March 1970/ 60c

AIR FORCE

and **SPACE DIGEST**

The Magazine of Aerospace Power / *Published by the Air Force Association*

FOR 'CHAPPIE' JAMES – A STAR, AND A NEW, TOP JOB IN THE PENTAGON

Dan Henkin, right, Ass't Sec'y of Defense (Public Affairs), greets his new deputy, Col. Daniel James, Jr., veteran fighter pilot and combat commander, who takes over his new duties this month.

DOD is the world's largest user of EDP, and EDC too.

EDC is electronic data communications. The largest and most sophisticated EDC system in the world designed, installed and maintained by Western Union is used by the Department of Defense.

The system, called Autodin, provides communications for virtually every aspect of DOD's operations on a global scale. About 2 700 points can communicate efficiently, flexibly and rapidly.

Since Autodin went on line in 1963, Western Union has been upgrading its performance. Here are typical figures showing current speed of service.

Precedence	Objective	Average Performance
Z—emergency	10 minutes	3.45 minutes
O—operation	1 hour	5.04 minutes
P—priority	6 hours	12.21 minutes
R—routine	18 hours	17.39 minutes

This is typical of Western Union's approach to the needs of civilian and military communications Our services go beyond installing systems. We continually maintain and upgrade performance. And that's because our goal is to make electronic data communications as useful and practical as electronic data processing.

Western Union, the EDC company

western union

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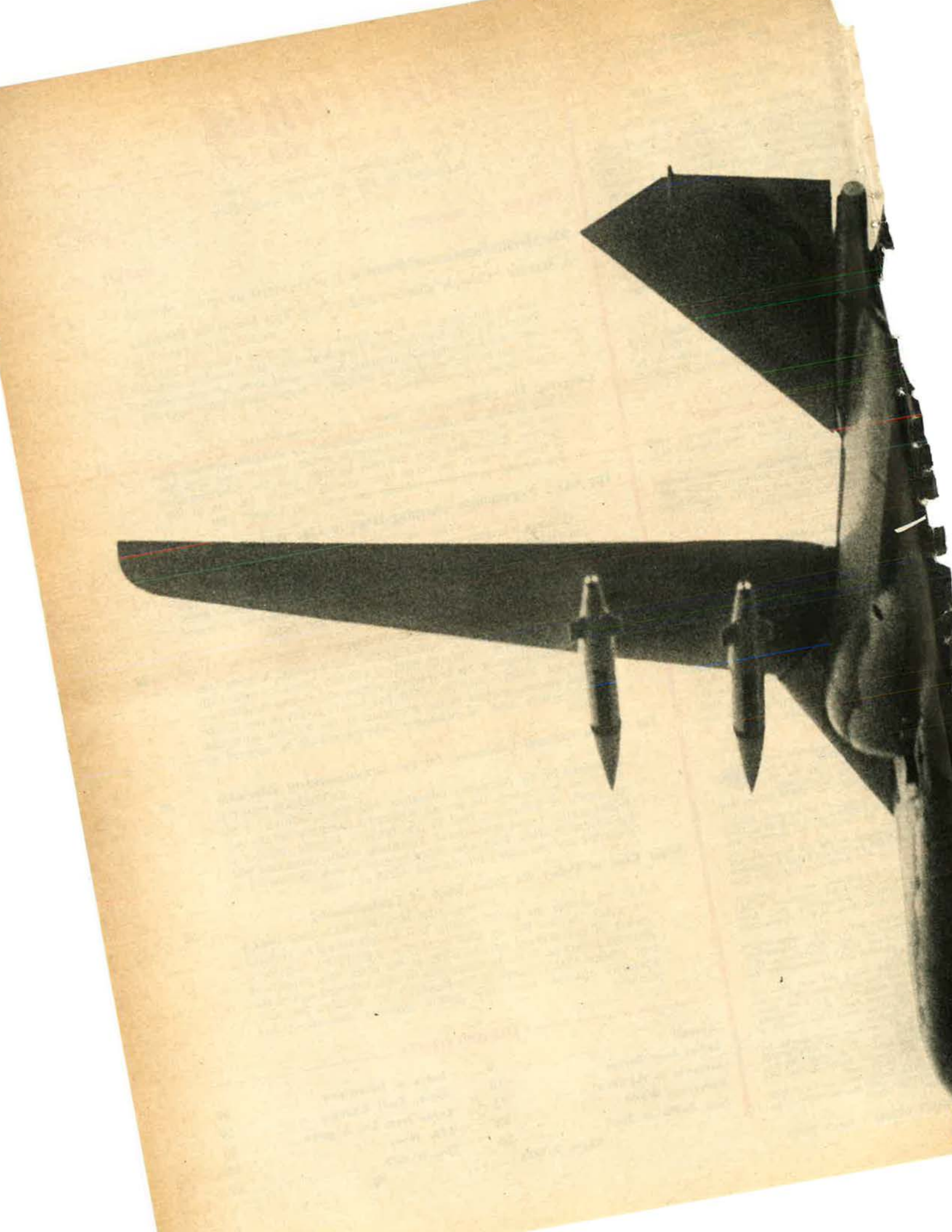
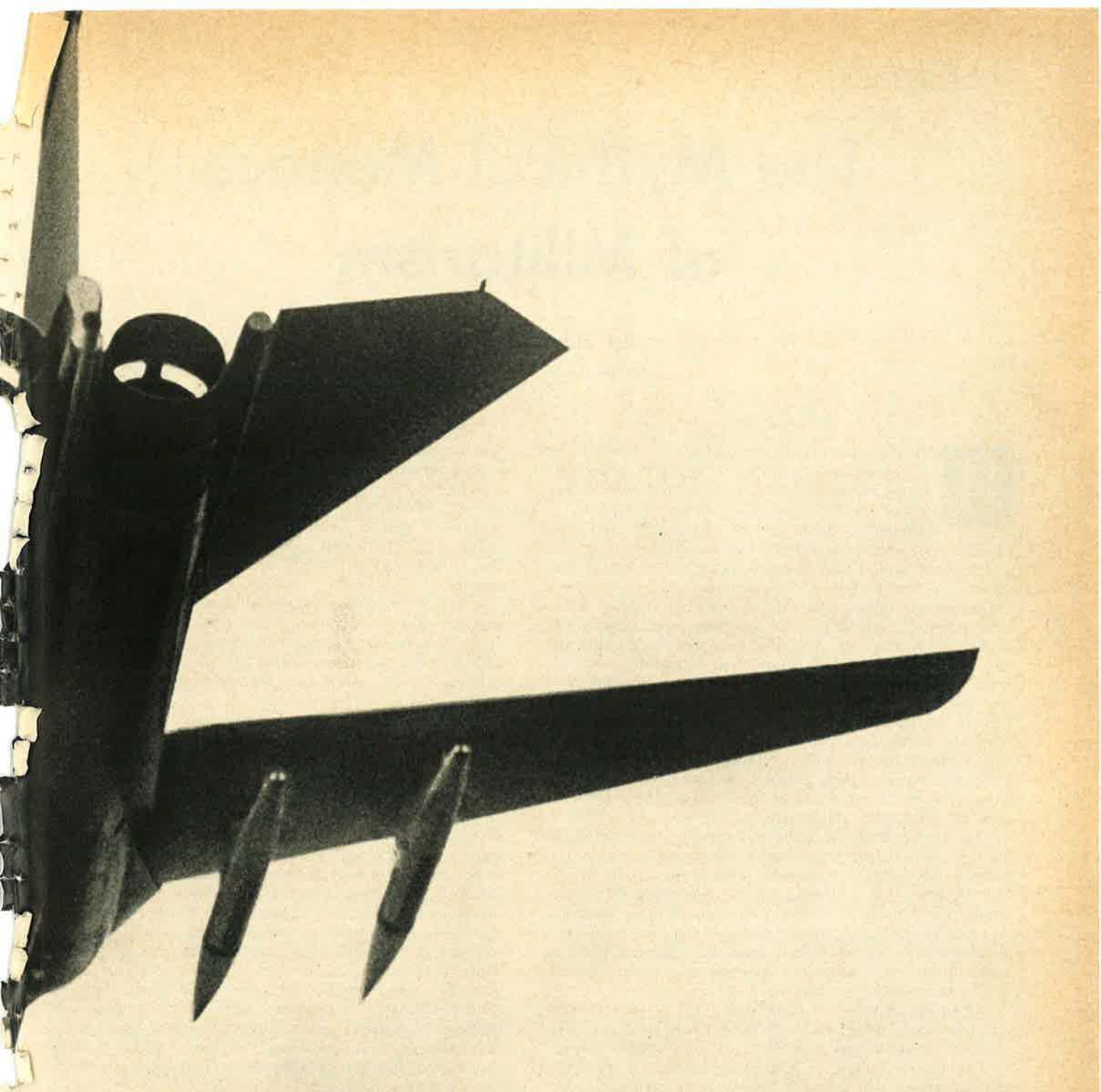
DEPARTMENTS





The FB-111A is the U.S. Air Force's newest strategic bomber. It can fly high or low a lot faster than other bombers, penetrate enemy defenses undetected in good weather or bad, day or night, and strike more accurately with just about any weapon in the inventory. It's being delivered now to the Strategic Air Command. We've built more than 10,000 bombers over the past 30 years. And we're already planning for the next generation.

GENERAL DYNAMICS

An Editorial

The Mythical Menace of Militarism

By John L. Frisbee

SENIOR EDITOR, PLANS AND POLICY

HAS America become a militaristic society?

No question bears more importantly on the future of this country. History underscores the gravity of the issue. It's difficult to think of a democracy that became militaristic and remained a democracy. And it's equally difficult to name a militaristic nation that reversed its course except as the result of a war that it sought—and lost.

Despite the importance of the question, it has hardly been debated at all. Discussed, yes. One need spend only a few minutes at the magazine and paperback racks of any large drugstore to compile a formidable list of critics and commentators who claim that militarism is in the American saddle—or at least has a foot in the stirrup. Among the gloom-spreaders are well-known academicians, scientists, economists, congressmen, novelists, editors, and an occasional retired military officer. But what should be a *dialogue* has been very largely a monologue, with terms defined for the convenience of the speaker. This, in itself, does not make for enlightenment.

The relevance of the current discussion becomes even more dubious when we consider the target on which it focuses—the military profession. That is the wrong target. Militarism is not a disease of the profession of arms. While we may find in the American military discrete attitudes toward discipline, authority, and the legitimate or illegitimate use of force, these are attitudes without which the military could not function as a useful agency of the democratic government it serves.

Militarism, rather, is the disease of a society that attempts to misapply to secular, civilian problems the kinds of attitudes and practices that are entirely proper, and uniquely required, in a military context. If we wish to discover whether a society has become militaristic, we should look at civilian attitudes—not at the military profession.

The study of militarism is hardly a new discipline. Serious students have catalogued a number of its symtoms. Among the most virulent are:

• *Glorification of war,* supported by elaborate pseudo-scientific justifications based on biological, psychological, ethical, nationalistic, or economic grounds. The best sellers of this genre were written by foreign despots and read here with horrified disbelief.

• *Public deification of the military,* which was last observed in this country about the time of V-J Day. With twelve million men and women in uniform, representing almost every American family, one could then have said quite accurately that the military *was* the public.

• *An elite officer corps,* with perquisites and privileges denied to most civilians. Ask any officer in uniform who ever tried to pull rank on a New York taxi driver or on a congressman about that.

• *Belief in a military mystique,* unfathomable to the layman. Maintaining such a mystique in a country with twenty-six million veterans, almost any one of whom believes that he could run almost any war better than almost any general, would be the neatest trick of the century.

• *A lack of control of the military* by elected and appointed officials. Vietnam, where the military still fights an Asian land war against which they counseled for years, with strategy and tactics often not of their choosing but dictated by civilian leaders, provides its own refutation of this charge.

• *A belief that external national goals can be attained only by military means.* With few exceptions—none of them in recent years—the public has viewed the purpose of our armed forces as strictly defensive. This view has been shared, almost universally, by American military professionals. Certainly public belief in the effectiveness of military power as a solution to world problems, other than defensive ones, is at an all-time low today.

An interesting note is found in the January 1970 issue of *The Center Magazine,* a publication of The Center for the Study of Democratic Institutions. Neither The Center nor its magazine will ever be described as a voice of the so-called military-industrial complex. Seven associates and consultants of The Center were asked to comment on the question, "Has America become a militaristic society?" Collectively, they represented five academic disciplines: theology, economics, mathematics, law, and the humanities. Among their responses, all the criteria described above were touched on directly or indirectly. Six of the seven answered, "No."

When charges of American militarism have been made, they generally are hung on loose and rather rusty semantic hinges. Whatever malaise besets this country, it is not militarism by any accepted definition of the term.

The military is open to criticism for errors of omission and commission, as it should be. It has not, however, committed the fatal error of trying to militarize American society, and the American people show no disposition to adopt militarism on their own.

We are not imperiled by militarism. But there is a real risk that those who would exorcise an imaginary devil may, in the process, dangerously weaken and seriously alienate from American society the only agency it has to protect it from an external military threat that not only is real, but is growing with each passing month.

This kind of devil-chasing is about as useful as beating your wife because the car won't start.—END

Asking Mars the right questions.

Our people are busy helping to plan and integrate the experiments Viking will carry to the surface of Mars in 1975. One of the knottiest problems is thinking up the right questions to ask the reticent red planet. The objective is to get the *maximum* amount of *pertinent* and *useful* information. Scientists, including ours, all over the nation are burning plenty of the midnight oil to achieve just that. Nobody wants to go 280-million miles and ask the wrong questions.

Martin Marietta Aerospace Group. Headquarters: Friendship International Airport, Maryland.

MARTIN MARIETTA

AIRMAIL

My Lai Comment

Gentlemen: Your editorial appearing in January entitled "On My Lai" is one of the most rational and comprehensive comments on this subject that I have read. It reflects, also, a truly Christian insight.

Well done.

MAJ. GEN. NORRIS B. HARBOLD, USAF (RET.)
San Antonio, Tex.

AX in the Air Force

Gentlemen: The article on the AX close-support aircraft ["AX: Lethal, Accurate, Agile, and Cheap," by Edgar E. Ulsamer] in your January issue was extremely well done. There's no doubt in my mind that we need an AX in the Air Force and should have had one in the past to help perform one of our vital missions—support of the ground forces.

It has always been my philosophy that "If it flies, the Air Force should be flying it," be it a helicopter, liaison plane, quiet aircraft, transport, bomber, supersonic fighter, or spacecraft. I haven't changed my mind.

I hope [the AX] isn't too late.

COL. RAY LANCASTER
Dept. of Aerospace Studies
The University of Kansas
Lawrence, Kan.

New Talent

Gentlemen: . . . I agree with the plea from Joe Rowland in "Airmail" in the January issue (page 5) regarding giving some more space to CAP.

We need all the help we can get to give this program as much assistance as possible as it is probably the best organized fight against juvenile delinquency in the United States. I know I do not have to tell you the CAP story, but we need more talent in the program, and we have to get more publicity to attract [it].

Many of the younger people view AIR FORCE/SPACE DIGEST as the Bible of airpower and a sort of "unofficial" mouthpiece for Air Force thinking. Inasmuch as the Civil Air Patrol is an auxiliary of the USAF and chartered by Congress in such regard, we should be included in any supplemental benefits that may accrue by information published in AIR FORCE concerning CAP activities. . . .

No matter what, sell the CAP; it's one of the best assets the USAF has as far as recruiting new talent, support, and in grass-roots backup. In these troubled moments we need all the help we can muster. . . .

COL. FRED E. BAMBERGER, JR., USAFRES
Reserve Coordinator
New York Wing Civil Air Patrol
Mineola, N.Y.

'17s and '24s

Gentlemen: Reference Colonel Arnold's "Mission Improbable" letter in the December '69 issue, I don't know if his last sentence referred to the entire letter or the last paragraph, but here we go again.

For information purposes there were 12,731 B-17s produced. Who has the figure for B-24s?

However, the main comment I have is that I sure didn't see any B-24s over Pyongyang or along the Yalu in 1950, and while our B-17s proved as much a surprise to some of our people as they did to the other side, we were there.

I assumed by then the Old Triple Threat (bomb them, strafe them, and fall on them) had accomplished all three. Glad to see some survived.

MAJ. WM. J. HARVEY, USAFRES
Huntsville, Ala.

• *Pentagon records come up with a figure of 18,190 for the B-24s (and 12,692 for the B-17s). The '24s weren't used in the Korean War. But there were some B-17s and one of our editors can prove it. He was there—in a B-17.*—THE EDITORS

Power Politics in Action

Gentlemen: After reading the reports of how Ernest Fitzgerald has been smeared by Air Force Secretary Seamans and his hatchetmen, your small paragraph on page 20 of the December '69 issue disturbs this writer no end.

We are witnessing a political execution that should unleash a wave of resentment among all taxpaying citizen-soldiers of the Air Force Reserve. One begins to understand the growing unrest among the younger generation. Their vocal criticism of the hypocrisy of "power politics" has some merit.

As a charter member of AFA, I have seen where political articles favorable to the Establishment (USAF) were given space in the magazine, yet nothing of a critical nature has been probed and written in depth. Yet, here is a case in point that cannot be pushed under the rug. As a taxpaying citizen, I applaud the revelations by Fitzgerald re cost of the C-5. You acknowledged, in an indirect way, the new methods of cost-management in a recent issue. That resulted from the flak Fitzgerald caused in Congress.

However, when will AFA take a moral stand, and voice opposition to the means, and the methods, the Establishment has "gotten to" Mr. Fitzgerald?

If AFA is not to be called the voice of the industrial complex, but a voice of its individual members past, present, and future, it must come to grips with this human story. Otherwise, AIR FORCE/SPACE DIGEST will fall into the class of a house organ for industry.

As a former jet jockey, I have the world of respect for the human element that makes up the product of our hardware. But please, let's not kill off our human assets for political expediency.

LT. COL. IRVING PEARLM.
USAFRES
Jamaica, N.Y.

Attack Planes

Gentlemen: Caption errors persist in the December issue, reference caption at upper left of page 24. The chances are the 90th Bomb Group never flew the B-26 Martin Marauder, as stated, but did fly the [Douglas] A-26 Invader, unfortunately redesignated a "B-26." [*See correction in "Airmail," February issue.*] This is a common error but one which shouldn't occur in an Air Force publication.

More serious is the fact that elimination of the "A" for "Attack" designation revealed a complete lack of appreciation of how the war had been won and how the change in airplane design would affect the chances of a "fighter" plane doing a satisfactory job of attack, *i.e.*, ground support.

