- on deadline—papers go to the Mili- ary Personnel Center, Randolph FB, Tex.—is September 30. Train- ng will begin next February.

Two groups of ten women each nrolled in pilot training earlier (two ater dropped out). The first grad- uates are to receive their wings September 2. Six women recently entered navigator training. Though officials are not enthusiastic about the idea, they may decide to admit a few more women to navigator school.

Women enter the Academy directly from civilian life or via the Academy prep school, while distaff flying training billets are open only to officers and nonactive-duty Reservists.

Indian School Wins AFJROTC Contest

The International, Intertribal High School of Brigham City, Utah, has won the 1976–77 AFJROTC Contest for its color-video tape that compares the readiness of the Indian Nation's battle of Little Big Horn with the national readiness of the US today. A $4,000 scholarship accompanies the award.

Officials of AFA's Aerospace Education Foundation, which sponsors the annual competition among the 275 AFJROTC units, lauded the winning entry for its originality, technical competence, and strong support of national security. The tape will be shown September 19 at the AFA Convention in Washington. Theme of this year's event was "The mperatives of National Readiness."

A delegation of students and aculty from the all-Indian school vill attend the convention. The cholarship can be distributed to rom one to four students for use at ny post-secondary school.

JSAF Thwarted on AFROTC Pacts

The Congressional Appropriations ommittees have rejected USAF's d to fund all 6,500 of its authorized OTC scholarships. (No matter that e Army and Navy, with 6,500 and 000 authorized ROTC pacts re- ectively, have enjoyed full fund- g for several years.) The Commit- es have okayed 4,775 funded USAF scholarships for FY '80, but denied requested increases to 5,450 in FY '79 and to the full 6,500 the following year. Officials say it means USAF will suffer a deficit of 450 scientific/technical qualified officers from ROTC by FY '80. The denial won't help USAF "meet the competition from industry," they add.

The USAF Outstanding Airmen for 1977

The Air Force Association particularly welcomes the twelve Outstanding Airmen of the Air Force for 1977 to its convention in Washington this month. Four members of the distinguished group are Senior Airmen, a new designation for E-4s. Three of the group are women. The new Outstanding Airmen include a dog handler, an electronics specialist, and a promotions clerk. They will also serve as members of the AFA's Enlisted Council, a concept tested this year and heartily endorsed by the Air Force as a permanent program. They are:

Sgt. Diana C. Baggett, a base promotions-testing clerk, 82d Air Base Gp., Williams AFB, Ariz. (ATC).

SSgt. Ronald A. Bollinger, a detachment administrative specialist, Command Sec., Det. 1, 15th ABW/DA, Bellows AFS, Hawaii (PACAF).

TSgt. Howard W. Bunton, a television equipment technician, 1972d Comm. Sqdn., Eglin AFB, Fla. (AFCS).

CMSgt. Willie R. Burnett, a programs and work control superintendent, 2854th AB Gp., Tinker AFB, Okla. (AFLC).

SSgt. James M. Carter II, a law-enforcement and corrections supervisor, 5010th Security Police Sqdn., Eielson AFB, Alaska (AAC).

SrA. Sabina F. Coronado, an aerospace ground equipment repairman and AGE scheduler, AGE Branch, 6515th Field Maint. Sqdn., USAF Flight Test Center, Edwards AFB, Calif. (AFSC).

SrA. Kevin D. Day, a security policeman, drug detector, and dog handler, Incirlik, Turkey (USAFE).

SSgt. Ralph J. Gallegos, Jr., a personnel management-programs NCO, Hq. ARPC, 7300 E. First Ave., Denver, Colo. (ARPC).

SrA. Carl E. Houk, a weapons release mechanic, 388th Munitions Maint. Sqdn., Hill AFB, Utah (TAC).

CMSgt. Donald Jackson, a structural superintendent, 60th Civil Engineering Sqdn., Travis AFB, Calif. (MAC).

SrA. William D. Piper, an electronic intelligence operations analysis specialist, 544th Intelligence Exploitation Sqdn., Offutt AFB, Neb. (SAC).

TSgt. Nancy L. Taylor, a base equal-opportunity and treatment NCO human relations instructor, 46th Aerospace Defense Wg., Peterson AFB, Colo. (ADCOM).

USAF's Davis on Pay Study

Lt. Gen. Benjamin O. Davis, USAF (Ret.), a former commander of US Forces, Korea, and Chief of Staff UN Command, has been appointed to the President's Blue Ribbon Commission to study military pay and benefits. The nine-member Commission is headed by Charles J. Zwick,

The Pentagon's top leadership recently honored James M. Roche (center) for his major role in getting employers representing sixty-one percent of the nation's work force to pledge support of the Reserve Forces. Mr. Roche, former G. M. board chairman, accomplished that feat during his five years as Chairman of the National Committee for Employer Support of the Guard and Reserve. Here, Deputy Defense Secretary C. W. Duncan, Jr. (left) and DoD Secretary Harold Brown present the Defense Department's Medal for Distinguished Public Service.

The Bulletin Board

director of the Southeast Banking Corp.

General Davis, who has been a consultant to the Department of Transportation since his retirement from the Air Force, has been getting acquainted with issues he will face when the pay commission swings into action this month. He attended the recent congressional hearings on dual compensation *(see report above)* and he has consulted with Air Force personnel officials.

The Commission has until March 15, 1978, to submit its report—if the present timetable is met. Pay study groups traditionally have failed to meet their deadlines, however. *(See "AFA Believes," p. 152.)*

Other members of the Commission are: Gen. William E. Depuy, USA (Ret.), former Commander, US Army Training and Doctrine Command; Thomas Ehrlich, President, Legal Services Corp.; John H. Filer, Chief Executive Officer, Aetna Life & Casualty; Philip A. Odeen, Vice President, Wilson Sporting Goods (former Deputy Asst. Sec'y of Defense, Systems Analysis); Walter N. Page, President, Morgan Guaranty Trust Co.; Jane P. Pfeiffer, Vice President, Communications, IBM Corp.; and Herbert F. York, professor of Physics, Univ. of California at San Diego (former Director of Defense Research and Engineering).

On the Reserve Incentives Front

New incentives to stimulate Reserve Forces recruiting and retention, which AFA is pushing hard, have again been sidetracked. But the Defense Department's Reserve Compensation System Study has endorsed an improved survivor-benefits plan that may have a slim chance of soon becoming law.

The completion date of the Compensation study, meanwhile, has slipped nine months. The study is examining all aspects of Reserve Forces pay and benefits.

Manning woes continue to plague the Reserves. Both Air Force Reserve and Air National Guard strengths remain well below authorization. The big bind, however, is in the Army Reserve and Guard where the combined shortage was recently put at nearly 50,000.

The Defense Department's answe in the FY '78 budget was to increase recruiting and training funds but no to seek the enlistment and reen listment bonuses and educationa aid many officials say are essential Congress wound up approving a small reenlistment bonus plan, which the Army Reserve and Guard will test during the upcoming year.

The lawmakers did tell the Pentagon to present, along with the FY '79 budget presentation, a "comprehensive program" for solving Reserve Forces manning problems. In effect, this delays action for another year on meaningful incentives to bring the Reserves up to strength. Defense officials, though, say they may consider such things as reducing the need for new male Reservists, recruiting more women, substituting civilians, and even reducing standards.

The Reserve Compensation study, headed by Rear Adm. R. G. Altmann, was to have submitted its final report to the President at the end of this month. That's been changed; instead, an "interim report" will be delivered then that will indicate

Ed Gates . . . Speaking of People

Senate Unit to Quiz Some on Promotion Lists

Under the Constitution, the US Senate is responsible for reviewing Presidential appointments of civilian defense officials and of military officers of all grades in all the services. This is accomplished in earnest, however, only in the case of a very few top-level appointees, like the service secretaries and the chiefs of staff. Nominees for those exalted posts appear before the Senate Armed Services Committee for questioning about their views and qualifications.