Ever since, the Air Force has continued to build fighters that can't as-

(*Continued on page 9*)

In systems we promise everything because we've already delivered it

...the U.S. Navy's AN/SPN-42 All-Weather Carrier Landing System

SPN-42 is a digital solid state system. It provides three modes of operation: fully automatic, instrument landing system guidance and ground control talk-down. All major Navy attack carriers and several Naval air stations are or will be equipped with SPN-42 systems.

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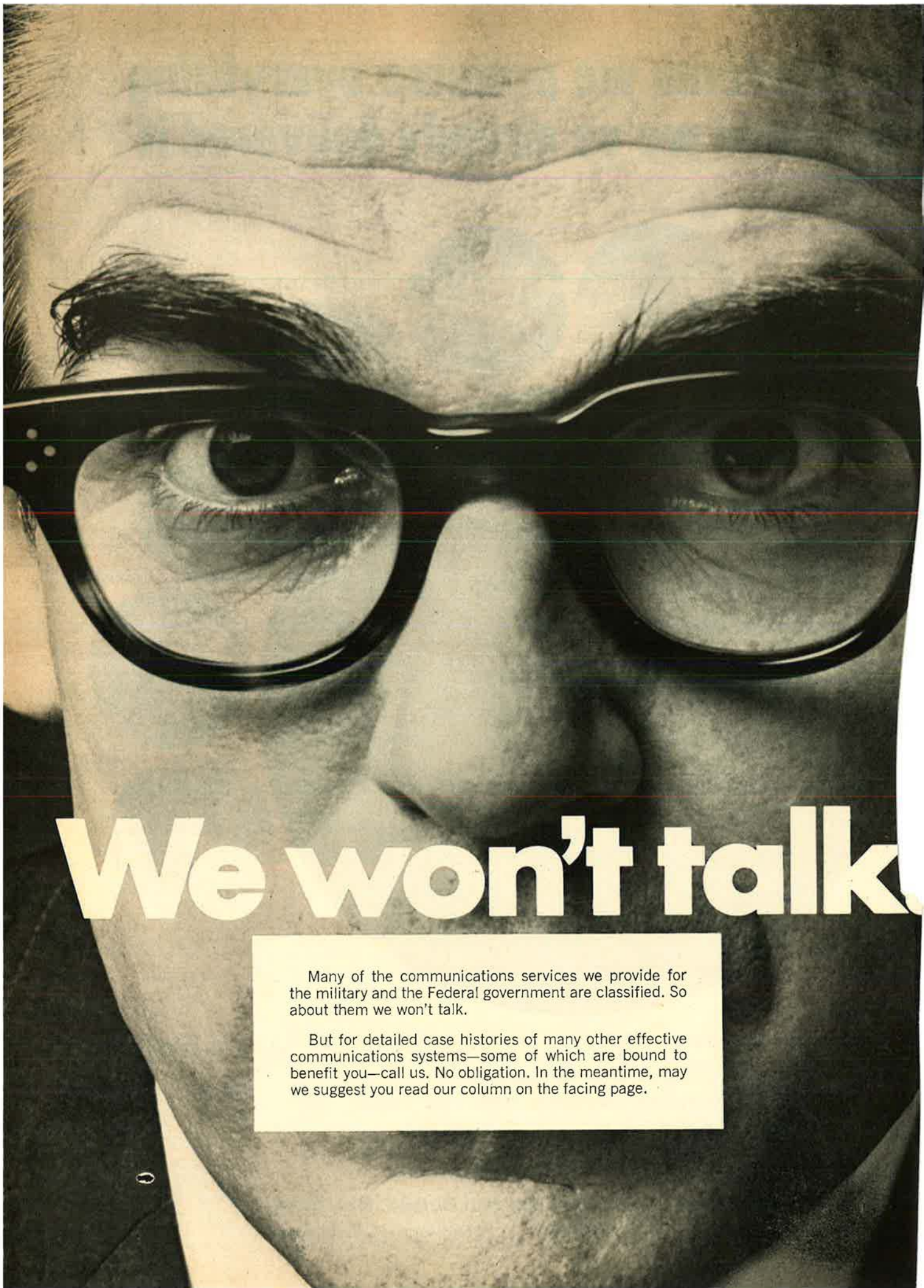

Many of the communications services we provide for the military and the Federal government are classified. So about them we won't talk.

But for detailed case histories of many other effective communications systems—some of which are bound to benefit you—call us. No obligation. In the meantime, may we suggest you read our column on the facing page.

sure air superiority, are fantastically expensive and unsatisfactory for any consideration of ground support, and retrofitted clay-pigeon B-52s a dozen times, also at fantastic expense. It took twenty-three years for a senior Air Force officer to even dare mention "attack airplanes" once again (Gen. Bruce Holloway, March-April issue of *Air University Review*). Our present equipment is only an expensive facsimile of an Air Force.

On the subject of equipment, your Association has done little more than to whitewash this deception and our mortal danger.

LT. COL. W. P. MAIERSPERGER, USAF (RET.)
McLean, Va.

Raid on Bari

Gentlemen: I would appreciate hearing from any of the readers who were present at Bari, Italy, on the night of December 23, 1943, when sixteen ships were sunk by German bombers. This information is for a contracted book due to be published in 1971.

GLENN INFIELD
3507 4th Ave.
Beaver Falls, Pa. 15010

North American F-82 Twin Mustang

Gentlemen: I would like to hear from anyone who flew or maintained F-82s. Data and photographs are needed for the F-82's service life in USAF with the 27th Fighter Escort Group (SAC), the 51st, 52d, 325th, and 347th Fighter Groups (All Weather), and the 449th Fighter Interceptor Squadron in Alaska. No amount of material is too small, and all material will be carefully handled, copied, and promptly returned.

ROBERT LOFFREDO
American Aviation Historical Society
1353 Park Ave.
Des Moines, Iowa 50315

UNIT REUNIONS

First Separate WAC Battalion

8th Air Force vets and their families are invited to join the First Separate WAC Battalion, WW II, on their London reunion trip. Plane leaves New York July 5, returns from London July 19. Details are being handled by

Mrs. Allan Sidell
350 East 77th St.
New York, N.Y. 10021

7th Fighter Command/7th Fighter Wing

The 25th V-J Day reunion of personnel associated with ("Lizard") Hawaiian Air Defense activities (including WARDs) from 1941 to 1946, will be held September 18 at Ft. Shafter and September 19 at Hickam AFB. Registration deadline: July 1, 1970 ($5 per person deposit). Make checks payable to 7th Fighter Command/Wing Reunion Fund. Further information from

Col. Henry S. Lau, USAF (Ret.)
925 14th Ave.
Honolulu, Hawaii 96816
Phone: 737-0346

P-47 Thunderbolt Pilots Association

World War II "Jug" pilots will hold their annual reunion at the Imperial House, North, in Dayton, Ohio, May 8-10. For further information contact

Robert Forrest
Ohrbachs Inc.
Market & Halsey Sts.
Newark, N.J. 07102
Phone: (201) 643-0400

56th Fighter Group Association

The 56th Fighter Group and attached units, WW II, will hold their reunion in June of this year. For information on exact time and place write

56th Fighter Group Association
c/o Lee D. Lester
408 Advel Court
Kewanee, Ill. 61443

63d Station Complement Squadron (SP)

The second big family reunion of the 63d Station Complement Squadron (SP) will be held Saturday, June 27, 1970, at Moore-Dale Village, Bailey, Colo. For further information contact

Lt. Col. J. T. Gilmore, USAF (Ret.)
2564 South Adams St.
Denver, Colo. 80210
Phone: (303) 757-0023

310th BG, 89th F/TC, and 94th TC/A Wings

All the old-timers of the 310th Bomb Group, 89th Fighter/Troop Carrier and 94th Troop Carrier/Airlift Wings are holding their biannual reunion at the Officers' Open Mess, Hanscom Field, Bedford, Mass., on Saturday, May 9. All interested should contact

Steve Lannan
Lannan Chevrolet
40 Winn St.
Woburn, Mass. 01801

388th Bombardment Group (H)

Ex-combat buddies of the 388th Bombardment Group (H), which was stationed in England during WW II in the 45th Wing, are planning a reunion in Sacramento, Calif., in June. Members of the 96th and 452d Bomb Groups, also with the 45th Wing, are welcome to join us. For further information write

Ed Huntzinger, Sec'y
388th Bombardment Group Assn.
863 Maple St.
Perrysburg, Ohio 43551

604th Air Commando Squadron

Officers and airmen of the 604th Air Commando Squadron (Fighter) of Bien Hoa Air Base, Vietnam, will hold their first annual reunion in Wichita, Kan., in July. Further information re time and place may be obtained by writing

Capt. Robert L. Holtz
2135 E. Palmcroft Dr.
Tempe, Ariz. 85281

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all solid state VHF/UHF equipment
operate in your environment

We are now demonstrating the Motorola CM Series—completely solid state including all transmitter final output stages. Engineered to deliver the higher level reliability demanded by the air traffic realities of the '70s. And designed to effect a significantly reduced total cost of ownership over ten years of operation.

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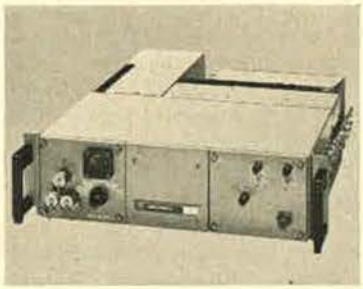
Module and component interchangeability. The all-new CM Series includes 20 and 40-watt single-channel VHF transmitters, 20 and 40-watt single-channel UHF transmitters; single-conversion, single-channel superheterodyne VHF and UHF receivers; and a 3500-channel, automatically-tuned 20-watt UHF transceiver. Component commonality between and among these all-solid-state units substantially reduces the spare parts inventory needed for full-scale operation.

Other direct results include simplified training of maintenance personnel and shorter downtime for preventive maintenance routines throughout the long equipment life.

40 reliable watts without a tube. The CM-634 and CM-644 are fixed-tuned, single-frequency, crystal-controlled transmitters capable of being tuned from 110-155 MHz and 225-400 MHz respectively. Their all-solid-state stability is not subject to the gradual power degradation typical of transmitters employing tubes in their final output stages.

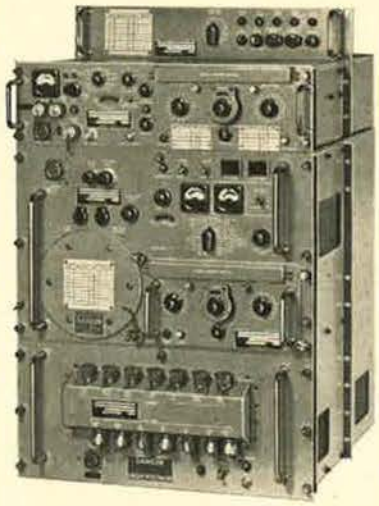


CM-634 VHF transmitter 40 watts, all solid-state, crystal controlled tuneable from 110 to 155 MHz 25 KHz spacing.

5000-hour MTBF. Both the CM-630 20 watt VHF transmitter and the CM-640 20 watt UHF transmitter are designed for minimum maintenance and aligning time. Channel changing is accomplished with units in rack-mounted position. An output filter limits all spurious radiation—including harmonics—to 80 dB below the carrier. Both are only 5¼ x 15 x 19 inches, weigh under 40 pounds.

100 watts, 3500 channels on-the-move. Motorola's advanced-design CM-Series emanates from the same technical group that produced the Air Forces' air transportable tactical UHF Communications Center, AN/TRC-87 and its offspring, the 100-watt, 3500-channel AN/URC-67 Automatic Receiver/Transmitter—a tested veteran of Vietnam jungles and Arctic tundra.

CM-610 VHF Receiver Single Channel-Compact-Lightweight (also available in UHF as CM-620).



URC-67 AUTOMATIC RECEIVER/TRANSMITTER.

CM-520 UHF Transceiver 3500 channels 50 KHz spacing 22 automatically tuned channels 20 watt output all solid-state.

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LETTER FROM EUROPE

By Stefan Geisenheyner

AIR FORCE/SPACE DIGEST EDITOR FOR EUROPE

Autoland Capability for RAF Transports

The standard of safety in world commercial aviation is one fatal accident in a million landings. With a fully automatic-landing (autoland) system such as Smiths Aviation triplex system, the probability is reduced to one accident in ten million landings, because the pilot-error factor has largely been eliminated. This tenfold increase in safety probability is of great interest to military aviation. The RAF started an autoland program for its transports in 1966.

The first experimental automatic landing with the help of a Smith Mk29 flight-control and triplex automatic-landing system with head-up display was performed in 1966. Today, the RAF's Belfast, an aircraft with maximum takeoff weight of 230,000 pounds, built by Short Brothers & Harland Ltd., has become the world's first military transport to be cleared for automatic landings under civil safety standards and fully operational conditions.

That announcement was made early this year by the British Ministry of Technology after successful completion of an important phase of the Belfast's blind-landing assessment program. This phase, which involved 800 fully automatic landings, qualified the aircraft to land automatically if 600 meters (1,970 feet) of runway are visible and a decision height (go or no-go for the landing) of forty-eight meters (160 feet) is available. This complies with clearance demands of the Certificate of Airworthiness for Stage B, Category IIa automatic landings. The next phase of the program, Stage C, will be completed by the end of 1971. Landings will be permitted then with runway visibility of 200 meters (650 feet). The decision height factor will have been eliminated altogether by that time.

Other RAF aircraft are equipped with blind-landing systems, but for emergency use only. The Belfast system has proved so safe that clearance has been given by the RAF for its use as standard procedure, even under normal and fair-weather conditions.

The RAF recommendation to use autoland procedures regularly was prompted by the fact that pilots distrust the automatic systems if visibility is good and standard visual references can be used on approach. The building of crew confidence is, therefore, an important factor of the current RAF training schedule. Airline experience has shown that crews often unnecessarily override the automatics on blind landings. To overcome this natural tendency, the crews who will fly the autoland aircraft have to undergo a training program of up to 250 automatic landings.

The first Belfast equipped for automatic landings was handed over to the RAF in February. All the other Belfasts will be reequipped with the new system and returned to operational use as soon as possible. The autoland system will increase considerably the operational readiness of the RAF Transport Command in Europe, where for several months of the year flying conditions are marginal because of fog.

Germany's National Satellite Programs

Germany's space efforts are being directed along tw lines. The first is its participation in European joint ven tures such as the European Launcher Development Or

The RAF Belfast has been instrumental in several successful phases of a program to assess the blind-landing capabilities of an autoland system built by Smiths Aviation. The system has been proved so safe in tests that the RAF has authorized its use as a standard landing procedure.

A Short Belfast XR 371 makes a fully automatic, hands-off landing at Amsterdam's Schiphol Airport during recent trials of the Smith Mk29 autoland system. The Belfast is the world's first military transport aircraft to become operational with the fully automatic blind-landing system.

ganization (ELDO) and the European Space Research Organization (ESRO), in which nearly all West European nations are involved. The second line is pursued by the German National Space Program which, as its name implies, is run on a purely national basis. It covers the development of satellites and space probes for which launching services are obtained abroad since no German launch vehicle is available.

In the summer of 1965, the German Ministry of Science and NASA signed an agreement that covers the launching by NASA of German scientific research satellites. The data obtained from these space vehicles are, according to the agreement, to be made available to both nations, each of whom carries the costs of its share in the program.

Last November, the first of a series of German satellites was orbited by NASA. In Germany its designation is "Azur," and in the US it is known as GRS-A (German Research Satellite-A). This 157-pound space vehicle carries seven experiments designed to study the earth's radiation belt, the aurorae, and solar-particle events. It was developed and constructed by the German firm of Messerschmitt-Bölkow-Blohm. The experiments were furnished by research institutes and universities.

The successful development, launch, and operation of this satellite, which up to now has cost the Germans 63 million DM ($17.2 million), was greeted with enthusiasm and gave additional impetus to the ambitious follow-up programs planned in the framework of the German/NASA agreement.

Satellite A-2 is scheduled for launch by a NASA Scout in late 1971 or early 1972. It has not yet been established who will have the overall design leadership for this project. The components and structure of the satellite, however, are under development by various firms. The scientific mission will be the measurement of electron temperatures, electron densities, ion and neutron densities, and special forms of solar radiation in a medium-high orbit.

The lifetime of the satellite will have to be at least six months. The spacecraft will carry five experiments, four of which will be built in Germany, with one supplied by the US. The project was started in 1968 and by the end of 1969 had cost the German Ministry of Science 8 million DM ($2.2 million). Development, construction, and operation cost estimates for 1970 and the following two years are 10.6, 11.5, and 3.0 million DM ($2.9 million, $3.15 million, and $820,000) respectively. The A-2 project will cost Germany in the neighborhood of 30 million DM ($8.2 million) altogether.

Also in 1968, preliminary work was initiated on the A-4 research satellite. Here, too, the design leadership has not been awarded. This has become a basic policy question involving internal German politics. The question has not been resolved whether it is wiser to give all the developmental and construction work to one firm or spread the work among a number of companies. Each approach offers advantages. The latter would spread technological know-how widely while diluting the total space capability of one firm specializing in this field; the other would give, in effect, a monopoly to one company which could build a tremendous capability, thereby precluding competition by other organizations.

Nevertheless, the work on A-4 has been started, and it is to be launched by a NASA Scout from the Western Test Range in 1973. The satellite is being designed to assist research into the intensity and direction of cosmic gamma quanta of more than 20 megavolts. The A-4 project will cost approximately 30 million DM ($8.2 million), to be spent in 1971 and '72.

Project analysis for a meteorological satellite is scheduled to begin in 1971. The space vehicle will carry experiments to measure the temperature profile of the earth, and

Prototype of the Azur satellite built by Messerschmitt-Bolkow-Blohm of Germany. The first in a series of Azurs was launched from Cape Kennedy last November and carried seven scientific experiments. NASA cooperation on the program is to continue.

to photograph cloud formations and geological features. The satellite is to be injected into a synchronous orbit by a Scout launcher in 1974. It will be a largely experimental vehicle, built to acquire the know-how for a later participation of German industry in global meteorological satellite systems under international auspices. The cost of the project is estimated to be more than 50 million DM ($13.7 million).

By far the most ambitious project is the development of a solar probe known as Helios. Work on it began in 1967. The tentative launch date has been set for 1974. The probe is being designed to measure solar radiation and other solar phenomena close to the sun. Due to its heavy weight, definitely beyond the payload capability of the Scout, the use of an Atlas-Centaur launcher is envisioned to boost the probe to escape velocity. A new agreement with NASA will have to be negotiated for the use of this launcher configuration. The total cost of the solar-probe project will be at least 175 million DM ($47.7 million). Up to the end of 1969, more than 15 million DM ($4.1 million) had been spent.

Since NASA is not willing to launch, for any foreign nation, communications satellites that infringe on the business of the Comsat Corp. or the Intelsat agreements (which are still to be negotiated), France and Germany decided to embark on a cooperative venture to develop and launch their own comsats. The program, called Symphonie, is now in the project-definition stage. Systems leadership is held by Messerschmitt-Bölkow-Blohm. The original plan called for a launch of the satellite by the spring of 1972 with a Europa 2 launcher, developed under the direction of ELDO.

The launching would take place from the French space center at Kourou, French Guiana, on the northeast coast of South America. The plan calls for stationing the satellite in a synchronous orbit over the equator at 15 degrees West longitude. If this venture can be realized, the comsat will be on station in time to relay the 1972 Olympic Games coverage from Munich to Africa and the Americas. Chances are slim that the launch date can be met since the launcher may not be operationally ready that early. At the close of 1969 Germany had spent 30 million DM ($8.2 million) on this venture. Total expenditures are estimated

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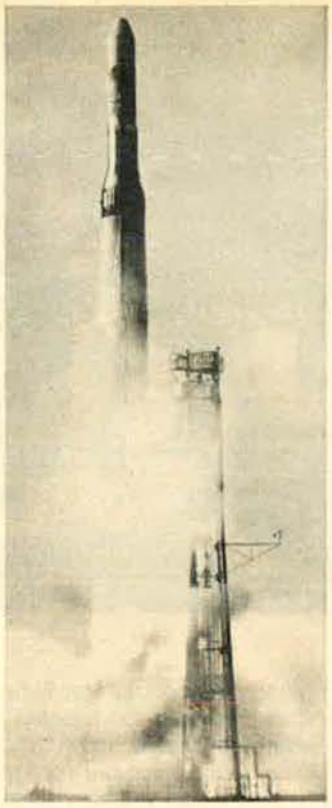

Franco-German cooperation is the mainstay of the joint communications satellite program called Symphonie. A satellite is to be launched sometime in 1972 via the Europa 2, an advanced version of the Europa 1 shown here.

in the vicinity of 250 million DM ($68.2 million), which will be shared equally by France and Germany.

This month may see the launching of another German-built satellite that is to be orbited from French Guiana by a French Diamant-B rocket. This satellite, called "Dial," is designed to probe the upper fringes of the atmosphere. Its total cost is about 9 million DM ($2.45 million). Though the satellite is of scientific importance, the major reasons for the joint venture are to prepare France and Germany for the launch of the Symphonie comsat, to establish a working relationship between the space teams of the two nations, and to form the working groups for future launching operations.

Germany is a latecomer in the space business. Its industry has not yet the capability and capacity to compete worldwide in this field, and it lacks the experience of actually constructing spacecraft. This situation is fully understood by the German government, which consequently is willing to spend considerable sums on projects designed to give industry the necessary experience. Together, the projects mentioned in this report will cost the German government a minimum of 500 million DM ($137 million). This investment promises no immediate, direct return in hard cash. The possibilities of technological spin-offs likewise are small. The long-term goal of the German National Program is to establish for Germany a reputation as a desirable partner in any future international space venture.

Anglo-US Partnership for Executive Jets

Two famous names in world aviation—Hawker Siddeley of Britain and Beech Aircraft of the US—have joined forces to design, build, and market a range of executive jet aircraft. A cooperative agreement was announced in London shortly before last Christmas. Hawker Siddeley said the new family of business jets would be based on its successful HS-125, a ten-seater twinjet aircraft. Beech Aircraft will take over North American marketing responsibilities for this and the follow-up aircraft, and is buying the aviation assets of Hawker Siddeley International Inc., of New York.

The latest HS-125 is the 400 series, which has better performance than the earlier series. The range could be increased to 1,800 nautical miles. This aircraft will be known in the US as the Beechcraft Hawker-125, or BH-125. Under present planning the 400 series jet will be developed into a larger and faster executive aircraft, tentatively designated BH-600. It will have better range and speed than the BH-125, and will carry several extra seats. It is to be equipped with two Rolls-Royce Viper 600 engines. The first flight of the prototype is expected toward the end of this year, with first deliveries planned for mid-1971.

Hawker Siddeley and Beech also plan to develop and test in Britain a smaller twin-engine executive jet under the project designation BH-200. It will have fewer seats than the other two aircraft but still offer a combination of interior spaciousness, economy of operation, and outstanding short-field capability. Eventually, the BH-200 and the two other aircraft destined for the North American market will be built in Britain and flown to Beech's facilities at Wichita, Kan., where each aircraft will be custom-fitted to the buyer's specifications.

Hawker Siddeley has also announced nine more export orders for the HS-125. Five of the aircraft were bought in the US; the others in Australia, Germany, and Switzerland. The new orders bring total HS-125 sales to 225, of which 131 were sold in the US.—END

Britain's Hawker Siddeley and the US's Beech Aircraft have joined forces to produce and market a range of executive jet aircraft based on the British company's HS-125 twinjet ten-seater shown here.

AIRPOWER IN THE NEWS

By Claude Witze
SENIOR EDITOR, AIR FORCE/SPACE DIGEST

Priorities and Money

WASHINGTON, D.C., FEBRUARY 10

The annual federal budget debate got under way last week, and the usual maelstrom of figures and the interpretations people put on them are spinning around. Next week, the military posture hearings will start behind closed doors, with Secretary Melvin R. Laird, fresh from a trip to Vietnam, before the Senate Armed Services Committee.

It is an election year (*see page 35*), and Congress wants to finish its chores in early August. Some members already have started to scream that what the Nixon Administration has done to the defense program is not enough. The Pentagon, anticipating this attack, has portrayed its cutbacks as a contribution to the rearrangement of national priorities. Defense outlays for Fiscal 1971 will be down twelve percent from those scheduled a year ago. This was announced in headlines adjoining news from the uneasy Middle East, where Russia is being about as helpful to the cause of peace as it was in Korea and is in Vietnam.

The Administration, intent on rearranging priorities, is left with two points of vulnerability. The first is that it anticipates a national budget surplus, but there is good reason to believe there will not be one. Chairman George H. Mahon of the House Appropriations Committee has said so. The second fact of life is that war and the threat of war, as well as its magnitude, is not something that can be put down as a line item. We went to the moon because the Russians launched Sputnik, and we perfected our electronic countermeasures because they put SAM antiaircraft missiles in Vietnam. They know how to upset the US budget and our technological and military equilibrium.

The faceless spokesmen for the Defense Department, who compared the Fiscal 1971 proposals with those of a year ago, insist this was done with no intent of criticizing the previous Administration. Indeed, the spokesmen themselves worked in the Pentagon under both regimes. But the way they described the shift in national priorities seemed to hang on what they want to do now, compared with what the Lyndon Johnson-Clark Clifford Fiscal 1970 budget wanted to do.

Item: The Fiscal 1971 request, in terms of Total Obligational Authority (TOA) is $72.9 billion. This is a decrease of $4.1 billion under the current FY 1970 request ($77 billion) and $12.7 billion or 14.8 percent below the Johnson budget for FY 1970 ($85.6 billion). Mr. Laird cut the latter figure.

Item: Budget authority, or New Obligational Authority (NOA), for FY 1971 totals $71.3 billion. This is down $11.9 billion or 14.3 percent from the request of the Johnson Administration. It also is $2.6 billion less than the final FY 1970 figure.

Item: Actual outlays for FY 1971 are projected at $71.8 billion, down twelve percent from those projected by the last Administration for FY 1970 ($81.6 billion) and $5.2 billion less than the actual FY 1970 outlay ($77 billion).

Item: Defense outlays in FY 1971 are estimated to take seven percent of the gross national product, the lowest figure since 1951. They will represent 34.6 percent of the federal budget. That is the lowest figure since 1950. It is these figures that Mr. Laird will stress when he talks about his contribution to the shift in national priorities. Other departments may be challenged to match it.

Item: Pay increases voted by Congress frequently distort the outlay picture. This is pointed up by comparing the FY 1971 outlays with those of FY 1969. They drop $6.9 billion, from $78.7 billion to $71.8 billion. However, if pay raises are put aside from the figuring, the real reduction jumps to $10.4 billion.

Item: There is the inflation factor. The department has translated the FY 1971 outlays into FY 1964 dollars and finds that $71.8 billion today is equal to $54.6 billion before the war in Vietnam got hot. That means the proposed FY 1971 budget is up only $3.8 billion in real dollars.

Item: A two-year manpower reduction—for Fiscal Years 1970 and 1971—is estimated at 1,321,708. This equals 1.6 percent of all those who are currently in the nation's work force. More than half of the projected cutback will come directly off the department's payroll. A total of 551,296 military and 130,412 civilian personnel will be dropped. Defense spokesmen say they hope these people will help ease the tight labor market and pressure on wages, thus contributing to the war on inflation. Added to this is an estimated 640,000 contractor employees. This figure is based on reports from 386 plants

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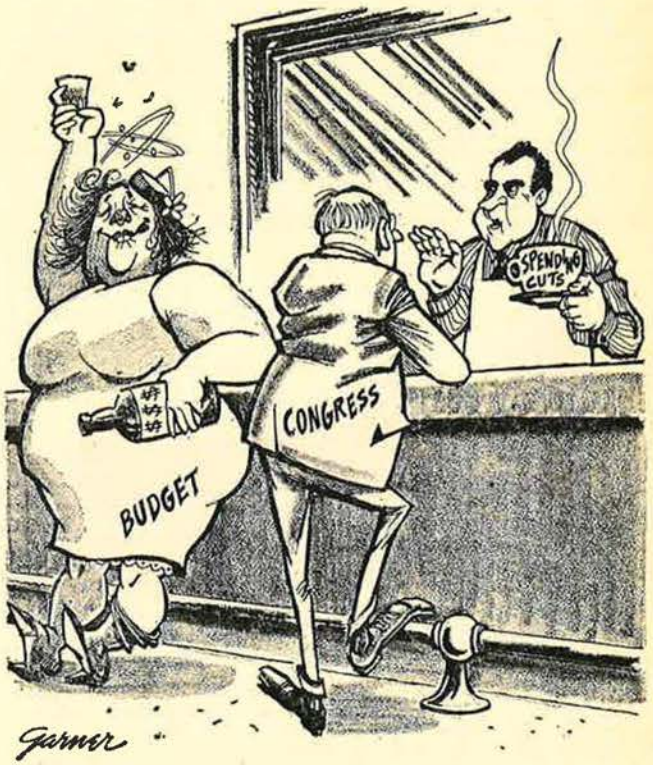

—Garner in the Washington Star, by permission

"This one's on me!"

that turn out a little less than half the total production used by the Defense Department.

Item: The TOA ($85.6 billion), the outlays ($81.6 billion), and the unfilled defense orders ($33.1 billion) were the highest in history one year ago. Defense Department manpower (4,646,082) was the highest since Korea. The only question provoked by this revelation was: What is today's figure for unfilled orders? The answer: A shade under $30 billion. It will be lower in six months.

Any search in the proposed budget for what is most significant for the military services must result in emphasis on strategic forces and research and development. They are the only two categories that show an increase over last year, although in magnitude the jumps do not look as good against the inflation factor, if nothing else.

The sharp funding for general-purpose forces, instituted in the John F. Kennedy Administration, is past. The budget request for strategic forces is $7,947 million, up $488 million from last year, but still less than provided in FY 1969.

For research and development, the new budget seeks $5,402 million, up from $4,847 million in the FY 1970 figures as revised by the Nixon Administration. The R&D total, incidentally, is $728 million higher than in FY 1969.

All of this reflects a Nixon determination that the Eisenhower policy had its merits and that our military trend, launched under the Kennedy Administration with Army Gen. Maxwell Taylor as its guru, must be reversed.

"Strategic forces are crucial to the prevention of nuclear war," the budget says. "They must at all times constitute a strong, credible deterrent to any kind of nuclear attack. Indeed, pending agreement to limit strategic armaments, we must proceed with a full range of new programs—including the Safeguard missile defense system—for protection against an evolving threat from potential aggressors."

The menace here, one that the public will hear more about in the next few months, is Russian capability today and Red China's capability in the future. There is no indication that the Administration intends to give ground on the Safeguard ABM issue. The President has said he will seek approval for expansion, prompting Majority Leader Mike Mansfield to ask in the Senate: "Where the hell is it going to end?" The answer in the budget seems to be that the potential enemy will determine that, either in how he presses ahead with his own systems, or in how tractable he is on the subject of arms control.

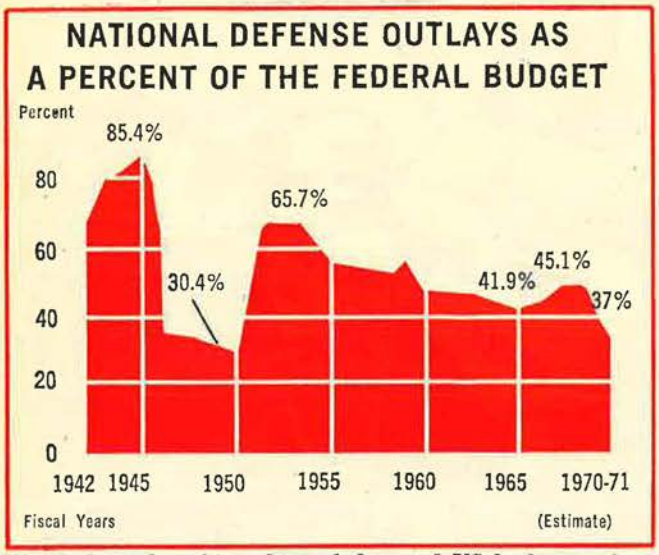

Chart shows how big a bite of the total US budget national defense has taken over the years since World War II. Projected outlays for FY 1971 account for a smaller percentage than any year since just before the Korean War. This year only strategic forces and R&D escaped cutbacks.

The FY 1971 budget calls for continued progress in the Minuteman and Polaris programs. The Navy took advantage of the opportunity to call a Polaris missile with multiple warheads a Poseidon. The Air Force, probably less astute on the subject, calls their land-based version Minuteman III. Gradual phase out of old strategic bombers will continue, but short-range attack missiles will be bought for the remaining manned systems. Studies will continue on an advanced bomber (the B-1, formerly called AMSA) and the airborne warning and control system (AWACS).

"Versatile general-purpose forces are required for a wide range of military contingencies other than general nuclear war," says the budget, adding that most of our naval, land, and air forces are designed for this purpose. The total provided is $24,731 million. That is $3,100 million less than in FY 1970 and about $6,000 million less than in FY 1969.

Major items in the general-purpose category are the two new aircraft for the Air Force and Navy—the F-15 and F-14. Both are in development, but the Navy seeks money to start procurement.

At this point, the figures on major procurement loom:

Numbers of Aircraft	FY 1970	FY 1971
Army	1,001	814
Navy and Marine Corps	348	261
USAF	586	390
Numbers of Missiles		
Army	34,382	19,698
Navy and Marine Corps	3,111	3,791
USAF	1,600	942

This USAF total buy of fewer than 400 aircraft in FY 1971 is the smallest purchase, so far as our own force is concerned, since the pre-World War II year of 1938. Last year's buy of 586 planes included 205 for our allies and 381 for USAF units. The proportions will not change much in FY 1971.

It has been pointed out, and bears repetition, that most of our tactical aircraft bought in recent years have made up for losses in Southeast Asia. This has deferred new programs and stretched out existing ones. The average age of Air Force aircraft is more than nine years. Modernization has been stretched out and will be stretched more. Fighting a war at the expense of modernization does not contribute to potential contests with a Soviet output that continues to develop new fighter prototypes, on a schedule of about one a year. The text of the new budget claims only that USAF will be provided with "procurement of aircraft to replace losses and continue modernization of the combat forces." In addition, there are funds for transports, trainers, and helicopters.

Turning to research and development, the new budget says "the process" is being improved. This is interpreted, at once, to mean that future R&D will "proceed prudently and selectively to ensure that what is needed is developed and that what is put into use has been carefully tested." The major efforts, it is stipulated, will be to improve the effectiveness and survivability of the strategic force, a clear reference to the emphasis on Safeguard, and strategic surveillance.