But each year there are scores of other appointment lists, containing thousands of names, mostly for promotion but including many for Regular commissions. They cover all grades, even Academy cadets about to become Regular second lieutenants and ensigns. All these rosters move from the executive branch to the Senate Committee where, after a brief holding period, they are generally rubber-stamped, bucked to the full Senate, and routinely approved. Only in rare instances does the committee contest a name, in which case it freezes the entire list.

But since the lists are so huge, the names of more than ninety-nine percent of the nominees are not really screened on Capitol Hill. The entire exercise—preparing the lists, delivering them to the Senate, printing them in the *Congressional Record*, etc.—seems hardly worthwhile. And unnecessarily expensive.

Still, the idea of congressional control over all such appointments, even those of very junior people, has merit. So Committee Chairman John Stennis (D-Miss.) has come up with a special plan. He has announced that from now his committee will conduct hearings on these various l and have a few nominees from each list appear in person.

As the influential lawmaker explained, "the commit membership is not interested in who shall be promo and takes no part in the selection of names to be sen for promotions. Each member is interested in the type persons, both as to attainments and personalities, who being chosen and promoted in the various services at many levels."

Another benefit, Senator Stennis added, "will be chance to obtain facts from officers in the field concer the readiness and morale of our armed forces."

What it all means, is that the committee—not the vices—will make random selections of nominees from various lists sent to the lawmakers. A handful will then ap before the committee. Meetings of this type "will be regularly, and we hope to hold the first one before congressional recess in August," a committee spokes told AIR FORCE Magazine.

It should be an interesting exercise. It could be signifi for there has been a woeful lack of communication bet the legislators who are influential in military matters an rank and file in the service community. The Stennis ploy help correct this deficiency.

Hq. USAF officials say the nature of the new hearing contemplated is to provide the perceived views of the c on military life." The officials acknowledge that there i

ıe direction the commission will o; *e.g.*, whether it favors a salary ystem, linking Reserve pay with ctive-duty scales, or something se.

The final study, under the new chedule, will not be completed ntil next June 30. Legislative proosals and congressional action eeded to set any changes in moion will take many more months.

The Altmann group has recommended early changes that would give Reservists' dependents survivor benefits protection, on an actuarially reduced basis, when the Reservist completes twenty years of service. Under present law, protection can't begin until the Reservist is sixty, and that is sometimes too late. The Reserve community has pointed this out with great emphasis.

Meanwhile, a House Armed Services subcommittee has scheduled early September hearings on the Reserve survivor benefits issue. Supporters are hoping for speedy action.

In a worrisome related development, the bill reported last spring by the House Armed Services Committee to improve the active-duty survivor benefits program had not been taken up by the full House when the lawmakers adjourned until after Labor Day. There may be no enactment this year. The measure, among other things, would reduce the Social Security offset (on benefits attributable to the deceased spouse's military service) from 100 to fifty percent. It would also give a cost-of-living increase to those covered by the old Retired Servicemen's Family Protection Plan. AFA has testified in support of this needed change.

GI Bill Payments Revamped

Uncle Sam has drastically altered GI Bill payment procedures for veterans, dependents, and service members. And the Veterans Administration has launched a massive publicity campaign to get the word around: It doesn't want anyone hurt by the changes.

Until recently, full-time GI Bill students received their regular checks at the start of each month. When each term began, they got an automatic advance payment of two months' benefits. But this led to abuses and huge overpayments when schools and students failed to notify the VA of student nonattendance and dropouts.

So Congress tightened the rules. Students now, if they want advance payments, must specifically request them. This takes up to three months before the checks start rolling. Regular GI checks are now issued the first of each month for the previous month's attendance, which in effect represents another payment delay.

VA Administrator Max Cleland has told his officials to smooth the transition to the new procedures and urged school administrators to help. For GI Bill students with money problems, Cleland cited the VA work-study program that provides on-campus (or nearby VA facility) jobs paying $2.50 an hour. An advance of up to $250 is available when the employment agreement is processed.

Qualified GI Bill students also can borrow up to $1,500 each academic year, and the agency will pay students $65 per month—up to a total of $780—for needed tutoring, the VA said.

Meanwhile, numerous new veterans bills, some quite startling, have been introduced in Congress. Here's a sampling:

S. 1688 (McGovern, S. Dak.) provides that in most cases it is unlawful for an employer to ask an em-

it" on the type of questions that may be asked. They do ject the committee members to concentrate on training, eer goals, leadership, job satisfaction, perceptions on efits, and similar areas.

'he individuals' views on unionization of the military could o be a major topic. And the Senators undoubtedly will k the nominees' opinions on the "up-or-out" question and ring the military retirement rules.

nd well they should. Indeed, the idea of members of Conss meeting face to face with a cross-section of the er corps, soliciting their views, and sizing them up, seems g overdue.

lembers of the House Armed Services Committee, acting a suggestion by the Air Force Association a few years k, visited some bases and Navy ships where they engaged ead-to-head sessions with military flyers of all ranks on then thorny flight-pay legislation. The feedback was cribed as highly valuable. The House committee declared meetings helped it write greatly improved flight-pay slation.

ıt normally, the lawmakers claim they're too busy to visit ary sites specifically to discuss troop problems with the ps. This is unfortunate, especially for those legislators he Armed Services Committees and the Defense Appro-ions Subcommittees. After all, next to the President s is the final word on vital programs that directly affect ocketbooks of the entire service community. Almost ut exception, their decisions have been based on the nony of traditional committee witnesses—high-ranking rals and service secretaries.

e Senate committee's new approach cannot prove as ıl as rapping directly with troops on bases—in their , dorms, and offices—would be. But since that appar- is not feasible, the Stennis approach appears the next hing.

When USAF names are chosen from a promotion list for appearances before the Senate committee, the Military Personnel Center will advise the service members and arrange travel orders. They'll report to Washington at least a day before their slated appearance, which will give them time for a meeting with officials of the Office of Legislative Liaison for "advice and assistance."

The appearance of younger officers should provide the lawmakers a more balanced view of how personnel programs are working in the field, how the younger element views life in uniform, and what changes they believe are needed.

The services, certainly, will not attempt to coach the witnesses picked from the promotion lists. That would easily be detected. The witnesses, of course, will not be appearing as official Air Force spokesmen. Accordingly, if their thoughts on policy matters differ from official Air Force viewpoints, they must so declare.

Air Force says it will tell these special witnesses to be cooperative and responsive, speak simply, avoid professional jargon and service abbreviations, and admit ignorance in areas where they are not informed. Those who follow this advice, who remain calm and natural throughout the proceedings, should score high marks with the influential Stennis group. And that will reflect favorably on their service.

The committee members are highly knowledgeable on military matters; their ranks include three retired Reserve major generals (Senators Goldwater and Cannon of the USAFR and Thurmond of the USAR). They're aware of the ever-growing quality of the services' officer corps, and they doubtless will relish exchanging ideas with the special witnesses.

Senator Stennis hopes that the new arrangement "will strengthen the constitutional relationship between Congress and the Executive, and help to ensure the superb quality of officers that our national defense demands." ■

The Bulletin Board

ployee or prospective employee to produce his military discharge papers or other service-connected records.

H. R. 7507 (Gilman, N. Y., and twenty-four others) gives veterans fifty-four months of GI Bill schooling, ends the time limit for using it, and restores eligibility to all veterans of World War II, Korea, and Vietnam who neglected to use it.

H. R. 7676 (Wolff, N. Y.) restores to colleges their right to determine academic standards of progress for GI Bill students.

H. R. 7714 (Blouin, Iowa) extends the ten-year period for using GI Bill schooling for any veteran taking courses at the time the initial ten years runs out.

Win $ With Clever Ideas

An early energy-saving idea has made MSgt. Wayne L. Bowman of Little Rock AFB, Ark., $570 richer. USAF reported that he found a way to reduce energy use in Titan missile complexes, and the innovation has been applied to all Titan sites.

The overall Air Force suggestion program saved more than $97 million in FY '76. Of the 125,000 new ideas received, 26,000 were adopted. One large award—$11,200—went to J. Robert Bennett, a Hill AFB, Utah, civilian, for designing a new bomb dispenser container. First-year savings were estimated at more than $10 million.

During the first half of FY '77, 57,719 suggestions were received, 10,532 were adopted, and total savings hit $46.4 million.

Short Bursts

Col. Harry A. Goodall, who before becoming an officer went through the ranks to tech sergeant, is the **new Military Assistant to the Air Force's second ranking executive,** Under Secretary Hans Mark. Goodall has been Vice Commander of the Alaskan Air Command. He won his commission through OCS twenty years ago.

"We have a good complaint system. Our system works. The aspect that we have not overcome is th perception by some that the systen won't work." So said USAF's In spector General, **Lt. Gen. John F Flynn,** to a House Armed Service subcommittee probing the **service grievance procedures.** Genera Flynn explained that the "won work" perception usually follow an answer that is unfavorable to th complainant.

Proficiency flying in the Air Force, on the decline in recent years, will be eliminated starting October 1. The other services ended the activity earlier. Rising costs are responsible.

Air Force and other military department personnel in the **Forrestal Building in Washington** are burned up that they're being booted out to make way for the new Energy Department. Just where the present 6,000 DoD military and civilian occupants will go was uncertain at press time. Some of them, like the USAF Surgeon General's staff, for years toiled in run-down temporary quarters before moving to the "Little Pentagon," as the Forrestal Building is called.

The betting was that the **October 1 military pay raise** will be 7.05 percent. Yet to be announced at press time was whether the President will allocate a quarter of the raise to allowances rather than basic pay. The retired military pay raise came out to 4.3 percent.

US military people in Europe are getting poor mail service, according to a report by a House Post Office

Col. Harry A. Goodall has been named new Military Assistant to Air Force Under Secretary Hans Mark (see adjacent item).

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The Bulletin Board

ınd Civil Service subcommittee. The group, headed by Rep. Charles H. Wilson (D-Calif.), recently inspected postal operations at bases in Germany and Spain. Mail-wise, service people there "are being treated like poor stepchildren," Wilson said. He cited long delays in delivering mail, insufficient mail handlers, and outdated equipment and facilities. Defense Department and Postal Service officials will be called before the subcommittee to explain, Wilson said.

Military retirees in Alabama worked hard to get their state to exempt their first $4,750 of income from Alabama income taxes. That accomplished, they're urging the entire military community to support bills in the US Congress that would exempt $5,000 of retired pay from federal income taxes. **Rep. Jack Edwards** (R-Ala.) is among the sponsors of the legislation. ■

Senior Staff Changes

RETIREMENTS: B/G Thomas P. **Conlin;** M/G William R. **Hayes;** M/G William A. **Temple.**

PROMOTIONS: To Major General, ANG: Robert E. **Buechler.** To Brigadier General, ANG: Ervin H. **Bucher;** James E. **Darst,** Jr.; Donald W. **Forney;** Orlando **Llenza;** Ralph A. **Skowron.**

CHANGES: B/G Walter J. Bacon, from IG, Hq. TAC, Langley AFB, Va., to DCS/Log., Hq. TAC, Langley AFB, Va., replacing B/G Waymond C. Nutt . . . **B/G Richard T. Boverie,** from Spec. Asst. for Strategic Matters, DCS/P&O, Hq. USAF, Washington, D. C., to Dep. Dir. for Plans and Policy, DCS/P&O, Hq. USAF, Washington, D. C., replacing B/G Herman O. Thomson . . . **M/G James L. Brown,** from Dir., J-2, US EUCOM, Stuttgart-Vaihingen, Germany, to ACS/Intel., and Cmdr., AF Intel. Svc., Hq. USAF, Washington, D. C. . . . **M/G William C. Burrows,** from DCS/Plans & Pgms., J-5, Hq. NORAD, and DCS/Plans & Pgms., Hq. ADCOM, Peterson AFB, Colo., to Vice CINC, Hq. ADCOM, Peterson AFB, Colo.

B/G William E. Carson, from IG, Hq. MAC, Scott AFB, Ill., to DCS/Log., Hq. MAC, Scott AFB, Ill., replacing B/G (M/G selectee) Edward J. Nash . . . **Col. (B/G selectee) Melvin F. Chubb, Jr.,** from Asst. DCS/Sys., Hq. AFSC, Andrews AFB, Md., to Dep. for Cruise Missiles/Strategic Systems, Hq. ASD, AFSC, Wright-Patterson AFB, Ohio . . . **M/G John W. Collens III,** from DCS/Plans, Hq. MAC, Scott AFB, Ill., to C/S, Hq. MAC, Scott AFB, Ill. . . . **B/G Robert F. Coverdale,** from Cmdr., 317th TAW, MAC, Pope AFB, N. C., to DCS/Plans, Hq. MAC, Scott AFB, Ill., replacing M/G John W. Collens III . . . **B/G Richard T. Drury,** from V/C, Twenty-second AF, MAC, Travis AFB, Calif., to Cmdr., US Forces, and Cmdr., 1605th ABW, Lajes Field, Azores, replacing B/G Erskine Wigley.

M/G Lincoln D. Faurer, from Vice Dir. for Prod., DIA, Washington, D. C., to Dir., J-2, US EUCOM, Stuttgart-Vaihingen, Germany, replacing M/G James L. Brown . . . **B/G Robert A. Foster,** from Dep. for E-4, Hq. ESD, AFSC, Hanscom AFB, Mass., to Dep. for Surveillance & Navigation, Hq. ESD, AFSC, Hanscom AFB, Mass. . . . **B/G Martin C. Fulcher,** from Asst. DCS/Log., Hq. SAC, Offutt AFB, Neb., to DCS/Log., Hq. SAC, Offutt AFB, Neb., replacing M/G John J. Murphy . . . **M/G William H. Ginn, Jr.,** from DCS/Plans, Hq. USAFE, Ramstein AB, Germany, to ACS for Ops., Hq. SHAPE, Casteau, Belgium.

B/G Robert T. Herres, from Dep. for Security Assistance Programs, Hq. ESD, AFSC, Hanscom AFB, Mass., to Spec. Asst. to Vice Chief of Staff, Hq. USAF, Washington, D. C. . . . **B/G Charles C. Irions,** from DCS/Ops., Hq. MAC, Scott AFB, Ill., to Dir. of Transportation, DCS/S&L, Hq. USAF, Washington, D. C., replacing M/G Benjamin F. Starr . . . **B/G Thomas E. Lacy,** from Cmdr., Field Command, DNA, Kirtland AFB, N. M., to V/C, Twenty-first AF, MAC, McGuire AFB, N. J. . . . **B/G Russell E. Mohney,** from Cmdr., 314th TAW, MAC, Little Rock AFB, Ark., to Asst. DCS/Log. Ops., Hq. AFLC, Wright-Patterson AFB, Ohio . . . **M/G John J. Murphy,** from DCS/Log., Hq. SAC, Offutt AFB, Neb., to V/C, Eighth AF, SAC, Barksdale AFB, La., replacing retiring M/G William A. Temple.

B/G (M/G selectee) Edward J. Nash, from DCS/Log., Hq. MAC, Scott AFB, Ill., to DCS/Ops., Hq. MAC, Scott AFB, Ill., replacing B/G Charles C. Irions . . . **B/G Waymond C. Nutt,** from DCS/Log., Hq. TAC, Langley AFB, Va., to C/S, Hq. TAC, Langley AFB, Va., replacing M/G Len C. Russell . . . **B/G John T. Randerson,** from Cmdr., European Communications Area, AFCS, Ramstein AB, Germany, to Cmdr., SAC Communications Area, AFSC, Omaha, Neb. . . . **Col. (B/G selectee) Robert D. Russ,** from Asst. DCS/Plans, Hq. TAC, Langley AFB, Va., to Asst. DCS/Ops. (Ops. & Training), Hq. TAC, Langley AFB, Va., replacing B/G John H. Bennett . . . **M/G Len C. Russell,** from C/S, Hq. TAC, Langley AFB, Va., to DCS/Plans, Hq. USAFE, Ramstein AB, Germany, replacing M/G William H. Ginn, Jr.