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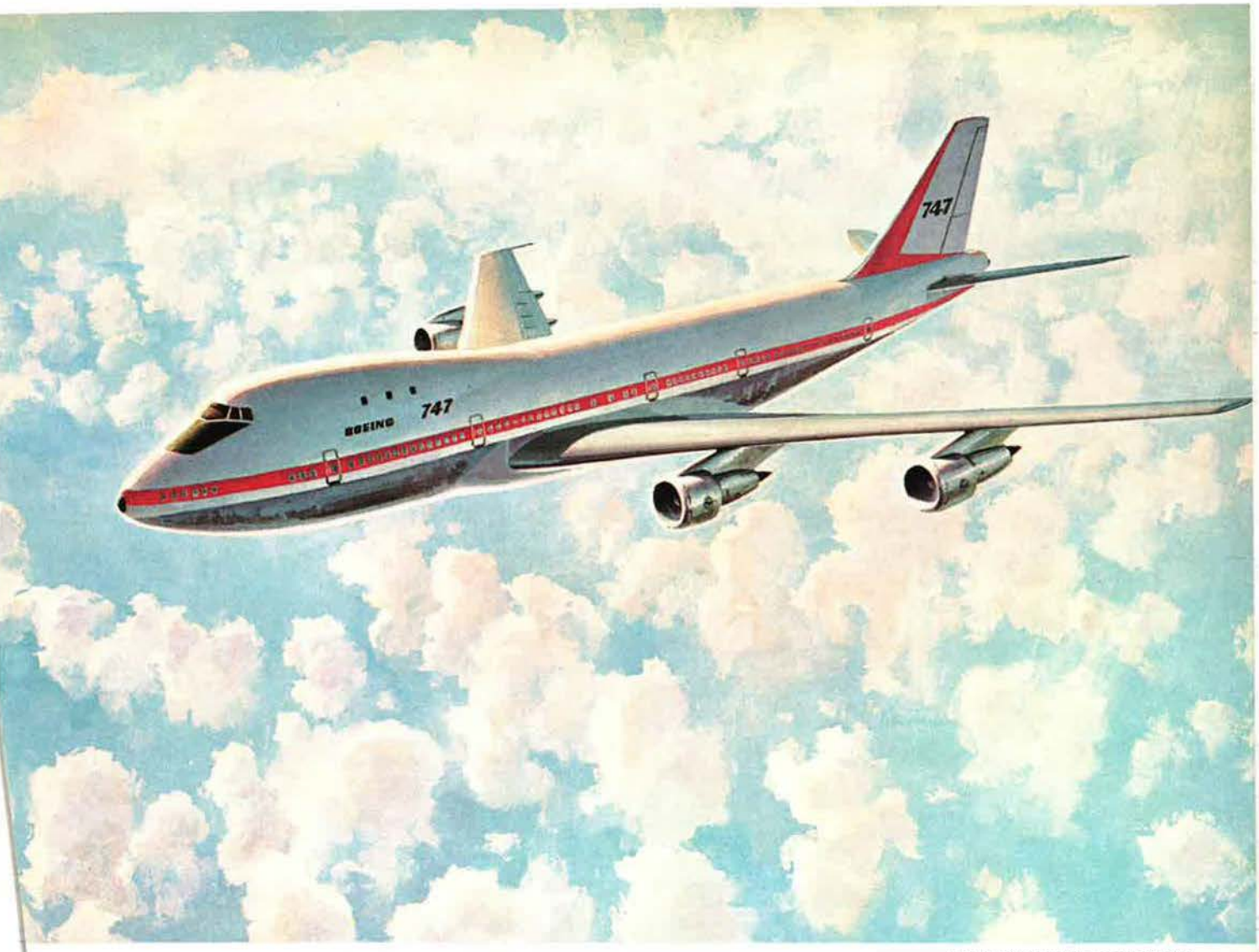

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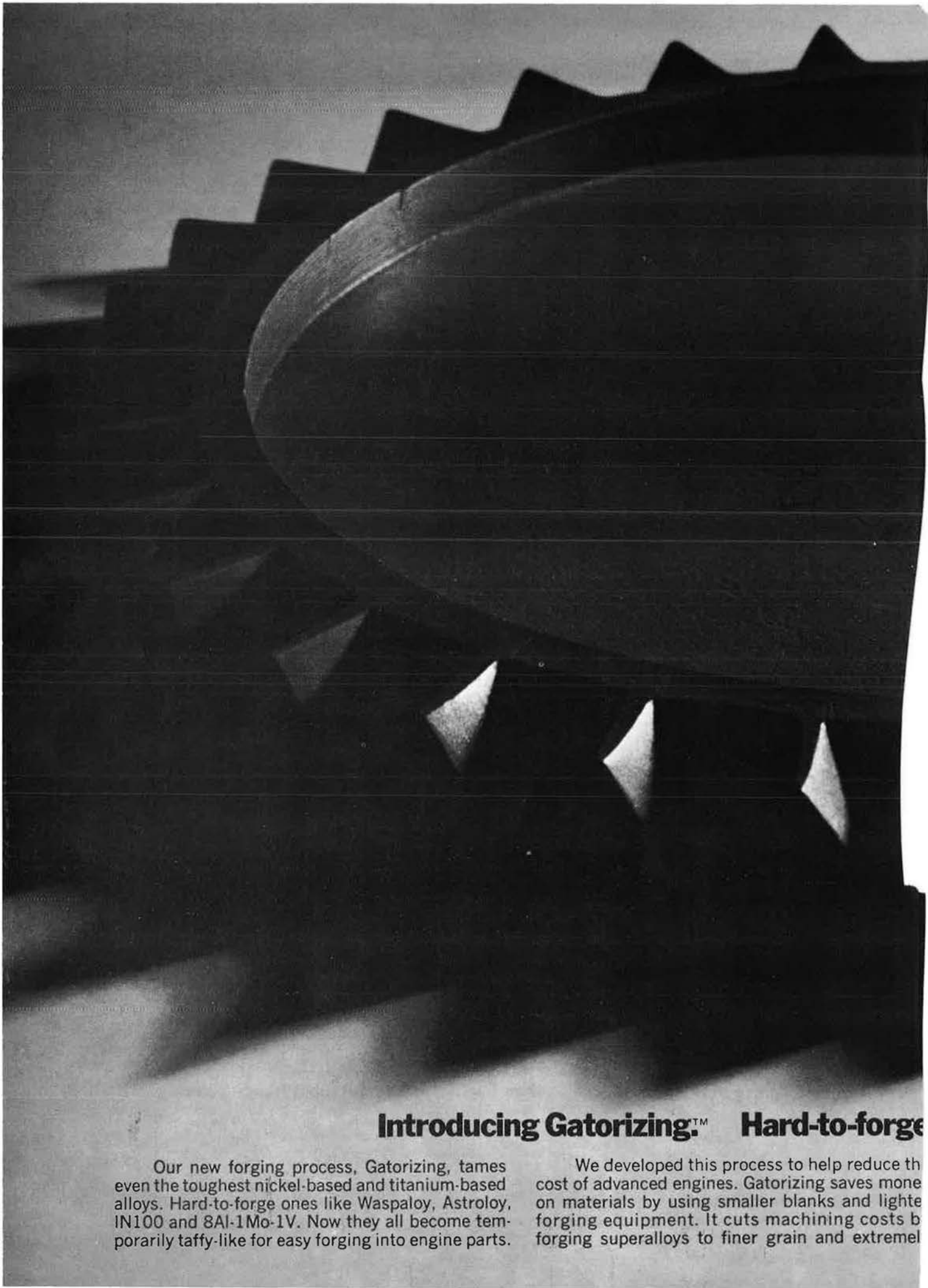

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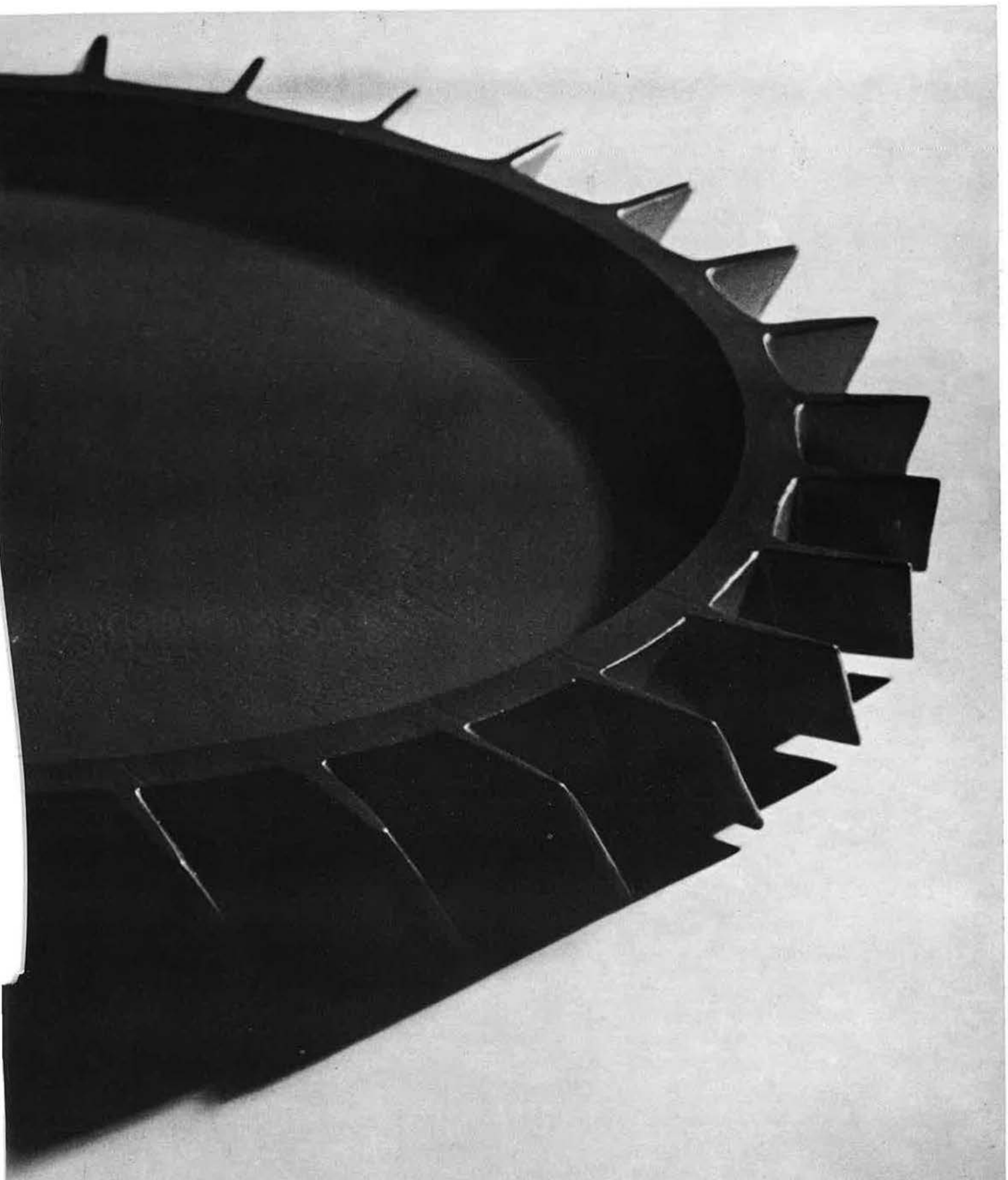

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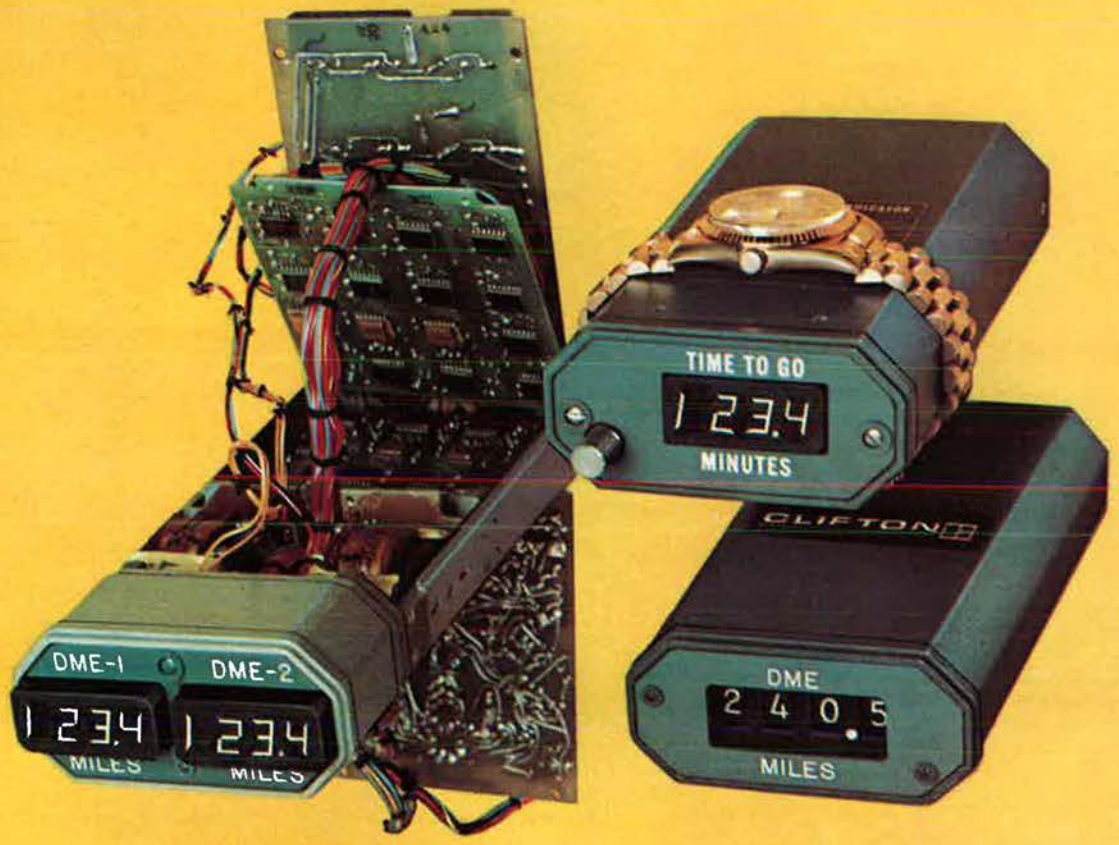

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—Crockett in the Washington Star, by permission
"That does it—you're going on a diet!"

In addition, there is $100 million included for further velopment of the AMSA, or B-1. If approved, this eans USAF can proceed with a contract. Another air- ne scheduled for development funding is the proposed turboprop for counterinsurgency missions. There is a uest for $27.9 million, sharply up from last year's million. The AWACS effort is listed for $87 million levelopment money, an increase of $47 million over last .

he defense spokesmen said, further, that the AWACS ling is not entirely designed for R&D; there is some urement effort included. This also is true for the , which is slated for $370 million in FY 1971, an ease of $195 million over the previous year.

he new budget is positively cagey on the subject of tary space activity. In the face of news reports that sia is testing both bombing and satellite destruction ems in space, the budget says our "programs include nilitary communications satellite systems and ballistic nissile early-warning systems. Continued support will be rovided for flight experiment programs, and ground- ased applied research and technology development pro- rams in such areas as secondary power sources and navi- ation, guidance, sensor, reentry, and propulsion systems."

For USAF, the budget seeks $6,699 million for procure- ient. Of this total the allocation is $3,514 million for ircraft; $1,580 million for missiles; $881 million for ord- ance; and $301 million for electronics and communi- ations.

In the RDT&E category, the USAF total is $2,910 illion. The biggest slice, $820 million, is for work on air- raft and the second, $774 million, for missiles. The gure for military astronautics is $438 million. Two years go it was more than $1 billion, a shift that reflects ancellation of the Manned Orbiting Laboratory (MOL).

There has been a good deal of discussion in the press d at the Pentagon budget briefing about the cost of the ar in Vietnam. The FY 1971 budget does not separate the item, as usual, and Defense Department spokesmen flatly refuse to speculate on the subject. To their critics, this is a sore point. Secretary Laird testified to the Senate last December that the Southeast Asia account ran $28.8 billion in FY 1969 and $23.2 billion in FY 1970.

Now the department is challenged for its refusal to give a figure for FY 1971. The reply is that "the President feels that the interests of peace require him not to disclose any specific plan. He does not have a predetermined schedule for withdrawal. He has said, again and again, as progress in Paris, as the enemy level of activity, as progress in the Vietnamization program takes place, he will make decisions moving toward withdrawal as fast as he possibly can. So, therefore, there is no dollar that matches that undetermined decision. So, it's as simple as saying, within these overall dollars, $71.8 billion, we will resource his decisions."

Later, under further pressure, the spokesman said he had not denied there is a figure, an estimate on the cost of the war in FY 1971. He said only he will not disclose the figure. There was a heated question about the right of the taxpayers and dying soldiers to know what the war is costing. The reply was that the interests of the country and peace are better served if the President does not disclose what he expects in this regard.

This brings the entire subject of the defense budget through a cycle and back to the central theme, in the Pentagon and everywhere else, of the shift in national priorities. It is an important political year, and the Administration wants votes. It does not think there are many of them in national defense issues. Further, the Nixon Administration has been doing a masterful job of taking over other issues on which the opposition had placed some bets.

The Wayward Press (cont.)

There is no requirement, of course, for newspaper reporters or copy readers to correct errors of fact when they are quoting statements by irresponsible persons. On the other hand, there are simple devices that make this possible if the newspaper itself is responsible, or at least as dedicated to the public weal as it pretends to be. In the Washington *Post* of February 10 there are about 800 words, under the byline of a man named Martin Weil, about plans of the New Mobilization Committee to End the War in Vietnam to fight the draft, taxes, some courts, and corporations. The corporations, it follows, are what are known loosely as "major defense" firms.

Now a lady named Trudi Young, who offers no qualifications for her expertise, is allowed to say in the *Post* that these companies "have had a sixty percent profit rise since 1964." For this reason she is calling on the Mobilization to protest at stockholders meetings during late April.

Well, in the same issue of the *Post*, if you turn to the financial pages, it becomes clear that Mrs. Young knows a lot less about the subject than the stockholders she is going to picket. The quoted prices suggest she is wrong. Mr. Weil could easily have told his readers that General Dynamics sold yesterday for $24, down from a 1969-70 high of $49.50. United Aircraft was $30.25, down in the same period from about $81. Others: North American Rockwell, $18.25, down from $42.60; Lockheed Aircraft, $16, down from $50; Grumman, $22, down from $48.25; McDonnell Douglas, $21, down from $49.75; Boeing Co. $21, down from $61. Further examples are not necessary. It will be interesting to follow newspaper coverage of the confrontation when Trudi Young chastises the stockholders at their April meetings.—END

AEROSPACE WORLD

News, Views & Comments

By William P. Schlitz

NEWS EDITOR, AIR FORCE/SPACE DIGEST

WASHINGTON, D.C., FEB. 10

The Air Force has in operation a new system for the rapid transmission of high-quality reconnaissance photographs from Vietnam to the Pentagon.

The system, called "Compass Link," is seen as having many peaceful applications on a worldwide basis as well as obvious military uses.

Compass Link currently is using the Initial Defense Communications Satellite System, USAF satellite terminals, and microwave links and other electronic equipment to transmit photos at speeds and quality well beyond the capability of current photo news wire service operations, according to Philco-Ford Corp., which cooperated with the Air Force and associate contractors in developing the system.

Among future uses, the Compass Link system might be applied to the transmission of complete microfilm newspapers for reproduction thousands of miles away, or it could move highly detailed documents and technological data in international cooperative enterprises.

As the system now works, the film of a reconnaissance aircraft is rushed through processing by Air Force intelligence, and the resulting prints are then scanned by a laser, which converts them to electronic signals. The signals are relayed to a defense communications satellite orbiting 21,000 miles above the earth, part of a net of twenty-seven satellites that constitute the world's first global communications satellite network.

The signals are sent, in turn, from the satellite to a relay station in Hawaii and from there to a satellite orbiting the US, and finally to a receiving station in Washington, D.C., where the photo is reproduced.

Other military information also can be recorded and sent via Compass Link, to provide a secure communications link between the Pentagon and Vietnam and other points around the world.