M/G John R. Spalding, Jr., from Vice CINC, Hq. ADCOM, Peterson AFB, Colo., to Cmdr., Warner Robins ALC, AFLC, Robins AFB, Ga., replacing retiring M/G William R. Hayes . . . **M/G Benjamin F. Starr,** from Dir. of Transportation, DCS/S&L, Hq. USAF, Washington, D. C., to Cmdr., 76th Airlift Div., MAC, Andrews AFB, Md. . . . **B/G Herman O. Thomson,** from Dep. Dir. for Plans & Policy, DCS/P&O, Hq. USAF, Washington, D. C., to DCS/Plans, Hq. PACAF, Hickam AFB, Hawaii . . . **B/G Mele Vojvodich, Jr.,** from Chief, Tac. Forces and Airlift Div., Dir. for Programs, DCS/P&R, Hq. USAF, Washington, D. C., to DCS/Tech. Training, Hq. ATC, Randolph AFB, Tex. . . . **B/G Larry D. Welch,** from Cmdr., 1st TFW, TAC, Langley AFB, Va., to IG, Hq. TAC, Langley AFB, Va., replacing B/G Walter J. Bacon . . . **B/G Erskine Wigley,** from Cmdr., US Forces, and Cmdr., 1605th ABW, Lajes Field, Azores, to IG, Hq. MAC, Scott AFB, Ill., replacing B/G William E. Carson. ■

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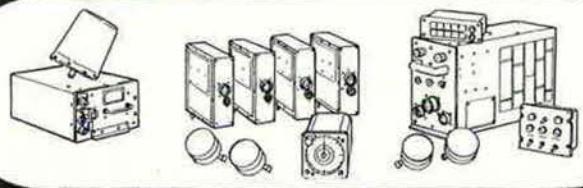

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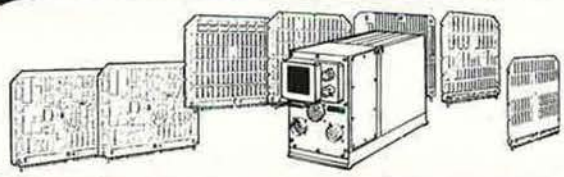

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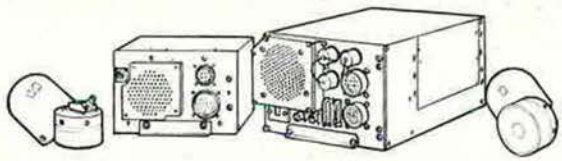

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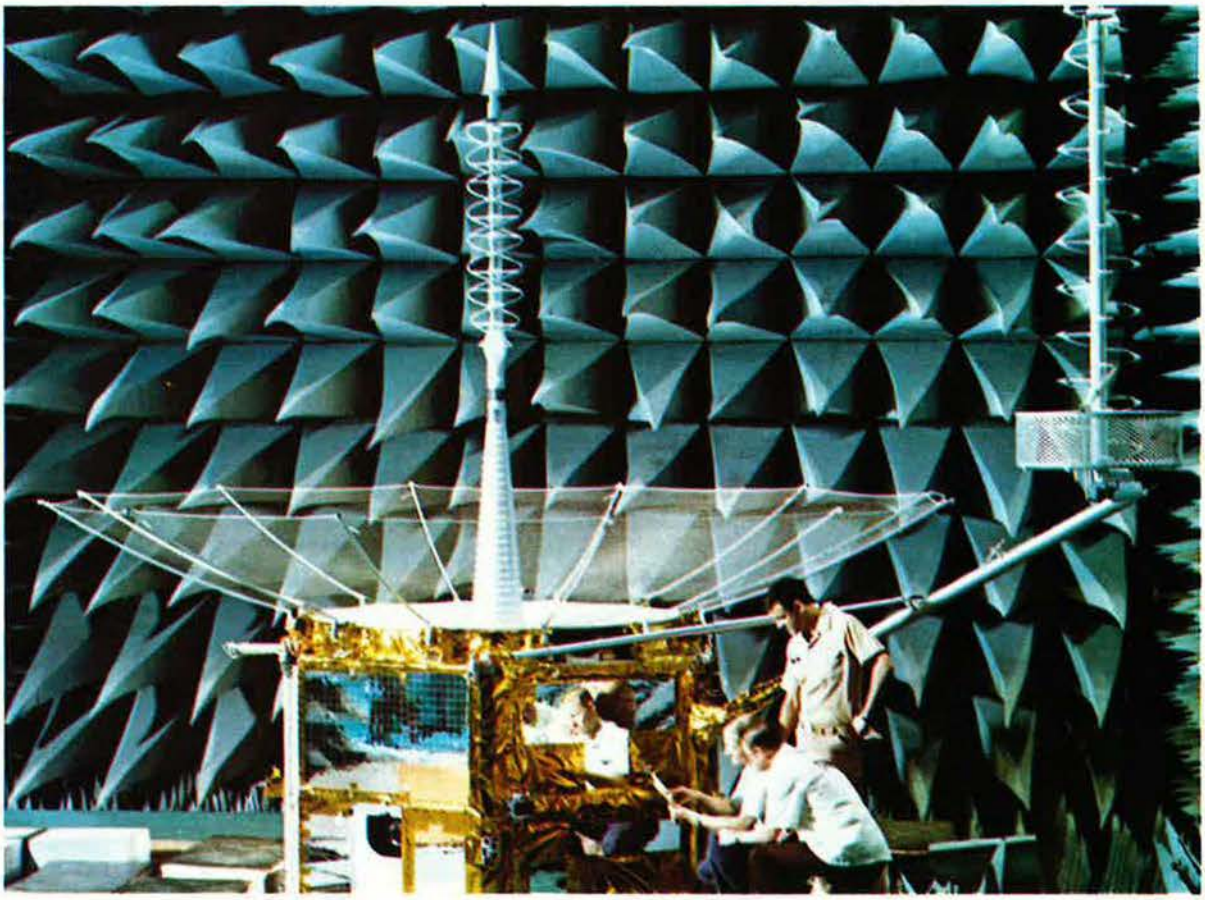

MILITARY COMMUNICATIONS SATELLITES

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AIR FORCE ASSOCIATION WILL MARK 30TH ANNIVERSARY OF THE USAF BY ISSUING AN OFFICIAL STERLING SILVER PLATE

Illustration reduced, actual plate 8″ in di

This commemorative plate will be available exclusively to Air Force Association members.

One of the highlights of this month's AFA National Convention in Washington, D. C., will be a special ceremony commemorating the 30th anniversary of the establishment of the United States Air Force on September 18, 1947.

At that ceremony, AFA National President George M. Douglas will mark the occasion by presenting The Official Air Force Association Commemorative Plate to Secretary of the Air Force John C. Stetson.

This special 30th anniversary plate will commemorate the beginning of a new era, in which airpower became firmly established as the nation's first line of defense and its chief hope for deterring war.

George M. Douglas, left, AFA President, and Board Chairman Gerald V. Hasler examine the plate bearing serial #1, which will be presented to Secretary of the Air Force John C. Stetson.

The Official Air Force Association Plate will be issued in a special, fully lined display case.

The plate will be produced in solid sterling silver and, by permission of the Department of the Air Force, will bear a finely etched design portraying the Official Air Force Seal. Moreover, it will be produced in a single, serially numbered and very limited edition. The plate bearing serial number 1 has been reserved for the presentation to the Secretary of the Air Force. Other plates will be made available *exclusively* to AFA members, with a limit of one plate per member.

The Association has appointed The Franklin Mint, America's largest private mint, to design and produce this official sterling silver plate. The serial number of each plate will be registered in the name of its owner, who will also receive a Certificate of Authenticity attesting to the limited edition status of the plate and its commemorative significance.

Each of these 8-inch diameter plates will be individually crafted and issued in its own presentation case, which will be lined in rich blue satin to create a very impressive display, suitable for home or office.

A special announcement and personal invitation to acquire The Official Air Force Association Plate is being sent to members, who will have only until October 15, 1977, to order.

Orders will be accepted only from Association members. And since the plate will be offered just this one time, those members who do not receive the special announcement by September 30th should contact Richmond M. Keeney, Membership Director, Air Force Association, 1750 Pennsylvania Avenue, N. W., Washington, D. C. 20006, without delay.

30 years ago . . .

The National Security Act of 1947, passed in July of that year, provided the outline of responsibilities which the Air Force was to undertake. President Harry S. Truman also signed an Executive Order which prescribed the roles and functions of the United States Air Force.

Then, on September 18, 1947, Chief Justice Fred M. Vinson administered the oath of office to the first Secretary of the Air Force, W. Stuart Symington. That day marked the birth of the United States Air Force as an independent military service, established within the newly created Department of the Air Force.

With some 600 military, civic, industry, and AFA leaders, family members, and friends in attendance, the Air Force Academy's 24th Cadet Squadron was saluted at AFA's . . .

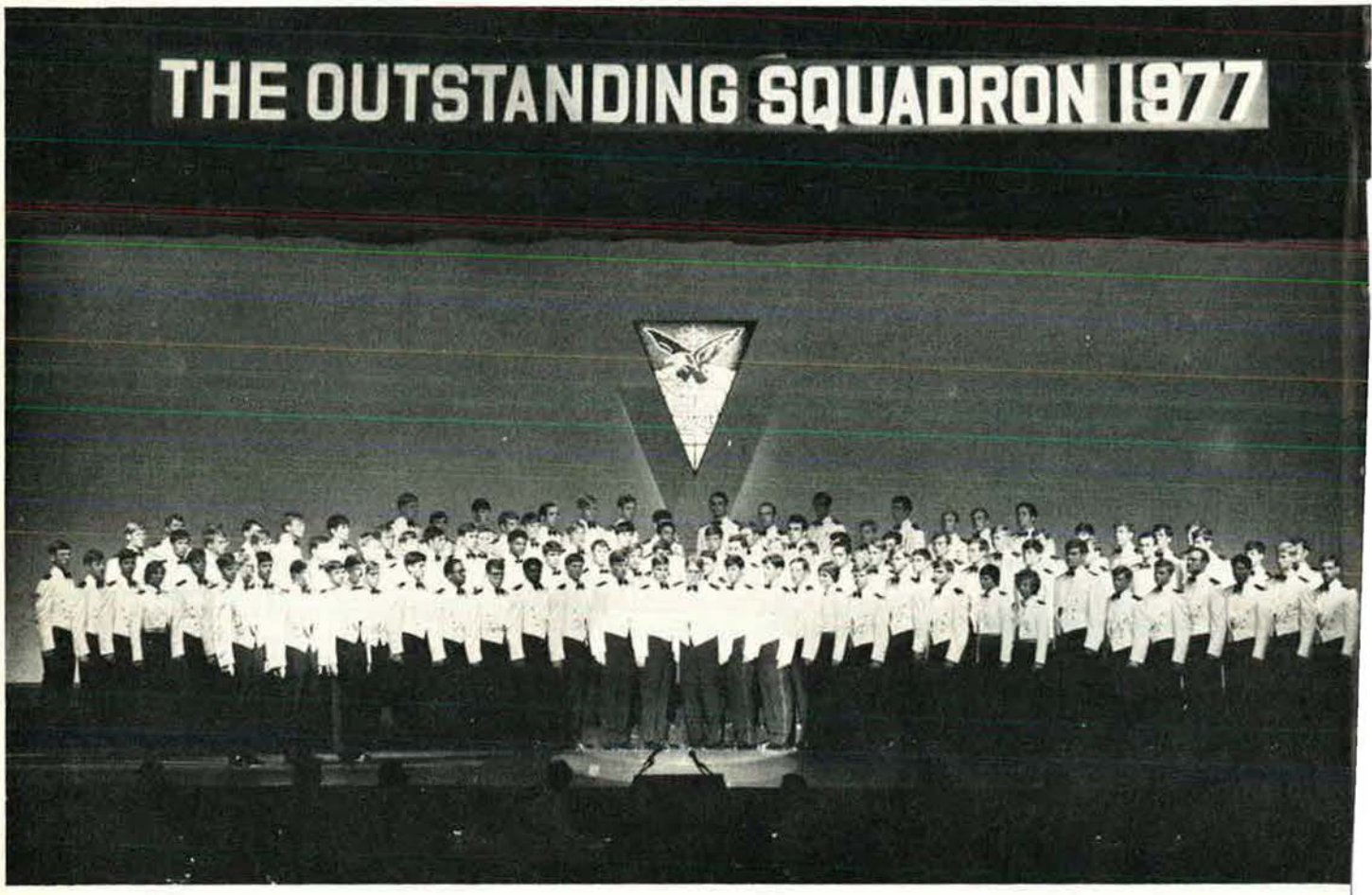
18th ANNUAL OUTSTANDING SQUADRON DINNER

BY DON STEELE, AFA AFFAIRS EDITOR

"LADIES and Gentlemen—fror the United States Air Forc Academy—the Outstanding Squac ron of 1977."

These words, almost drowned i applause, brought the audience c some 600 to their feet. On the stag of The Broadmoor's Internationa Center, the curtain opened to re veal the 105 cadets of the 24th Squadron who were being honored at the 18th Annual Outstanding Squadron Dinner, sponsored each year by the Air Force Association and its Colorado Springs Chapter.

Master of ceremonies was Lt. Col. George L. Butler, Director of the Executive Committee of the AWACS Task Force at USAF Headquarters. (A colonel selectee, he now is Assistant Deputy for Operations, 416th Bomb Wing, Griffiss AFB, N. Y.) A graduate of the Air Force Academy,



The cadets of 1977's Outstanding Squadron, the 24th Squadron, assembled on stage to be introduced to the some 6 guests who gathered in Colorado Springs to salute them for their outstanding accomplishmen

lass of 1961, Colonel Butler was ommander of the Outstanding quadron of that year.

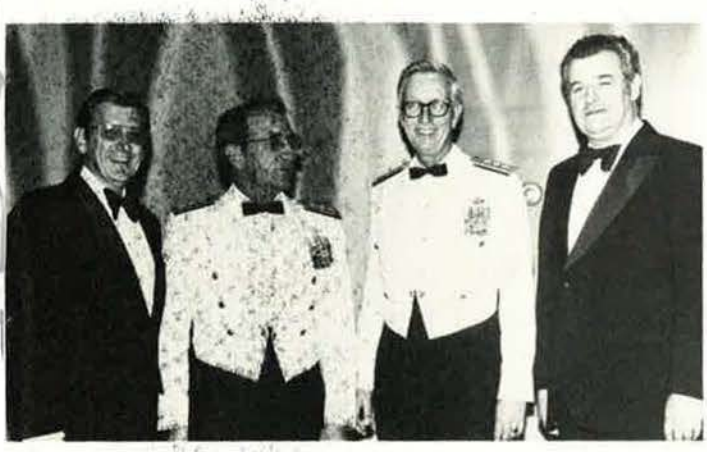
Lt. Gen. John P. Flynn, the Inpector General of the Air Force, epresenting the USAF Chief of taff, was the featured speaker. rief remarks were made by Lt. en. James R. Allen, Superintenlent of the Air Force Academy, who as since been promoted to four-tar rank and is Chief of Staff, SHAPE, Casteau, Belgium.

AFA National President George M. Douglas presented AFA's Outstanding Squadron Trophy for 1977 to the Squadron's three Cadet Commanders, and also presented each an AFA Life Membership. Each member of the Squadron received a personalized engraved desk set bearing the seal of the Academy as well as the AFA emblem. Cadet Lt. Col. Dallas K. Stephens, the 24th's Spring Term Commander, responded for the Squadron.

Among the many distinguished guests were two former Academy Superintendents, retired Lt. Gens. Thomas S. Moorman and A. P. Clark. America's top living ace, retired Air Force Col. Francis "Gabby" Gabreski, was on hand, as were Maj. Gen. Lucius Theus, Commander, Air Force Accounting and Finance Center; Brig. Gen. Joseph B. Dodds, Commander, Air Force Audit Agency; Brig. Gen. William T. Woodyard, Dean of the Faculty; Brig. Gen. Stanley C. Beck, Commandant of Cadets; Col. John J. Clune, Director of Athletics; Col. Thomas C. Richards, Commander, Air Reserve Personnel Center; and Dr. Ralph H. Tripp, Vice President, Grumman Aerospace Corp., representing the delegation from industry.