☆

The Pentagon's top research office has undergone a revamping. Object of reorganizing the Office of the Director of Defense Research and Engineering, headed by Dr. John S. Foster, Jr., is to give the individual services primary responsibility for conducting their own research programs.

Until now, scientists and engineers for the ODDR&E supervised the services' defense research program to the extent that in some cases the services felt they did not have sufficient responsibility and authority over their own projects.

In the action ordered by Dr. Foster, ODDR&E lost about twenty-five civilian personnel; according to the Pentagon, ODDR&E in the future will apparently be less a director of military research and more a monitoring agency.

Under the new setup, the services' military project directors will be held more closely accountable for costs, scheduling, and performance.

☆

Volunteer aircrews making dangerous nighttime landings on an airstrip carved from a rough jungle road long periods of boredom in the tropi heat followed by intense excitemer and fatigue during missions; a my terious enemy called "The Intrude who appeared overhead nightly t bomb and broadcast insults and ch lenges.

It all sounds like something t the Americans of Chennault's Fly Tigers could have experienced in days of Japan's invasion of China. the volunteer flights into stric Biafra belonged to a tragedy of era.

The volunteer pilots operated assortment of aircraft, and the

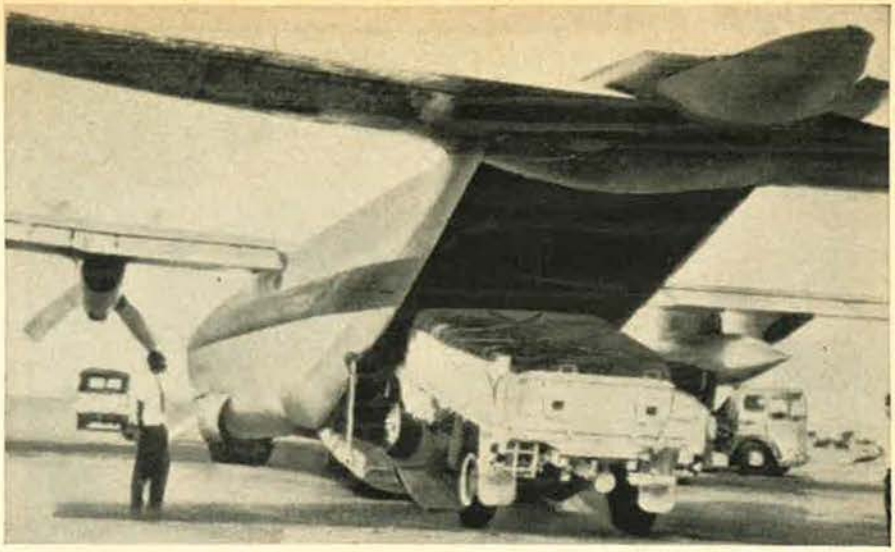
—Wide World Photos

A USAF transport is loaded for evacuation at Wheelus AB, Libya. Long a training facility, the base is being shut down at the request of Libya's military government. The base's most recent Commander, "Chappie" James, has been reassigned and promoted to general (*see page 32*).

Two new A-7D tactical fighters from a detachment of th 56th Fighter Weapons Wing fly over the desert near Luk AFB, Ariz. The aircraft are being evaluated at Luke, whic is to become the principal base for A-7D pilot trainin A training squadron was geared up at Luke in Februar

—Wide World Photos

NASA has named Eberhard Rees to replace Dr. Wernher von Braun as head of the Marshall Space Flight Center, Huntsville, Ala. Von Braun moves to new duties in Washington.



—Wide World Photos

Now that Nigeria's civil war has come to an end, the dramatic but less-than-effective volunteer relief effort is being superseded by large-scale help from the outside world. Here a US C-130 transport unloads an eight-ton truck of vital supplies to help stem starvation and disease. Large C-141 cargo aircraft in the American airlift to Lagos Airport brought in various other heavy equipment.

hey led was weird although well paid each earned $150 a night).

The relief flights to Biafra originated mainly from the Portuguese island of São Tomé in the Gulf of Guinea, and were organized by the World Council of Churches and Caritas, the Catholic relief agency. As the war wound on, many of the pilots became critical, because it was evident that despite their efforts many Biafrans were starving, and the supplies brought in by air were minimal at best.

Daylight time to Uli, the outside world's last entry point to besieged Biafra before its total collapse, was about ninety minutes, barring such hazards as Nigerian antiaircraft fire and encounters with Nigeria's "Interceptor," a converted commercial transport.

Uli had a small beacon for the pilots to home in on and not much else. When ready to land, a pilot sent a coded signal to indicate the approach of a "friendly," and for a brief span the strip's floodlights flashed on to direct a final approach.

And now that the savage Nigerian civil war has ended, the story of the volunteers' relief flights to Biafra will fade into that corner of history reserved for freebooters, gunrunners, and other men of daring.

☆

Nine participants have signed a NATO memorandum of understanding that will extend research and development of a tactical satellite communications system (TACSATCOM) to include building one. The system could become operational as early as the mid-1970s.

The nine—Belgium, Canada, Federal Republic of Germany, Italy, the Netherlands, Norway, United Kingdom, the US, and the SHAPE Technical Center—will each contribute some specialized technical skill or hardware to the cooperative venture.

Whereas the Skynet military satellite net provides secure long-range communications, TACSATCOM will be designed specifically for tactical communications.

The proposed system is considered essential because present very-high-frequency transmissions in tactical communications can be blocked by such natural features as the curvature of the earth or other geographic terrain barriers. Although transmissions on lower frequencies are possible, such adverse factors as enemy interception act against them.

The TACSATCOM program was originated in 1967 when it first was placed under NATO auspices. The R&D phase has entailed a cooperative test series utilizing the synchronous Lincoln Experimental Satellite LES-6, launched from Cape Kennedy in the fall of 1968, plus a network of small tactical satellite communications terminals built and operated by the participating nations.

Hopefully, the test series will lead to development of a TACSATCOM system capable of fully meeting NATO's urgent tactical communications needs.

☆

It sounds like *Auld Lang Syne* for the Air Force's Pipe Band. And the recent order to phase out the internationally renowned eleven-man bagpiper unit created almost as much comment in Washington, D.C., as the new White House police uniforms.

Headquarters USAF said that the pipers are being eliminated for budgetary reasons. It apparently didn't buy the argument that elimination of the Pipe Band actually would cost more money in the long run since larger Air Force Band units probably would have to be sent in answer to requests for musical participation.

The 250-member Air Force Band, of which the pipers were a unique part, has a worldwide reputation for excellence (*see December 1969 AF/SD, page 81, "A Band It's Hard to Beat"*). The piper unit rose to its greatest prominence during the Kennedy years and played at the assassinated President's funeral at the request of the family.

Last year, the band's Sgt. Donald Lindsay became the first American to win a top prize at Scotland's highly competitive meeting at Inverness.

Unless the order is rescinded, the last official pipe-and-drum unit in the US armed forces will be completely phased out by June 30.

☆

Late in January a vehicle designed specifically to rescue survivors of submarine disasters was launched at San Diego, Calif.

The DSRV-1 (Deep Submergence Rescue Vehicle) is designed to save men stranded at depths that will not crush the hulls of submarines. Since 1910 the US Navy has recorded ten incidents where rescue operations could have been conducted at depths

(Continued on following page)

This winter marked the twenty-fifth anniversary of the US's recapture from the Japanese of Clark Field in the Philippines. This historic photo, sure to stir a few old memories, shows the field still in Japanese hands but being severely pounded in a low-level strafing and parafrag attack by Allied aircraft. American forces retook Clark less than a month after this picture was taken.

of less than 600 feet—the approximate depth of the continental shelves; other nations have reported nineteen such sinkings. Unknown are the number of submarine disasters suffered by the Russian and Red Chinese navies.

In view of possible emergency use with submarines of other nations, the Navy has disseminated technical information on operation of the vehicle.

The air-transportable DSRV-1, built by Lockheed Missiles & Space Co., is to have a crew of three. It is built of three independent spherical hulls encased in a glass-fiber outer hull. The DSRV-1 is said to have a maximum operating depth of 5,000 feet.

In the forward hull are the crew and the navigation and guidance equipment; the central hull houses a rescue chamber capable of mating with a submarine hatch; the third compartment can contain twelve men. The combined capacity of the second and third hulls provides room to transport twenty-four men at a time.

The DSRV-1, which faces a year of trials before entering service in 1971, is the first of six such vehicles planned by the Navy. Whether such a fleet actually will be built is problematical, since the program has come under criticism because of cost overruns.

☆

With airline passenger numbers expected to swell to flood-tide proportions in the new decade, airline officials are anticipating a number-one headache: processing.

The big fear is that air terminals won't be ready for the tsunami that is about to hit, and will simply bog down in the numbers of passengers, ticket selling, customs, and people and cargo loading and unloading operations.

The planners' answer? Automation.

A system to provide the first automated inventory control and customs clearance for international air cargo is currently being readied to serve London's Heathrow Airport.

The system is under development by Belgium's Computer Sciences International in Brussels, under contract to Britain's International Computers Ltd., which will supply the computers for the system.

Lt. Col. Ralph Haaf (left), Chief of MAC's 56th Military Airlift Squadron at Altus AFB, Okla., accepts a plaque commemorating delivery of the first USAF C-5 to Altus from Col. Ray Holsey, USAF (Ret.), President of the AFA's Altus Chapter. Vice President J. Aboussie witnesses the ceremony.

The system, known as London Airport Cargo Electronic data-processing Scheme (LACES), will enable customs officials, airlines, and shipping agents to remain abreast of mounting cargo traffic, estimated to be growing by twelve percent annually.

Among other things, LACES will help accelerate cargo processing, improve control, and reduce paperwork.

☆

A West German device that eases pilot workload during cruise, in holding patterns, or during landing approaches promises wide-scale application.

Currently, the automatic throttle control system, designed and produced by Bodenseewerk Gerätetechnik (BSW), of Überlingen, is being installed in Lufthansa's Boeing 707s and has been selected for the European A-300B airbus.

In December, the device, designated FVR-02, was flight-demonstrated for government and airline officials at Dulles International Airport.

According to GE's Aircraft Equipment Division, which will provide sales representation and product support for the system to airlines in the United States, the FVR-02 "improves operational performance and promotes safety" and has demonstrated "exceptionally smooth control behavior even in turbulence."

The system also is suitable for adaptation to Boeing 727 and 737 aircraft, General Electric said. According to BSW, the system has been extensively evaluated and flight-tested, and is in full-scale production.

Closing out a distinguished career, Brig. Gen. William D. Durham served as Vice Commander of Third Air Force prior to his retirement earlier this year. A leading American ace with sixteen kills to his credit, General Durham is shown here in the cockpit of an F-104 Starfighter during the Tiger Meet of NATO pilots in England late in 1969.

Gen. James Ferguson, right, Commander of the Air Force Systems Command, presents the Tittle-Liethan Trophy to Capt. Stuart R. Boyd, the outstanding graduate of Class 69-A, Aerospace Research Pilot School. The ceremonies took place at Edwards AFB, Calif., in mid-January. Captain Boyd is assigned to the Flight Test Center at that base.

Aircraft equipped with the new system have been qualified for landing approaches under Category II weather conditions: runway visual range of 1,000 feet and decision height of 100 feet, BSW said.

☆

Various agencies of the federal government plan to cooperate in a major effort to deal with clear-air turbulence (CAT). Clear-air turbulence is a high-altitude phenomenon and poses special problems in detecting it before flying through it.

Essential to the proposed five-year campaign will be development of airborne remote-detection devices and precise prediction of CAT for preflight planning. Also preeminent will be the establishment of a national CAT forecasting facility, better criteria for identification and reporting and for aircraft design, and improved flight techniques, instrumentation, and pilot/aircraft response.

Responsibility for overall coordination of the project will rest with Dr. Robert M. White, Administrator of the Commerce Department's Environmental Science Services Administration. DoD will involve itself with CAT measurement and observation, including remote detection.

The Commerce Department will investigate forecasting, while the Department of Transportation will tackle the dissemination of information. Upgrading pilot/aircraft response when experiencing CAT will fall to NASA.

In the search for a remote-detection device, a major aim of the program, the Air Force in cooperation with such other agencies as NASA, ESSA, and

(Continued on page 28)

V BOOKS IN BRIEF

Famous Aircraft: The F-4 Phantom II, by G. G. Rourke. Part of the Arco Famous Aircraft Series, Capt O'Rourke's book is largely Navy-oriented. Well illustrated. Arco Publishing Co., Inc., N.Y. 64 pages. $5. Also paperback, $2.95.

Famous Aircraft: North American P-51D Mustang, by Richard Ward. Following a brief history, the remainder of the book is devoted to photographs and drawings. Arco Publishing Co., Inc., N.Y. 50 pages. $5. Also in paperback, $2.95.

Famous Aircraft: The P-38 Lightning, by Gene Gurney. More than ninety photos plus statements by several airmen who have flown the P-38 are included in this aviation history. Arco Publishing Co., Inc., N.Y. 60 pages. $5. Paperback, $2.95.

The Land in Between: The Cambodian Dilemma, by Maslyn Williams. Williams' idealism and aversion to violence color his impressions of Cambodia. Part travelogue, part investigation of the Cambodian character, part conjecture about future political developments, his book offers a look at a country few journalists are permitted to visit. William Morrow and Co., Inc., N.Y. 241 pages. $7.95.

Man on the Moon, edited by Eugene Rabinowitch and Richard S. Lewis. A collection of essays exploring the political and social—as well as the scientific and technological—consequences of the lunar landings. Those contributing include Sir Bernard Lovell of England's Jodrell Bank observatory, Wernher von Braun, and William Leavitt, Science and Education Editor of AF/SD. The essays originally appeared in the *Bulletin of the Atomic Scientists.* Basic Books, Inc., N.Y. 204 pages. $5.95.

Ten Thousand Tons by Christmas, by Col. Edwin Lee White (Ret.). This first-person account chronicles the growth of the Air Transport Command's freight operations over the "Hump," which helped to supply China and prevent further Japanese expansion. Beginning in 1942 with some twenty aircraft, the airlift operation in 1945 had more than 600 planes. Vantage Press, Inc., N.Y. 187 pages. $3.75.

War in Peacetime: The History and Lessons of Korea, by Gen. J. Lawton Collins (Ret.). General Collins is well-qualified to write about the Korean War. As Army Chief of Staff at that time, he worked with the civilian and military leaders involved, and in his history he has included judgments of those men as well as descriptions of battles. General Collins also offers his opinions about the proper relationship between the military and civilian authorities and draws parallels between the Korean conflict and the Vietnam War. Houghton Mifflin Co., Boston. 416 pages. $6.95.

—JOANNE M. MILLER

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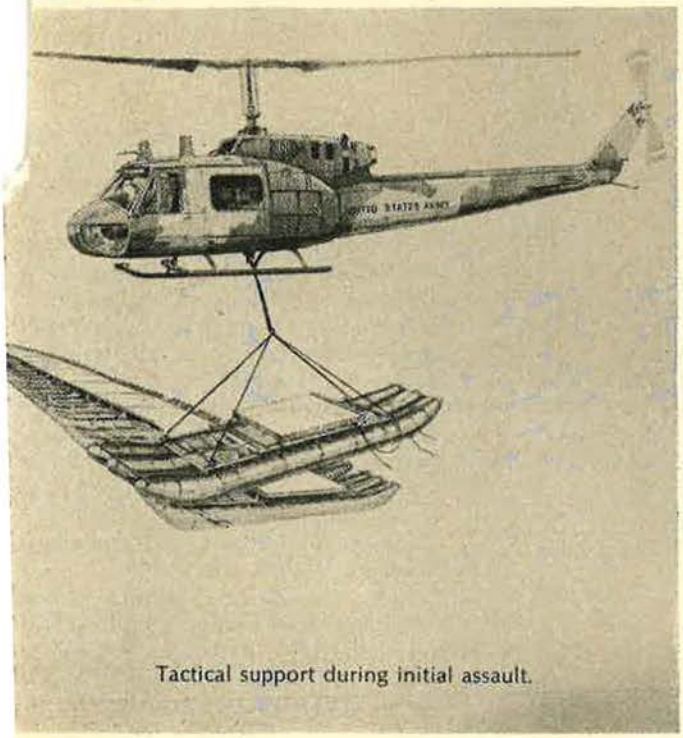
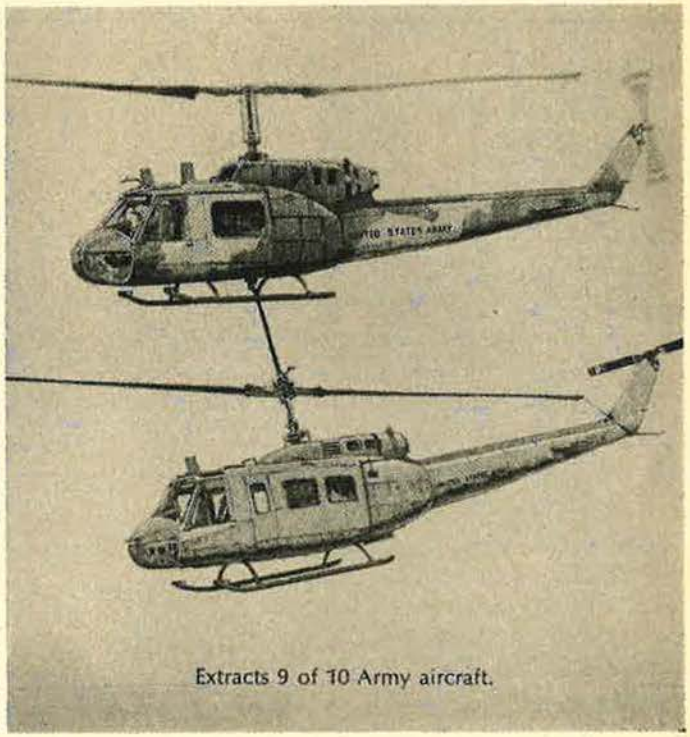


Tactical support during initial assault.



Extracts 9 of 10 Army aircraft.

A flying camera platform, this NKC-135A jet aircraft is one of four specially equipped planes recently added to the Air Force Eastern Test Range inventory. The aircraft will participate in AF R&D programs analyzing the effects of reentry on missiles and on other space objects.

Each of the four special aircraft carries sixteen cameras arranged in banks of four. From about sixty miles away, the aircraft can provide high-speed and high-resolution photographic coverage of the reentering object from reentry at an altitude of 300,000 feet until it impacts.

the FAA will study the use of radar, laser, microwave radiometer and spectrometer techniques.