The Air Force Academy Band and the Moods in Blue Singers, under the direction of Maj. John McCord, provided entertainment during the formal program, and dancing to the music of the Floyd Frame Orchestra rounded out a most enjoyable evening.

In his remarks, General Allen said, "I've told many, many people in the last three years since the first Outstanding Squadron Dinner I had the opportunity to attend that this particular evening is, I think, the finest annual function of its kind that we have at the Academy. On behalf of all of us—the Cadet Wing, the Staff, and the Faculty—I want to express our deepest appreciation to the Air Force Association on a national level and on a local level for sponsoring this splendid affair." ■



OP: *Head-table guests included, from left, AFA National President eorge M. Douglas; Air Force Inspector General Lt. Gen. John P. ynn, the guest speaker; Air Force Academy Superintendent Lt. Gen. mes R. Allen; and AFA Board Chairman Gerald V. Hasler.* **OTTOM:** *AFA National President George M. Douglas, left, visits h, from left, Lt. Col. George L. Butler, the master of ceremonies; G. Freyschlag, a Past President of the Colorado Springs Chapter d a long-time supporter of the Outstanding Squadron Dinner; and Gen. David R. Adamson, Canadian Forces, Deputy Commander Chief, NORAD, representing the NORAD Commander in Chief.*

TOP: *Standing by the Air Force Association's Outstanding Squadron Trophy are, from left, Colorado Springs Chapter President Henry "Kort" Kortemeyer; the 24th Squadron's three commanders, Cadet Lt. Cols. Dallas K. Stephens, Spring Term Commander, Kenneth W. Van Treuren, Fall Term Commander, and Richard L. Ring, Jr., Winter Term Commander; and Lt. Col. George L. Butler, the master of ceremonies.* **BOTTOM:** *Among the Air Force and AFA leaders at the dinner were Brig. Gen. H. J. Dalton, Jr., right, the Air Force Director of Information; AFA National Director Judge John G. Brosky, center, and his daughter, Carol.*

AFA News

By Don Steele, AFA AFFAIRS EDITOR

Units of the Month

THE LANGLEY CHAPTER, VIRGINIA AND THE TEXAS STATE ORGANIZATIO cited for consistent and effectiv programming in support of the mission of the Air Force and AFA

More than 500 members and guests attended the Langley, Va., Chapter's 12th Annual Military-Civic Reception and Dinner in the Langley AFB Officers' Club. The function, which honored the Tactical Air Command, featured an address by Gen. George S. Brown, Chairman, Joint Chiefs of Staff. AFA Executive Director James H. Straubel spoke briefly on the Aerospace Education Foundation's Jimmy Doolittle Fellow Program, after which Chapter President Harry R. Logan, Jr., presented Gen. Robert J. Dixon, Commander, Tactical Air Command, a Jimmy Doolittle Fellow plaque. The receiving line included, from left, Mrs. Brown, General Brown, Mrs. Dixon, General Dixon, Mrs. Logan, and Colonel Logan. In recognition of this outstanding program, AFA President George M. Douglas names the Langley Chapter a corecipient of AFA's "Unit of the Month" Award for September.

The Nation's Capital Chapter of Washington, D. C., recently sponsored a reception at which the Hon. John C. Stetson, Secretary of the Air Force, was the guest of honor. More than 200 leaders of the Air Force, industry, and AFA attended the reception. Secretary Stetson, right, is shown visiting with Chapter President James McGarry.

During the banquet at the Connecticut State AFA's recent Convention in New Haven, "Dev" Devoucoux, Vice President for AFA's New England Region, presented an AFA Medal of Merit to Kenneth Kelly, Igor Sikorsky Chapter President. Shown are, from left, State President Margaret McEnerney; Mr. Devoucoux; Mr. Kelly; Sergei Sikorsky, the guest speaker; and First Connecticut Chapter President James Holloway. At the business session, delegates elected Joe Falcone to succeed Margaret McEnerney as State President.

The highlight of the Armed Forces Week observances in San Antonio, Tex., was the "Salute to Lindy" banquet cosponsored by the Texas State AFA and the San Antonio Light. More than 700 people attended the banquet commemorating the fiftieth anniversary of Charles Lindbergh's history-making flight across the Atlantic. The banquet, held in the Henry B. Gonzalez Convention Center, featured former Astronaut Charles M. Duke, Jr., as keynote speaker. Head-table guests included Congressman Abraham "Chick" Kazen (D-Tex.), a member of the House Armed Services Committee; San Antonio Mayor Pro Tem Henry Cisneros; and Frank Bennack, Executive Vice President, the Hearst Corp. Proceeds from the program will go to AFA's Aerospace Education Foundation. During the program, Texas State AFA President Sandy Faust, left, presented a plaque to San Antonio Light Publisher William B. Bellamy, right, in appreciation of the newspaper's cosponsorship of the function. State AFA Vice President Frank Manupelli, center, and Mr. Bellamy were cochairmen of the Salute. In recognition of this outstanding program, AFA President Douglas names the Texas State AFA a corecipient of AFA's "Unit of the Month" Award for September.

chapter and state photo gallery

At the Awards Luncheon held during the recent Washington State AFA Convention in Spokane, State President Margaret "Peg" Reed, left, presented the State AFA's "Airman of the Year" Award to Sgt. Terrence D. Seboldt, an accounting specialist with the 92d Bomb Wing Accounting and Finance Office at Fairchild AFB. Also shown are Sergeant Seboldt's wife, Vicki, and Washington State AFA Vice President Dick Bond, the master of ceremonies at both the Convention luncheon and banquet. AFA President George M. Douglas was the luncheon speaker. At the business session, delegates reelected Miss Reed for another term.

Chicagoland Chapter President Alexander C. Field, Jr., right, was named the Illinois AFA "Man of the Year" at the State AFA's annual convention in Belleville. State President Hugh L. Enyart, left, made the presentation, and also was reelected for a second term. Looking on is newly elected Missouri State AFA President Donald K. Kuhn. More than 150 members and guests attended the Convention banquet at which Gen. William G. Moore, Jr., Commander in Chief, Military Airlift Command, was the guest of honor and speaker.

The Alabama State AFA President's Award for the Outstanding AFJROTC Unit in Alabama went to the unit at the Selma High School. Lt. Col. Jack Boyd, right, USAF (Ret.), the Aerospace Education Instructor at the school, is shown accepting the award from State President Jim Tipton. The award was one of several presented during the banquet at the recent Alabama State AFA Convention in Mobile. At the Convention business session, delegates elected Donald B. "Lucky" Cunningham to the office of State President for 1977–78.

The Hon. Will Hill Tankersley, Deputy Assistant Secretary of Defense for Reserve Affairs, was the guest of honor and speaker at a recent meeting of the General H. H. Arnold Memorial Chapter in Tullahoma, Tenn. Shown discussing the Secretary's remarks on "The Role of Reserve and National Guard Forces in the Military Departments" are, from left, Chapter President Ward Protsman, Tennessee State AFA President Tom Bigger, Secretary Tankersley, Tennessee State Adjutant General Maj. Gen. Carl Wallace, and Col. Oliver H. Tallman, Commander, Arnold Engineering Development Center.

AFA News

Gen. Robert J. Dixon, Commander, Tactical Air Command, was the guest of honor and speaker at a Dining-Out cosponsored by the Idaho State AFA and its Boise Valley Chapter. Shown during the reception are, from left, Brig. Gen. James M. Trail, Assistant Adjutant General for Air, Idaho National Guard, and also an AFA National Director; Magic Valley Chapter President Lowell Hanson; Boise Valley Chapter President Ron Galloway; General Dixon; and Idaho State AFA President Larry L. Leach.

INTERESTED IN JOINING A LOCAL CHAPTER?

For information on AFA Chapters in your area, write:
Assistant Executive Director/Field Operations
Air Force Association
1750 Pennsylvania Ave., N. W.
Washington, D. C. 20006

Capt. Mike Connors, aide to Maj. Gen. William R. Hayes, Commander, Warner Robins Air Logistics Center, was one of eight new AFA Life Members recruited during the Middle Georgia Chapter's recent membership drive. The Chapter now boasts 148 Life Members. Shown accepting Captain Connors' membership application are Dr. Dan Callahan, left, Vice President for AFA's Southeast Region; and Col. James Tillotson, second from left, volunteer cochairman for the drive. General Hayes, right, looks on.

During the Texas State AFA's recent Quarterly Executive Committee Meeting in San Angelo, the State AFA's $1,000 Earle North Parker Scholarship was presented to Miss Linda Leos of Lubbock's Coronado High School for her winning essay on "The United States Air Force—Its Mission in a Changing World." Shown with Miss Leos, center, are State AFA President Sandy Faust, left, and former AFA National Director Earle North Parker of Fort Worth, the major contributor to the scholarship fund.

Dr. Jerome H. Meyer, Curator of the Aviation Hall of Fame, founder of AFA's Wright Memorial Chapter, and a personal friend of the late Charles A. Lindbergh, was the guest speaker at the Wright Memorial Chapter's recent luncheon in the Wright-Patterson AFB NCO Club saluting the fiftieth anniversary of Lindbergh's solo flight from New York to Paris. Shown following the program are, from left, Chapter Treasurer Ken Puterbaugh, Chapter Councilman Morris Ribbler, Dr. Meyer, and Chapter President Dutch Heilman.

chapter and state photo gallery

At the awards ceremony for the AFJROTC Unit at El Cajon Valley High School, Calif., San Diego Chapter President Dan McPherson, left, presented AFA's Bronze Medal to Cadet SSgt. Eunice McGrew, the outstanding cadet in the newly established unit.

South Dakota Gov. Richard F. Kneip, an Air Force staff sergeant in the 1950s, was recently promoted to the rank of technical sergeant on orders signed by Air Force Chief of Staff Gen. David C. Jones. Governor Kneip, center, a member of AFA's Rushmore Chapter and a staunch supporter of the Air Force and AFA, is shown receiving insignia of his rank from CMSgt. Carl N. Jacks of Ellsworth AFB, as Rushmore Chapter President James Anderson, left, looks on.

rry S. Truman Chapter President Jack R. Curry is shown receiving laque from Brig. Gen. Alvin J. Moser, Commander, 442d Tactical Airlift g, Richards-Gebaur AFB, Mo. The plaque was presented at a recent pter board meeting in recognition of Mr. Curry's long tenure as a nber and officer of the Chapter.

During a recent meeting of the David D. Terry, Jr., Chapter, Arkansas State President Jack Karas, right, presented a plaque to Chapter President Willie Oates, left, in recognition of her outstanding service as Chapter President.

AFA News

The Col. Stuart E. Kane, Jr., Chapter of State College, Pa., recently presented its first scholarship award to AFROTC Cadet SSgt. David L. G. Horn, a sophomore at Penn State University. The award and the Chapter are named for the late Col. Stuart E. Kane, Jr., who, at the time of his death, was organizing the Chapter while PAS at Penn State.

The award consists of a certificate and a check for the fall semester tuition. Shown during the presentation ceremony are, from left, Mrs. Helen Kane, widow of Colonel Kane; Chapter President R. O. Eck, Lt. Col. USAF (Ret.); Cadet Horn; and Capt. K. A. Juul, Commandant of Cadets, Penn State AFROTC.

The Arnold Air Society's "Little General" for 1977–78, Bronwyn Lawson, right, chats with AFROTC Commandant Maj. Gen. James R. Brickel during the recent visit to AFROTC Headquarters at Maxwell AFB, Ala. A member of the John H. Payne Squadron of Angel Flight at the University of Texas at Austin, she will be the national protocol representative of the Arnold Air Society until the Arnold Air Society/Angel Flight National Conclave next spring.

At the Bellevue East High School AFJROTC unit's recent Honors Night in Bellevue, Neb., Nebraska State AFA President Lyle Remde, left, presented a State AFA check for $250 to Cadet Capt. Jan Shablow, center, Commander of the unit; and Lt. Col. Ralph H. Tate, Jr., USAF (Ret.), Aerospace Education Instructor at the school. The money will be used for trophy cases and cadet charts for the newly established unit.

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.

OBJECTIVES

The Association provides an organization rough 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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Aerospace Education Foundation (AFA
Honor Roll of
Jimmy Doolittle Fellows

The Foundation proudly recognizes the individuals, groups of people, corporations, and AFA units who—as Jimmy Doolittle Fellows—are responsible for supporting the Foundation's unique program of applying aerospace technology to the advancement of education. It does this by making available to the civilian education community Air Force-developed occupational education course systems.

Thanks to these Fellows, the Foundation has sold, on a non-profit basis, one or more of twenty Air Force course systems to more than 500 schools in forty-eight states. And nineteen more Air Force courses are scheduled to be offered by the Foundation in 1977.

All monies received through this program are placed in a special fund that is used only for reproducing Air Force course systems. None of it is used for overhead expenses.

Each name on this Honor Roll represents a tax-deductible $1,000 contribution to the Aerospace Education Foundation. A Jimmy Doolittle Fellow receives a 12" x 7" Hawaiian walnut plaque that identifies the Fellow by name and year of affiliation. The plaque features a bronze medallion bearing the Doolittle portrait. The medallion is removable, and on the back of it is this inscription:

"A Jimmy Doolittle Fellow supports advancement of education through transfer to the nation's schools of instructional systems based on applying aerospace technology to curriculum development, thereby enhancing the U. S. Air Force public image."

This Honor Roll lists Jimmy Doolittle Fellows in the order of their affiliation. Those individuals and organizations that have participated in two or more Fellows are indicated in **bold-face type.**

	NAME	SPONSOR
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5.	**Joe Higgins**	Personal
6.	**Arthur J. Kates**	Personal
7.	**Samuel M. Hecht**	Personal
8.	George D. Hardy	Personal
9.	**Bob Hope**	Personal
10.	Fred Hummel (Deceased—1975)	Personal
11.	Dr. Dan Callahan	Personal
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17.	Northrop Corporation	Northrop Corporation
18.	Jon R. Donnelly	Richmond Chapter, AFA
19.	Neil November	Mrs. Neil November and Friend
20.	Dana B. Hamel	Gordon Willis
21.	**William W. Spruance**	Personal
22.	Arthur C. Storz, Sr.	Arthur C. Storz, Jr.
23.	Senator Barry Goldwater	Nation's Capital Chapter, AFA
24.	James H. Straubel	**William W. Spruance and Joe Higgins**
25.	Theodore O. Wright	Personal
26.	Charles L. Backus, Jr.	**Wright Memorial Chapter, A**
27.	W. Calvin Falwell	Falwell Aviation, Inc.
28.	William L. Copeland	Personal
29.	Joe L. Shosid	Fort Worth Chapter, AFA
30.	Colorado Air Force Association	Friends
31.	Paul J. Giegerich	Personal
32.	**Arthur J. Kates**	Personal
33.	Sherrod E. Skinner	The Aerospace Corporation
34.	Mager Associates, Inc.	**Mager Associates, Inc.**
35.	Willard F. Rockwell, Jr.	**Rockwell International Corporation**
36.	Willard G. Plentl	Virginia Advisory Committee Aviation
37.	Sol Love	Vought Corporation
38.	George M. Skurla	**Grumman Aerospace Corporation**
39.	Joseph J. George (Posthumously)	Eastern Airlines Corporation
40.	Walter H. Andrews (Posthumously)	Charleston Chapter, AFA
41.	United Technologies Corporation	United Technologies Corpor
42.	General Electric Company	General Electric Company
43.	Bob Considine (Posthumously)	**Iron Gate Chapter, AFA**

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(To be named)	**Iron Gate Chapter, AFA**
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Henry Pascale	Personal
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Dominic Renda	Western Airlines
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Gen. Nathan F. Twining	South Carolina State AFA
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NOTE: To help this cause, send your tax-deductible $1,000 to the Aerospace Education Foundation (AFA), 1750 Pennsylvania Avenue, N.W., Washington, D. C. 20006. For further details, call the Foundation's Managing Director at: (202) 637-3370.