While the plan to combat CAT concedes that ". . . all developmental efforts of hardware and techniques" for detecting CAT have been and will for the next several years be "exploratory in character," it calls for state-of-the-art advances in such areas as sensor technology to determine CAT's physical and meteorological makeup.

Regarding strictly military operations, DoD is to refine and modify CAT forecasting for the Air Force Global Weather Central, and USAF weathermen are to prepare climatological studies and work toward real-time exchange of available data.

☆

The Department of Transportation has scheduled the second annual government/industry National Aviation System Planning Review Conference for April 14-17 in Washington, D.C.

Officials have termed the annual planning sessions of benefit to both the government and industry, providing the former with "a means for tapping the resources and expertise of the private sector" and the latter with "an opportunity to shape the plans and policies that most affect it."

The opening plenary session will be keyed to the need for an integrated transportation system. Following this will be a schedule of seminars on such subjects as R&D, airport planning, new ILS requirements, and future ATC operations.

Registration will be handled by Office of Public Affairs (PA-10), Federal Aviation Administration/Department of Transportation, 800 Independence Ave., S.W., Washington D.C. 20590. Registration before March 30 is recommended in order to receive mailings of advance material.

☆

NEWS NOTES — Wernher von **Braun** has been shifted from the directorship of NASA's Marshall Space Flight Center, Huntsville, Ala., to Washington, D.C., as **Deputy Associate Administrator for Planning.** He'll oversee the total space program.

A plan to test-fire seven **Minuteman missiles** from their operational silos across the northwestern US into the Pacific Test Range in December and January has been delayed pending further study, the Air Force said. The firings were to demonstrate reliability of the total Minuteman system.

On January 8, **Strategic Aerospace Museum,** Offutt AFB, Neb., was turned over to the **Nebraska Game and Parks Commission** and renamed the Nebraska Museum of Aerospace History, hopefully to become a major tourist attraction as a state park.

INDEX TO ADVERTISERS

Senior Staff Changes

B/G Richard L. Ault, from Dep. Dir., Plans for Force Dev., to Dep. Dir., Plans, DCS/P&O, Hq. USAF, replacing B/G (M/G Selectee) Leslie W. Bray, Jr. . . . **B/G (M/G Selectee) Paul N. Bacalis,** from Cmdr., 14th Strategic Aerospace Div., SAC, Beale AFB, Calif., to Asst. DCS/M, SAC, Offutt AFB, Neb., replacing B/G George P. Cole . . . **B/G (M/G Selectee) Leslie W. Bray, Jr.,** from Dep. Dir., Plans, to Dir. of Doctrine, Concepts & Objectives, DCS/P&O, Hq. USAF, replacing M/G Richard A. Yudkin.

Col. (B/G Selectee) Harry N. Cordes, from Asst., to Dep. Dir., Plans for Force Dev., DCS/P&O, Hq. USAF, replacing B/G Richard L. Ault . . . **Col. (B/G Selectee) Darrell S. Cramer,** from Cmdr., 432d Tac. Recon. Wg., Udorn Airfield, Thailand, to Dir., Combat Ops., 7th AF, PACAF, Tan Son Nhut Airfield, VN . . . **M/G Joseph R. DeLuca,** from Cmdr., ALSC, AFLC, to DSC/Comptroller, AFLC, Wright-Patterson AFB, Ohio.

Col. (B/G Selectee) William A. Dietrich, from Cmdr., 313th Tac. Airlift Wg., TAC, Forbes AFB, Kan., to Cmdr., USAF Tac. Airlift Center, Pope AFB, N.C., replacing B/G Joseph N. Donovan . . . **M/G George J. Eade,** from Dir., Ops. Plans, SAC, Offutt AFB, Neb., to Dir., Plans, DCS/P&O, Hq. USAF, replacing B/G John M. McNabb . . . **Col. (M/G Selectee) Frank W. Elliott, Jr.,** Cmdr., 92d Strategic Aerospace Div., SAC, Fairchild AFB, Wash., to Cmdr., 14th Strategic Aerospace Div., SAC, Beale AFB, Calif., replacing B/G (M/G Selectee) Paul N. Bacalis.

James H. Straubel, Executive Director of the Air Force Association and its affiliate, the Aerospace Education Foundation, has been named winner of the Frank G. Brewer Trophy for 1969. The trophy is awarded annually by the National Aeronautic Association. Mr. Straubel is creator of the National Laboratory for the Advancement of Education *(see report on page 47).*

Col. (B/G Selectee) James M. Fogle, from Vice Cmdr., 24th Air Div., ADC, Malmstrom AFB, Mont., to Asst. DCS/Plans, ADC, Ent AFB, Colo. . . . **Col. (B/G Selectee) Frank L. Gailer, Jr.,** from Cmdr., 48th Tac. Ftr. Wg., USAFE, RAF Lakenheath, England, to Vice Cmdr., 3d AF, USAFE, South Ruislip AS, England, replacing B/G William D. Dunham . . . **Col. (B/G Selectee) Morton J. Gold,** from Dep. Staff Judge Advocate, AFSC, Andrews AFB, Md., to Asst. JAG, Hq. USAF.

Col. (B/G Selectee) John F. Gonge, from Vice Cmdr., 60th Military Airlift Wg., MAC, Travis AFB, Calif., to Cmdr., 63d Military Airlift Wg., MAC, Norton AFB, Calif., replacing B/G Louis G. Griffin . . . **B/G Robert E. Huyser,** from Dir., Cmd. Control, DCS/Ops, SAC, Offutt AFB, Neb., to Dir., Ops. Plans, SAC, Offutt AFB, Neb., replacing M/G George J. Eade . . . **Col. (B/G Selectee) Daniel James, Jr.,** from Cmdr., 7272d Flying Tng. Wg., USAFE, Wheelus AB, Libya, to Dep. Asst. Sec. of Defense for Public Affairs, Office, Secretary of Defense, Washington, D.C.

Col. (B/G Selectee) Joseph E. Krysakowski. from Dir. of Civil Law, Office JAG, Hq. USAF, to Staff Judge Advocate, SAC, Offutt AFB, Neb. . . . **M/G Henry B. Kucheman, Jr.,** from Dir., Dev., DCS/R&D, to Asst. DCS/R&D, Hq. USAF . . . **M/G John M. McNabb,** from Dir., Plans, DCS/P&O, to Asst. DCS/P&O, Hq. USAF.

(Continued on following page)

M/G William G. Moore, Jr., from Dir. of Ops. Requirements & Dev. Plans, DCS/R&D, Hq. USAF, to Cmdr., 22d AF, MAC, Travis AFB, Calif. . . . **Col (B/G Selectee) Wesley L. Pendergraft,** from Cmdr., 380th Strategic Aerospace Wg., SAC, Plattsburgh AFB, N.Y., to Vice Cmdr., OOAMA, Hill AFB, Utah . . . **M/G Albert W. Schinz,** from DCS/Ops, TAC, Langley AFB, Va., to Cmdr., 12th AF, TAC, Bergstrom AFB, Tex.

Col. (B/G Selectee) Eugene Q. Steffes, Jr., from Dep. ACS/Studies & Analysis, Hq. USAF, to Cmdr., 817th Air Div., SAC, Pease AFB, N.H. . . . **Col. (B/G Selectee) Lawrence W. Steinkraus,** from Cmdr., 22d Bomb Wg., SAC, March AFB, Calif., to Dir., Cmd. Control, DCS/Ops, SAC, Offutt AFB, Neb., replacing B/G Robert E. Huyser . . . **Col. (B/G Selectee) Charles E. Williams, Jr.,** from Cmdr., Tac. Communications Area, AFCS, Langley AFB, Va., to Dir., J-6, US Strike Cmd., MacDill AFB, Fla., replacing B/G Sam L. Huey.

PROMOTIONS: To **Brigadier General:** James R. **Allen;** James D. **Hughes;** Robert E. **Pursley.**

Nominated to **Major General:** Paul N. **Bacalis;** Jones E. **Bolt;** Leslie W. **Bray,** Jr.; Allison C. **Brooks;** William E. **Bryan,** Jr.; John H. **Buckner;** Charles W. **Carson,** Jr.; Maurice J. **Casey;** William S. **Chairsell;** Ernest J. **Cragg;** Rexford H. **Dettre,** Jr.; Dudley E. **Faver;** John C. **Giraudo;** Robert E. **Hails;** Richard M. **Hoban,** Henry L. **Hogan** III; John B. **Hudson;** Earl L. **Johnson;** Jimmy J. **Jordan;** James M. **Keck;** John B. **Knapp;** John R. **Kullman;** William R. **Lloyd;** Donald; George W. **McLaughlin;** Frank M. **Madsen,** Jr.; Robert **Maloy;** David V. **Miller;** Sanford **Moats;** John O. **Moench;** Robert **Patterson;** Roger K. **Rhodarmer;** Albert R. **Shiely,** Jr.; Richard R. **Stewart;** Harold C. **Teubner;** Joseph G. **Wilson.**

RETIREMENTS: M/G William H. **Brandon;** B/G (Chaplain) William L. **Clark;** B/G George P. **Cole;** B/G Maurice A. **Cristadoro,** Jr.; M/G Howard A. **Davis;** B/G Joseph N. **Donovan;** B/G William D. **Durnham;** B/G John E. **Frizen;** B/G Leo P. **Geary;** B/G Louis G. **Griffin;** B/G Thomas L. **Hayes,** Jr.; B/G Sam L. **Huey;** L/G William B. **Kieffer;** B/G Richard A. **Knobloch;** B/G Harold V. **Larson;** M/G John L. **Martin,** Jr.; M/G Thomas E. **Moore;** B/G Richard C. **Neeley;** B/G William A. **Tope;** B/G Hugh E. **Wild;** M/G Richard A. **Yudkin.**—END

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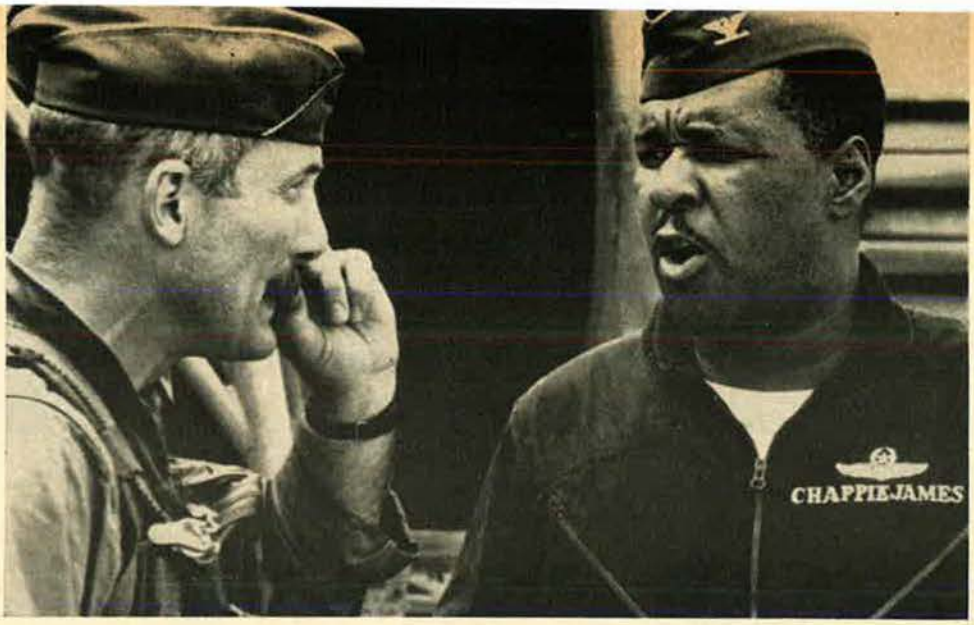

The MIG that got away is the subject of the conversation between a dismayed "Chappie" James and his wing commander, Col. Robin Olds, at Ubon Royal Thai AFB, Thailand. After completing his combat tour in Southeast Asia, Colonel James became Vice Commander of the 33d Tac Fighter Wing, Eglin AFB, Fla., before taking over his more recent assignment at Wheelus AB, Libya.

A Star for 'Chappie' James —And a New, Top Job in the Pentagon

During his long Air Force career, the popular Daniel "Chappie" James, Jr., has demonstrated both leadership and abundant enthusiasm, two attributes sure to stand him in good stead as a public-affairs assistant to the Secretary of Defense . .

This month the Air Force's Daniel "Chappie" James, Jr., begins his new assignment as Deputy Assistant Secretary of Defense for Public Affairs. Effective also at this time will be his promotion to brigadier general.

The selection of the veteran fighter pilot and combat commander to be a top aide to Defense Secretary Melvin R. Laird is unique: Chappie is the first military man to hold the post. He also is the second Negro to rise to general-officer rank in the US Air Force *(see box on page 34 on retired Air Force Lt. Gen. Benjamin O. Davis, Jr.)*.

General James comes to Washington from Wheelus AB, Libya, where he supervised the first phase of that installation's shutdown. The Wheelus pullout is the result of heavy political fire from Libya's military government, in power since last September. Wheelus' primary training mission is being transferred to air bases in Europe.

At the Pentagon, General James's immediate boss will be Daniel Z. Henkin, Assistant Secretary of Defense for Public Affairs *(see cover)*, who indicates that part of Chappie James's new job will involve prisoners of war. This area should prove of particular interest to General James; in the past he has voiced deep concern over the treatment of US POWs, particularly his "friends at the Hanoi Hilton," the lockup in North Vietnam where many USAF pilots are interned.

General James's primary task at the Pentagon will be to assist newsmen in reporting defense and military matters. Where his new assignment entails public relations—the best sense of that phrase—Chappie James is admirably qualified. In a manner of speaking, he has been involved in public relations most of his life.

As one of the Air Force's first Negro career officers Chappie James followed a long hard trail without abandoning his outspoken allegiance to the American way of life. His public-relations score on that theme is 100 percent.

In a Freedoms Foundation award-winning letter, written while serving his tour in Southeast Asia, then-Colonel James said:

"It is our responsibility to preserve our freedom and our unity. Great-thinking men must help unite those with whom they come in contact through hard work and participation. Our contributions to the total effort can be a by-product of what we achieve through excellence in our chosen field. In our daily lives we must become a strong link in the chain of unity and freedom that has always been the strength of the United States of America." *(The full text of Colonel James's prize-winning letter appeared in the April '68 issue of AF/SD, on page 179.)*

The following report by Jesse W. Lewis of the Washington Post Foreign Service staff appeared in the February 1 edition of the Washington *Post* and is reprinted here with permission. Mr. Lewis' story was written before the announcement was made of Chappie James's new assignment in the Pentagon.

For a letter on Americanism he wrote in 1968, "Chappie" James was honored by the Freedoms Foundation. Here Foundation President Kenneth Wells, center, presents medals to USAF winners, from left, Colonel James, Col. Harold Shoemaker, and Capt. John Williams. At right, Howard Callaway, a Foundation trustee.

FRONT COVER—USAF PHOTO BY DANIEL VINES

By Jesse W. Lewis, Jr.

Washington Post Foreign Service

WHEELUS AB, LIBYA

COL. Daniel (Chappie) James, Jr., commander of this sprawling American airfield on the edge of Tripoli, is the original Black Panther.

"But I'm a different breed of cat," says James, a Negro and a veteran combat fighter pilot who has been selected for promotion to brigadier general. "This Black Panther fights *for* his country."

When he pins his star on sometime this year, James, forty-nine, will become the second black American to attain the rank of general in the Air Force. But Colonel James has used the insigne of a leaping black panther for a long time. "Mine started long before the infamous Black Panthers came into being," he says. "I imagine some of them were still in grade school."

The tag of Black Panther for "Chappie" James had its origins during World War II, in the days of the all-Negro 99th Pursuit Squadron that flew segregated combat missions in Europe. James instructed Negro pilots during that war. It was usual for Air Force units and individual pilots to adopt an insigne. When the Air Force integrated and James was assigned to Korea, he adopted the black panther as his sign.

"I wore the panther on my helmet all through Korea and in Vietnam and I still wear it," he says. During his tour in Southeast Asia, James was vice commander of the famous 8th Tactical Fighter Wing, which was commanded by Robin Olds, now a brigadier general and Air Force Academy Commandant of Cadets.

That wing of F-4 Phantoms shot down a total of thirty MIGs over North Vietnam under the leadership of Olds and James. Both men were flight leaders the day of the "bold MIG sweep" on January 2, 1967, when seven MIGs were downed—the highest total kill for a single unit on any day of the Vietnam War.

During his tour, James was credited with one "kill" and several probable "kills." During the "bold sweep," he says, "I fired on one and he went down through the clouds smoking." But under the scoring rules, a sure kill is awarded only if the enemy pilot is seen bailing out or the plane is seen hitting the ground.

James, whose six-foot, four-inch, 235-pound frame suggests a fullback more than a pilot, became interested in flying as a boy in his native Pensacola, Fla. "I grew up near the big naval air base at Pensacola, and I wanted to fly with the Navy, but in those days the Navy did not accept Negro pilots," he said.

At Tuskegee Institute, where James got his degree in physical education, he also took flying lessons, and became a licensed pilot and flight instructor before entering what was then the Army Air Corps. In the twenty-seven years since then, "Chappie" James has come a long way.

He is now commander of the largest American air base outside the United States. (The base, on the Mediterranean Sea, will close June 30 at the insistence of the new Libyan government. It has been used by American fighter pilots based in Europe to practice gunnery and bombing.)

James prefers to think of his success in the Air Force —as an officer and as a Negro—as an American success story rather than a personal one.

He is the seventeenth of seventeen children. "We have a pretty large family," as he puts it.

"My block of Alcaniz Street in Pensacola made today's ghettos look like Palace Row," he says. "My father and some of my older brothers were lamplighters. Those were the days before electric street lights, and my father went around at night and lit the lamps. If the moon came out, he'd go back and put them out again."

James completed the seventh grade at home. "My mother didn't think much of the segregated public schools, so she taught us all at home. She also ran a school for many of the Negro kids in the neighborhood.

"My mother provided me with much of my spiritual strength," he said. "She taught us all the basics: love of God, love of country, and love of fellowman. She used to say there are two Negroes we don't need: the first Negro and the only Negro. And don't be a part of the problem; always contribute to the solution.

"She also said don't fight. My father said fight. I have a blend of the two.

"I'm not nonviolent. No fighter pilot is, but I fight for my country and I've never been discouraged or encountered any obstacles in the Air Force that I haven't overcome," he says.

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James, however, said he has had several "very bitter experiences" in the service.

He recalls being stationed at the old Johnson Field in Kentucky when the then Army Air Corps was still a segregated fighting force. The entertainment facilities on the base were segregated and when the black officers tried to integrate them, "101 of us were arrested by military police.

"It was one of the first sit-ins," he said. "We were under arrest for three or four days.

"They selected three of the men and put them on trial as a test case. Thurgood Marshall came down, defended them, and won the case. They let the rest of us go and dropped the charges."

James remembers another experience that began on a sour note but ended quite differently. When he was assigned to Clark Field in the Philippines, he walked up to the crowded bar at the Officers' Club. The group at the bar backed away and the whole room went silent.

Then a white officer with a Southern drawl came up to James, introduced himself as Claude (Spud) Taylor from Texas, and welcomed him to the base.

"Spud and I became real tight, and that's when the Black Panther tag took hold and has been with me ever since," James said.

"Spud was shot down over North Korea; he bailed out and was captured. We heard later he was shot in the back of the head with his hands tied behind his back."

Colonel James's youngest son is named Claude and nicknamed "Spud." His other son, Daniel, Jr., is a combat pilot in South Vietnam. His daughter, Danice, is married to an Air Force flight surgeon.

As an Air Force pilot, James has logged more than 10,000 flying hours. He has flown a total of 197 combat missions, seventy-eight of them recently over North Vietnam.

His blue uniform has five rows of ribbons, which include the Legion of Merit, the Distinguished Flying Cross with two oak leaf clusters, and the Air Medal with ten oak leaf clusters. His Air Force career has been filled with important command assignments and key staff positions.

But he insists he's basically a fighter pilot. "That's why I joined the Air Force," he said.

Does being on the promotion list for general and being a Negro have special significance for James? "Yes," he says, "but only in the sense of showing black kids that it can be done. Today black kids hear so much bitterness from the militants, who are so steeped in their own bitterness that they're trying to cure the disease by killing the patient.

"I'm not saying all the barriers are down. They are not. I'm not a starry-eyed idealist," he said. "But separatism is not the answer. There are opportunities today . . . in the Air Force, everywhere in America.

"I'm all for teaching black history so kids will know about the Negro contribution to our country. But I'm dead set against separatism. And I am dead set against disloyalty, black or white, and racism, black or white," James said.

"You will find prejudice of some kind everywhere in the world.

"I think our country is closer to true freedom than any other country in the world," he says. "Our system —if justly applied—will lead to eventual true freedom for all its people.

"I feel the way to bring about change in America is first to ensure that the nation survives, to cast the vote, to participate in the political life, to contribute to its welfare, and to fight for it whenever asked without question," he says.

"My getting promoted is not just getting a star but it means being able to make a larger contribution to the Air Force and to make a stronger America."—END

Air Force careers gallop in the James family. Here, in June '68, "Chappie" James pins lieutenant's bars on his son, Daniel James III, after Daniel's graduation from the University of Arizona. He's now a combat pilot in Vietnam.

—Wide World Photos

Until Daniel "Chappie" James, Jr., was named a brigadier general, the distinction of being the only Negro general in the Air Force was held by recently retired Lt. Gen. Benjamin O. Davis, Jr., the son of the US Army's first Negro general officer.

A West Point graduate and much-decorated World War II fighter commander, General Davis served with distinction in the postwar years as a senior staff officer and commander. At his retirement, he was Deputy Commander of the US Strike Command, MacDill AFB, Fla.

In retirement, General Davis does not plan to rest on his considerable laurels. He has been named Cleveland's Public Safety Director, supervisor of that city's police and fire departments. The photo shows him being sworn in by Cleveland's Mayor Carl B. Stokes last month.

The liberals are distressed and confused as Congress plunges into the last session before election. The stakes in November will be high, and the Administration is trying to shift the focus from war to inflation. On top of this, overlapping committees contribute to confusion in mid-winter on Capitol Hill . . .

Congress: The 1970 Issue Is Votes

By Claude Witze

SENIOR EDITOR, AIR FORCE/SPACE DIGEST

THE second session of the 91st Congress is under way, and it is perfectly clear that the most important day of 1970 is going to be November 3. At stake in the election next fall are thirty-five seats in the US Senate, all 435 House seats, thirty-five state governorships, and the control of forty-five state legislatures.

There are people in the Nation's Capital with a stubborn sort of myopia, who have not learned in the past year that President Richard M. Nixon is not only a true politician, but a highly skilled one at that. Since the January 28 vote in the House of Representatives, there is no way to poll those who may still be skeptics, but the Nixon victory—226 to 191—should have thinned their ranks. The issue was an effort to override the President's veto of the appropriations bill for health, education, and antipoverty programs. It fell fifty-two votes short of the needed two-thirds majority.

This argument had nothing to do with national defense, and ordinarily our interest in it would be minimal. However, it is reasonably accurate to say that what passes for liberalism these days was measured in the 226 votes, not in the 191 that supported the White House. That is a pretty narrow gap. When this session gets down to the nitty-gritty business of debating defense issues—and there will be a lot of them—it may be that Mr. Nixon's sensitivity to what is now called the Silent Majority will bear some weight.

There are evidences of this already showing in the dusty scales of the opinion-weighers. *The New Republic*, the well-edited and long-lived liberal weekly, recently carried an essay by Tom Wicker that said this Administration "is most strongly influenced by the idea that the Forgotten American is the dominant political figure of the day." This seems to answer *The New Republic's* own question—"Can the Administration talk to suspicious blacks, to anxious idealists, to groping youngsters?"—asked by one of the editors. The answer is that Mr. Nixon is not trying to talk to them; they did not cast any of his 31.3 million votes. Nor did they cast any of the 9.8 million votes that went to George C. Wallace in 1968, votes that the Republican Party badly wants in 1970.

On strict party lines, the Democrats control Congress. In the last session, the margin was fifty-seven to forty-three in the Senate and 245 to 189 in the House. At that time, one House seat, formerly Democratic, was vacant. Now two former-GOP seats are also vacant. In the vote on the veto of the HEW bill, House Democratic leaders were jolted when thirty-five members of their party joined with 156 Republicans to support the President. Only twenty-seven Republicans defected to vote with 199 Democrats for overriding the veto. There is some significance, also, in the fact that there was no mention in the debate of what the appropriation meant to the quality of our nation's efforts in health, education, and welfare. The appeal was not to the public interest, but to the pork barrel, and it was supported by an active education lobby. Nobody called it a "complex," or organized committees to fight it, or demanded an investigation.

In this case, it turned out that the White House did not need a Republican Congress to sustain the Administration's position, and an important reason is that Mr. Nixon staged his veto of the HEW bill on television. This leads to the conclusion that the President intends to use the power of his office, in front of the cameras, to fight his foes in Congress and to try to win control of the legislature. There is wide feeling, which can dissipate in less than nine months, that the GOP stands a good chance of winning the Senate. There are those who will even make a cautious bet on a Republican House.

There is little doubt that the self-proclaimed liberals are distressed and confused. One of the men most aware of this is Senator Henry M. Jackson, the Washington Democrat who was Mr. Nixon's first choice to serve as Secretary of Defense. In a thoroughly dispassionate Senate speech, the same man who was John F.

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Kennedy's campaign manager in 1960 warned against any laying-on of hands to disturb the Nixon Administration's program to pursue the Safeguard antiballistic missile system.

A new debate is anticipated in this session, and a renewal of last year's clash is expected with relish by the foes of ABM. Mr. Jackson knows that most of these anti-ABM crusaders are also strong enthusiasts for the cause of arms control. At last year's duplicative inquiries on the Safeguard project, they said so, many times. Now the Strategic Arms Limitation Talks (SALT) are under way, with the stage shifting from Helsinki to Vienna. (*See also page 39.*)

"The planned deployment of Safeguard is the President's trump card in the effort of our negotiators to bring a halt to the seriously destabilizing, continued buildup of Soviet offensive power," Mr. Jackson declared. He went on to point out that the Russians have always favored defensive systems and are carrying on their own elaborate research program in this area. He said our efforts to contain the Russian march can easily fail if we do not have a "concrete, visible, and limited deployment of our own." He added that Senators "who are today considering whether to deny the President a system he considers essential to our position in the SALT discussions—or to substantially cut the funds for Safeguard and delay it further—must recognize that, in so doing, they must bear responsibility for any failure in Helsinki or Vienna that might result from the collapse of our position there. For this is what is at stake—quite apart from the strategic importance of Safeguard in the event that the talks fail for other reasons."

Mr. Jackson, further, chided the Safeguard foes who argue that Safeguard would be provocative, that it would create ill-feeling. He said the Soviet Union has continued an unprecedented buildup of strategic forces since last summer and since the talks started in Helsinki in November. Not a single program has been slowed down. They do not consider work on offensive systems to be provocative at this time.

This dilemma for the camp that opposes ABM and favors arms control is only one of several that have emerged from the first Nixon year. The war in Vietnam is still with us, but we are retrenching. The voices that were so loud before Lyndon Johnson retreated from the White House are down to a murmur. When Mr. Nixon was elected, most of these same voices were predicting that in no time the hawks would take over, that the generals (whose prototype is the beribboned oaf on the "Laugh-In" show) would shortly ride roughshod over the entire nation. The screams got louder when Melvin R. Laird, fresh from the House Appropriations Committee, was made Defense Secretary after Senator Jackson turned down the post. What happened, of course, proved that the most outspoken doves were wrong. This Administration has firmer control over the Pentagon than any since the days of Harry S. Truman. The Joint Chiefs of Staff, it turns out, want to get out of Vietnam just as ardently as they opposed fighting this kind of war from the beginning.

The top two—Defense Secretary Melvin R. Laird and head of the Joint Chiefs of Staff, Gen. Earle G. Wheeler—testify before a congressional committee. A renewal of 1969's clash on ABM is expected in this session of Congress.

The emphasis on counterinsurgency, another child of the Kennedy years and a pet military theory of the liberal wings, has proved both disastrous and expensive. It is an acquired capability, dating back to the early 1960s, without which the Vietnam adventure would have been even more unreasonable.

So far as the military budget is concerned, it advanced steadily in the 1960s and now has been cut by Mr. Nixon and Mr. Laird. The fact that they have retrenched, and have been supported by congressional committees in this effort, is having impact. Some of the critics claim credit, but do they deserve it? George H. Mahon, chairman of the Defense Appropriations Subcommittee of the House, has predicted that what is voted for Fiscal 1971 will be close to the Nixon-Laird request, which is $73.6 billion.

The history of the first session of this Congress deserves a brief review. The ABM debate was long and overheated. The White House was worried but managed to prevail in the Senate by a single vote. That was the high point reached by the alliance of liberals in both parties. Aside from support for a resolution seeking to limit our overseas commitments and one to curb the development of chemical and biological warfare, they made little progress. After the procurement authorization debate, the coalition disintegrated and lost the battles over a number of restrictive amendments. The critics of defense spending have not dispersed, but their teeth have been pulled in the key Armed Services and Appropriations Committees.

By this time, it is clear that the Administration is cutting back on the defense budget in a highly selective way. Safeguard is considered essential, and it will be pressed. The United States does not intend to neglect its nuclear deterrent. Research will be continued on advanced systems. The most significant statement by a White House source probably is the one that says the big impact is two or three years away and that it will reflect a basic change in our defense program. The immediate savings will come out of a sharp cutback in general-purpose forces and, hopefully, a winding down of the war in Vietnam.

Up on Capitol Hill, the men who had hoped to make political hay out of Administration defense policies will not have an easy time. One reason is that the Nixon Administration is shifting the focus to inflation as a major issue, and it is not easy to deny public interest in this. Inflation helps make conservative votes.

Sen. John Stennis of Mississippi

Sen. Stuart Symington of Missouri

Sen. Margaret Chase Smith of Maine

Sen. Richard B. Russell of Georgia

The committee structure in Congress is more unstable than at any time in the recollection of seasoned observers. John Stennis of Mississippi, chairman of the Senate Armed Services Committee, is going through a tortuous period. He is reorganizing his staff and adopting an entirely new approach toward the posture hearings and the defense authorization bill that will come out of them. Over his shoulder, he is forced to keep an eye on other committees, such as Foreign Relations, Government Operations, and the Joint Economic Committee. Each of them is concerning itself with questions that belong in Mr. Stennis' bailiwick.

The proper jurisdiction of the Armed Services Committee has been eroded by a number of factors. The chairman himself has been devoting a great deal of his time to fighting the school-desegregation question that is so important to his constituents in Mississippi.

Senator William Proxmire, heading a subcommittee of the Joint Economic Committee, has taken his concern with the cost of the Lockheed C-5A and has extended it to the point where he is attacking the requirement for the giant transport. He has also introduced a bill that seeks to curb the funding for independent research and development performed by defense contractors. Hearings are scheduled by an Armed Services subcommittee headed by Senator Thomas J. McIntyre.

Senator Mike Mansfield, the Democratic leader, who is a member of both the Appropriations and Foreign Relations Committees, also stepped onto the stage with an amendment demanding that all military R&D be identified as some kind of support for a specific military program. Keeping the military aspects of our work with unknowns this pure is almost impossible, according to most Defense Department, USAF, and industry experts. They cite the close interface of defense R&D with that of NASA and other federal agencies, arguing that the hunt for scientific fact can't be conducted behind fences.

On another front, Senator Edward M. Kennedy, majority whip, assumed leadership in the debate over the draft. Far more serious, Senator Stuart Symington, who was denied chairmanship of the Preparedness Subcommittee of Armed Forces when Mr. Stennis moved to the top post in the parent committee, has opened a new attack. Using his position on Foreign Relations, Senator Symington now heads a subcommittee on US Security Agreements and Commitments Abroad. It has been holding secret sessions. The impact of the subcommittee's report, when one is finally made, will be felt by Armed Services, and the Stennis committee will have to weigh the results.

The effort on the part of the General Accounting Office to carry out a strict monitorship of defense contractors will be continued. The Subcommittee on Executive Reorganization of the Committee on Government Operations, headed by Senator Abraham Ribicoff, has held hearings. Senator Proxmire's subcommittee has also heard testimony on the same subject. Another Foreign Relations subcommittee, this one on International Organization and Disarmament Affairs and headed by Senator Albert Gore, continues to have interest in the ABM, antisubmarine warfare, and Multiple Independently Targeted Reentry Vehicles (MIRV).

None of these developments adds to the prestige of Armed Services. The reaction of Mr. Stennis has been to become himself more critical of strategy and programs. In a staff housecleaning, he has dispensed with the services of four former professional military men. All of them had worked for the Preparedness Subcommittee when Mr. Stennis was chairman, and generally were credited with a lot of hard digging into military facts. Their results, frequently critical of Army, Navy, and Air Force practices, were responsible for keeping the services on their toes. The focus was kept on the guns, ships, and airplanes: Were they good enough, and were there enough of them? The result, in some circles, was that the subcommittee contributed to the "rubber-stamp image" that encumbered Armed Forces; at the same time the staff brought in a degree of military professionalism that is absent in other quarters.

Now Mr. Stennis has replaced these men with civilian procurement specialists from the GAO and the Bureau of the Budget. There is apprehension in the Pentagon, passed on to some of its suppliers, that the effort of the Armed Services Committee to disarm its critics will shift its emphasis from the requirement for a system to the cost of the system.

It must go in the record at this point that, if the GOP takes over the Senate in the 1970 election, Margaret Chase Smith will become chairman of Senate Armed Services. In the first session of the 91st Con-

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Representative Chet Holifield of California heads up the Government Operations Committee's Subcommittee on Military Operations.

gress, this lady worked hard at several points to stiffen the backbone of Mr. Stennis, who showed a propensity to underestimate the support he could muster. Critics say that the Stennis guidance for the Fiscal 1970 authorization bill was not up to the standard set by his predecessor, Senator Richard B. Russell.

Mr. Russell now is chairman of the Appropriations Committee; he is an ailing man. The next senior Democrat is Allen J. Ellender of Louisiana, and the senior Republican is Milton R. Young of North Dakota. Mr. Ellender's main interest is agriculture, but observers believe he would measure up to the chairmanship of that committee if it were thrust upon him. Mr. Young, who would take over in the event of a Republican victory, is seventy-two years old. There have been times when he displayed some crotchetiness, but he has not been accused of incompetence in any degree. Veteran military observers of the Defense Subcommittee, of which Mr. Young is a member, testify that they hold him in high respect.

Over on the House side, the committee situation is less confusing. L. Mendel Rivers of South Carolina guides the House Armed Services Committee with a reasonably firm hand, and he enjoys good staff support. The House also benefits from the cool approach of Congressman Chet Holifield of California, who heads the Subcommittee on Military Operations of the Government Operations Committee. Mr. Holifield is the father of the new Procurement Commission that has taken his name. At this writing, the selection of the fifteen-member group is imminent. Six are to be appointed by the President, four by the President of the Senate, and four by the Speaker of the House. The Comptroller General will be the fifteenth member.

The Commission is directed to "study and investigate the present statutes affecting government procurement; the procurement policies, rules, regulations, procedures, and practices followed by the departments, bureaus, agencies, boards, commissions, offices, independent establishments, and instrumentalities of the Executive branch of the federal government; and the organizations by which procurement is accomplished, to determine to what extent these facilitate the policy" declared in the bill. There are twelve points to the policy, covering everything from reasonable cost to the requirements placed on contractors and the inconsistencies of the law. The bill was given support by the military and its suppliers.

Mr. Holifield, who has suggested that the phrase "civil-industrial complex" be substituted for "military-industrial complex," hopes that the Commission will find "better ways for industry to serve the government and better ways for the government to serve the public." He is convinced himself that the military budget "cannot safely fall much below the $70 billion level." Economies, he says, can best come from improved management, manpower, and operational maintenance.

Representative George H. Mahon is chairman of the House Appropriations Committee and its subcommittee on defense. The man has had many years of experience, all of them marked by hard work. At one point in the last session, he had a clash on the floor with Mr. Rivers, in which he was accused of "playing into the hands of the enemies of the military." This was an unfortunate exaggeration, but Mr. Mahon can be expected to support Secretary Laird and the Nixon Administration in a new approach to the defense budget. The Appropriations chairman shares the stage with Wilbur Mills of Ways and Means as one of the two most powerful men in the House. It is said that Mr. Mahon is proud of his efforts to keep the military strong, while turning back social welfare programs brought in with no effort to justify them as cost-effective.