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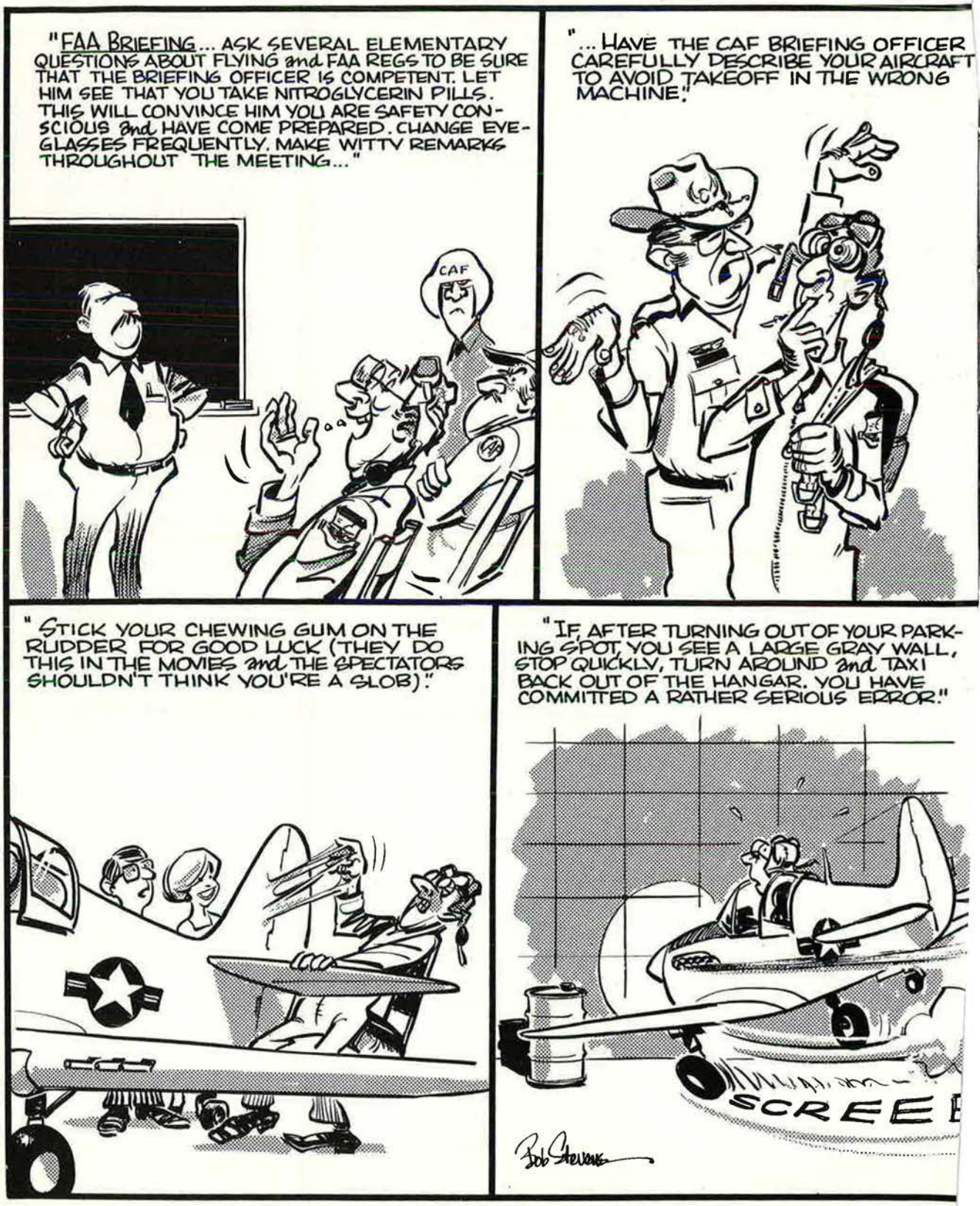

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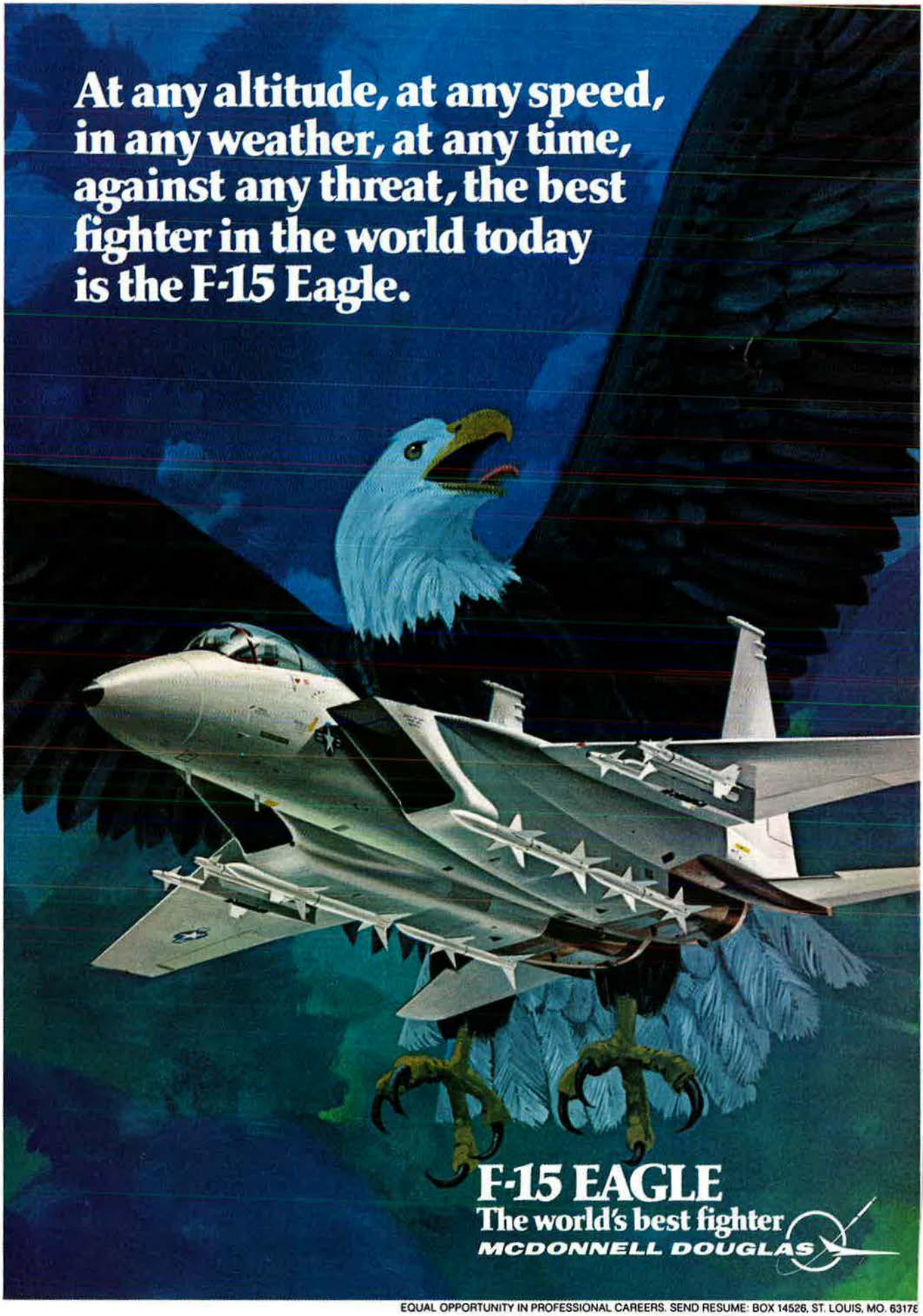

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