Spokesmen for Secretary Laird, confronted with common Capitol Hill speculation, do not deny that the defense budget is going to decline steadily over the next five years—probably to the $60 billion level. But they also insist that pressure will not be eased to meet the requirement for modernization of the tools and weapons. On top of this, it is the Army, the Navy, and the Air Force that will make the decisions on how the money will be spent for hardware. Congress and the defense industry share the opinion that the savings must come out of manpower and maintenance. There is no disagreement that this opinion prevails as well on the third floor of the Pentagon.

To the Holifield Commission must be added the impact of an anticipated report on Defense Department management by Mr. Laird's so-called Blue Ribbon or Fitzhugh Committee. Silence surrounds the proceedings, but there will be a report this year. An educated guess is that it will endorse the rollback of McNamara policies already achieved and urge still further, drastic retrenchment of Pentagon bureaucracy with its insatiable demands for paper and manpower to shuffle it.

These changes inevitably will be reflected in USAF's approaches to Congress. The fact that each branch of the armed forces now can make decisions, instead of trying to support decisions handed down from the Office of the Secretary of Defense and his "Whiz Kids," is not without a price. In the past few years a USAF briefing team appeared on Capitol Hill prepared to defend a project on the basis that it had been approved—and in many cases selected—by Defense Department staffs. Challenged to discourse on the alternatives by an inquisitive and intelligent member of the Armed Services or Appropriations Committees, the witness was not adequately prepared. The reason was that the alternatives already had been eliminated by the civilian bureaucracy.

In the future, there is no doubt, a USAF presentation will have to include a discussion of the system requirements, the alternatives, and a defense of USAF's rationale in selecting the system it wants.—END

Although it is quite possible that the arms talks between the Soviets and us may eventually produce—after long, hard, and complex negotiations—agreements that could tone down the arms competition, we must be realistic about our need to maintain a deterrent sufficient to retain the respect of the Russians . . .

The SALT Negotiations

KEEPING HOPE IN LINE WITH REALITY

By Anne M. Jonas

SO FAR, most Americans have failed to formulate thoughtful opinions about the vital issues to be discussed during the first substantive round of the US-Soviet Strategic Arms Limitation Talks (SALT) scheduled to open in Vienna in mid-April.

Given President Nixon's decision—taken prior to the procedural SALT sessions at Helsinki late last year and still in effect—to practice private diplomacy for as long as feasible during these negotiations, some specialists on international relations may try to argue that what goes on at SALT is no business of the US public. Certainly, concerned citizens do not need—nor are they likely to get—detailed, blow-by-blow accounts from Administration spokesmen on SALT policy, strategy, and progress, either before or after the Vienna sessions convene. But policy decisions affecting SALT are intertwined with policy decisions on other vital issues also affecting our strategic deterrent posture.

Some of these other issues—including the value of arms control *per se*—long have been under debate by the Congress and its constituents. Matters like what the US should do about antiballistic missile (ABM) deployment, Minuteman and Poseidon retrofit timetables, and funding a follow on for the B-52 potentially affect the strategic deterrent balance. Once more, they are under debate on Capitol Hill and elsewhere. In addition, certain segments of the American public, intent on achieving arms control irrespective of the potential risks to our national security some of their proposals would impose, already are trying indirectly to influence the Administration's SALT policies. Hence, there is an urgent need for thoughtful and sophisticated citizens first to inform themselves adequately, and then to express themselves in appropriate places at appropriate times on appropriate topics. Thereby, they can exert a constructive influence on national security policy-making at this crucial juncture.

Material on the public record about SALT, concepts and dynamics of strategic deterrence, Soviet and US military capabilities, projected US strategic offensive and defensive force requirements, and related issues varies greatly in quality. In books, magazines, newspapers, congressional hearings, and radio and TV commentary, there exist carefully reasoned discussions based on facts. There are also confusing presentations claiming to be factual, but instead merely repeating outworn slogans about stopping the alleged "arms race." How, then, can one hope to sort out the truths from the half-truths—or worse? How can one arrive at an objective, informed opinion on the relationship between US strategic deterrence requirements and SALT?

Discussing a few of the more important factors involved should furnish some guidelines for winnowing the wheat from the chaff in the bumper crop of material our information media will continue to carry before either SALT or the related congressional debate on the Administration's requested FY 1971 defense budget ceases to be big news.

An important initial key to understanding the relationship between SALT and our strategic deterrence requirements involves uncertainties about Kremlin intentions:

1. ***Soviet negotiatory behavior at the preliminary SALT sessions at Helsinki was businesslike. The desultory and tiresome polemical tactics characteristic of so many earlier East-West negotiations never were used. Bilateral adherence to the principle of minimum official publicity freed the negotiators for serious discussions. Concurrently, however, the Kremlin has continued its buildup of the already formidable Soviet stra-***

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tegic strike force. Because of these seemingly contradictory Soviet moves, it is difficult to assess whether Moscow now is really serious about working out mutually acceptable strategic arms limitation arrangements.

For a number of years, Soviet theory about the impact of nuclear weapons on military strategy and operations lagged behind our own. Now that the USSR has acquired sufficient strategic strike capabilities to inflict unacceptable damage on the continental United States, published Soviet discussions on atomic warfare by professional military spokesmen have gradually become more sophisticated. While lip service still frequently is paid to outworn Marxist-Leninist concepts about war as an extension of politics, at least some high-ranking USSR officials seem now to comprehend the difficulties of trying to defeat the chief capitalist nation—the United States—by launching a surprise nuclear strike. It seems safe to assume that our earlier decisions to deploy the currently operational US strategic force "mix" strengthened deterrence and helped to bring about this shift in at least some of the published Soviet assessments of the East-West strategic balance.

However, there is evidence that the Soviet military leaders are by no means unanimous in their opinions about the presence or absence of an existing state of mutual deterrence. For example, on February 23, 1968, Minister of Defense Grechko told a Kremlin audience:

> It would be a serious mistake to overestimate the stability of existing peaceful relations [with the United States]. At the slightest change in the situation, the imperialist predators might hurl themselves against the country of the Soviets.

Of course, statements like this by military officials like Marshal Grechko may be designed primarily to enhance troop morale and build up the prestige of the armed forces. But within the USSR's military hierarchy there seem to be genuine differences of opinion on the advisability of SALT negotiations. As recently as last August, such high-ranking spokesmen as Marshal Krylov, Commander of the Strategic Rocket Forces, bitterly opposed Soviet participation in SALT. Nevertheless, a competent military staff willing seriously to discuss complex SALT-related problems was present at Helsinki, suggesting that any Soviet military objections to the SALT negotiations have been overruled—at least temporarily—by higher, civilian authority.

Perhaps some younger officers have mastered, more thoroughly than some of their superiors, the intricacies and uncertainties of deterrence based solely on unilateral modernization and buildup of existing forces. Or perhaps they are cooperating with higher political authority because they have been ordered to do so. They may even be seeking by their participation in SALT staff work to carve out a greater role for the military in future Kremlin decisions on crucial foreign-policy issues—a role that until now has been comparatively negligible. Whatever the case, at least some elements of the Soviet military still argue that the only way to maintain a viable strategic deterrent is through indefinite unilateral modernization and buildup of existing forces. Others appear to be in favor of SALT.

By contrast, the current Kremlin political leaders seem to have accepted the fact that a state of mutual deterrence now exists, and that it may be possible to stabilize this deterrent through arriving at some strategic arms limitation arrangements with the United States. In other words, Brezhnev, Kosygin, and at least some of their advisers seem to believe that both the US and USSR today possess enough nuclear weapons virtually to destroy each other. But they also seem to believe that neither the US nor the USSR yet has achieved sufficient nuclear superiority to risk the devastating damage of the retaliatory strike that would follow if one launched a surprise nuclear attack on the other.

Of course, the US has never contemplated a deliberate attack on the Soviet Union or any other nation. President Nixon's enunciation of the doctrine of nuclear "sufficiency," which rejects both "overkill" and "superiority" as goals of our strategic nuclear weapons procurement policy, has reinforced this traditional posture. Nevertheless, absurd as it may seem to us, some—but apparently by no means all—members of the Soviet bureaucracy, both political and military, still seem to retain suspicions that at some point we might find our national interests so drastically in conflict with those of the USSR that we might launch a deliberate nuclear attack on the Soviet Union. Other Soviet bureaucrats may even dream of the day when Brezhnev and Kosygin will be ousted and replaced by advocates of Soviet "superiority" and an eventual outright nuclear attack on the United States.

Clearly, internal disagreements over the advantages and disadvantages of SALT exist in the USSR as well as in the United States. But these have been aired less frequently in Soviet publications since the Russian people were told, on October 24, 1969, of their government's decision to meet at Helsinki for SALT discussions with the United States.

The Kremlin leaders traditionally have placed great importance on making certain foreign policy moves only after careful assessment suggests that the contemplated moves are most appropriate to the "external situation" at a given point in time. They now seem to have decided the time is ripe to try to arrive at SALT agreements. Foreign Minister Gromyko foreshadowed this decision when, on June 26, 1968, he told the USSR Supreme Soviet:

> There are problems which sometimes are blunted by time. But there are also problems which accumulate new complications and dangers with the passage of time. Thus, life [today] raises the problem of discontinuing the arms race, the problem of arms control.

Has a new era in US-Soviet relations really begun? Will the Soviet delegation's instructions for next month's sessions lead to continuation, on a more substantive level, of the serious discussions among experts begun at Helsinki? Will the Soviet negotiators really try to work out mutually acceptable solutions to the many problems involved in substituting long-term bilateral arrangements for maintaining a stable deterrent

through unilateral measures? Or is the USSR merely using, for the moment, a more subtle version of its threadbare tactics of negotiating to gain time?

No one knows for sure. But continued sincere and businesslike Soviet negotiatory behavior at Vienna, combined with no pause in the buildup of the USSR's unilateral strategic deterrent forces, would be entirely consistent with the Kremlin's approach to decision-making.

Brezhnev, Kosygin, and other current members of the Central Committee of the Communist Party of the Soviet Union (CPSU)—a body that significantly influences major policy decisions—rose to power because they were able to maintain sufficient ideological orthodoxy to survive the bloody Stalinist purges of the mid-1930s. At the same time, these present-day Soviet policy-makers have been sufficiently resilient and realistic about the changed political, technological, economic, and ideological context in which the USSR now must conduct its foreign policy to avoid "harebrained schemes" like nuclear blackmail of the United States or outright invasion of Western Europe.

They are aware that Khrushchev's missile-rattling—which turned out to be partly bluff—provoked the US to improve its strategic strike force. They know that when the superpowers approached the brink of a nuclear showdown after Khrushchev's decision to introduce missiles into Cuba, the realities of the deterrent balance were such that the USSR was forced to back down. Subsequently, they have built up Soviet strategic strike capabilities and have drawn at least even with the United States.

Unity arising from contradiction is a fundamental tenet of the dialectical approach to policy planning. Despite the continuing buildup of its strategic forces, the Kremlin may be sincere about seeking mutually acceptable bilateral arrangements to limit strategic arms.

More practical considerations also may be influencing current Kremlin interest in SALT. The USSR still has serious resource-allocation problems, complicated by requirements to prepare for the contingency of an eventual nuclear threat from Communist China. There are uncertainties about what future force "mixes" will be required if the US modernizes its deterrent in the absence of SALT arrangements. Faced with these issues, the Kremlin leaders seem to have decided to probe US intentions seriously at SALT. They also seem to have decided to defer any cutbacks in their effort to keep their unilateral strategic deterrent modern, effective, and credible. This increases their diplomatic flexibility. But it does not necessarily mean that the SALT negotiations are sure to break down, as some US observers have asserted. Nor does it mean the US should defer all additional modernization of its own strategic deterrent forces—offensive and defensive—until we see what happens at SALT, as other US commentators advocate.

Mutual deterrence based solely on decisions taken independently in Washington and Moscow to maintain those modernized force "mixes" required to deter an attack is an exceedingly delicate, uncertain, and expensive balance of terror. In theory, at least, certain types of SALT agreements could stabilize this balance and be mutually beneficial to both superpowers, without jeopardizing the national security of either. But working out the details involves many risks for both the US and the USSR.

The second key, then, to a prudent public perspective on SALT is this:

2. ***Until tangible progress is made on arriving at—and even beginning to implement—mutually acceptable SALT agreements, it is in the national interest of both the US and the USSR to retain at all times a credible capability to deter attack by the other. As long as one side continues to introduce new weapon systems into its strategic inventory, the other side risks precipitating undesirable shifts in the deterrent equation if it fails to respond.***

The existing deterrent balance is delicate, intricate, still changing. Construction and deployment of at least three types of Soviet ICBMs—SS-9s, SS-11s, and SS-13s—has proceeded more rapidly than US Secretary of Defense Melvin Laird, using estimates agreed upon by the entire intelligence community, thought would be the case when he testified before congressional committees during last summer's hearings on the Safeguard ABM. Meanwhile, as Mr. Laird recently has stated (in an interview on CBS "Face the Nation," January 11, 1970): "We are not going forward with any strategic offensive weapons systems except in research and development—[any] new systems." He added that even Phase One of the Safeguard ABM program, approved in principle by Congress by a one-vote margin last summer and designed to protect our Minuteman wings at Malmstrom and Grand Forks AFBs by 1974, has experienced a "six-month slippage" due to the Administration's decision to wait for final congressional approval in the vote on the military appropriations bill. This endorsement was not forthcoming until late December 1969.

Now, President Nixon has asked for funds in the FY 1971 budget to initiate work on Phase Two of the Safeguard ABM system. If approved by the Congress, this would involve eventual protection of additional Minuteman silos at Whiteman AFB in Missouri and of the National Command Authority in the greater Washington area. It would also provide by the mid-'70s some area defense against an accidental or "light" ICBM attack from Communist China or any other source.

The President's January 30 announcement on ABM has prompted renewed cries of "Let's wait and see what happens at the SALT talks!", "We don't want to offend the Russians!", and similar unsophisticated remarks. Although the total defense budget requested for FY 1971 constitutes only seven percent of the gross national product—the lowest percentage by this measurement since 1951—pressures have arisen to slash it even further. Defense Secretary Laird, like the President, is on record as wanting to establish a balance between defense expenditures and outlays of federal money to meet requirements in other areas like health, education, welfare, and urban affairs. On January 3, 1970, Mr.

(*Continued on following page*)

Laird told the press: ". . . we are hopeful that we can meet with some success in the SALT talks." On January 7, he said: ". . . it's most important that we get our defense expenditures in tune with the other priorities that . . . face this nation." He might well have added—although he only implied it—that we *cannot* cut defense spending at the expense of our strategic nuclear deterrent, SALT notwithstanding. It is this deterrent—and the "mix" of offensive and defensive forces constituting it—that provides the protective shield under which all our other activities occur, *including* domestic attacks on pollution, crime, and other internal problems as well as SALT negotiations with the USSR. If this fundamental fact were accepted by a greater majority of Americans, our SALT negotiators would be freed to go about their complex work with less pressure to rush into arrangements we might later find undesirable.

If the SALT negotiations lead to mutually acceptable US-Soviet arrangements that will both stabilize deterrence and permit the two nations to spend less in the future on strategic weaponry, this will be an important milestone in East-West relations. But no one knows how long the SALT negotiators will need to accomplish their tasks, or whether the two sides can work out arrangements both can accept. Even if preliminary attention given the test-ban issue in other diplomatic forums is disregarded, the formal US-UK-USSR negotiations on a test-ban treaty were lengthy and laborious. By the most literal measurement, it took almost five years to come to tripartite agreement on the language of the limited nuclear test-ban treaty. Hopefully, the SALT negotiations will result in useful agreements in less time. But we cannot be sure of it.

Meantime, the interactions between strategic weapon development lead-times, fiscal lead-times involving congressional appropriations, and negotiatory lead-times have become particularly significant. Many in the US ignore the fact that we already lag behind the USSR in some aspects of the weapons development lead-time race, since the SS-9s, SS-11s, and SS-13s that Safeguard ABMs are designed to deter or counter are being deployed, with many sites operational right now. Assuming no further slippage in deployment schedules, even Safeguard Phase One will not begin to be operational until the end of 1974. Similarly, the funds requested in the FY '71 budget for Minuteman and Poseidon retrofit are the minimum necessary to keep our deterrent effective.

Kremlin leaders, from Stalin to Brezhnev and Kosygin, consistently have been realists who understand and respect power and who are contemptuous of any displays of weakness or equivocation on the part of the US leadership. Kremlin leaders, even when they are serious about coming to an agreement, negotiate carefully and slowly. We cannot afford to "wait and see what happens at SALT."

Both the US and the USSR are on record as endorsing the principle that neither side should gain strategic advantage over the other as a consequence of SALT agreements. The entire problem of what to keep and what to prohibit under a SALT arrangement—of what "mix" would strengthen deterrence and what "mix" would not—takes time to work out. On the one hand, the longer both superpowers continue to develop and deploy new strategic weaponry, the more complex becomes the task of arriving at mutually acceptable SALT arrangements. On the other hand, failing to maintain strong unilateral deterrents or quickly agreeing to simplistic trade-offs, dismantling arrangements, and "freezes" could work to the disadvantage of both the nuclear superpowers, destabilizing deterrence and making the delicate balance of terror even more delicate.

Strategic deterrence is the most vital protection we have to ensure our continued national existence. If it can be obtained eventually at less cost and risk through SALT arrangements, this will be a real step forward. But no one will know until the negotiators have had sufficient time to do their work—behind closed doors and without any pressures to hurry. Meanwhile, our deterrent must be maintained unilaterally, with maximum public support for early congressional approval—without cuts—of the already pared-down requests for strategic offensive and defensive force maintenance and modernization included in the Administration's FY 1971 military budget.

A third key to a prudent public perspective on relationships between SALT and strategic deterrence involves vital differences between arms limitation and disarmament:

3. ***Both sides will require some deterrent forces—defensive as well as offensive—even under a SALT arrangement. Detente between nuclear superpowers does not—and need not—involve total trust. Moreover, neither superpower can be sure what Communist China and other actual and potential secondary nuclear powers may do with their nuclear weapons as their delivery capabilities grow.***

The chances for eventually arriving at mutually acceptable SALT arrangements will be enhanced if there occurs, in this country, a surge of public realism and patience. To repeat: The Administration's FY 1971 military budget requests—insofar as they affect our strategic offensive and defensive deterrent force "mix"—constitute the minimum requirements for maintaining a strong deterrent irrespective of success or failure at SALT. If subsequent developments permit further cuts in this portion of the military budget, the Administration will so inform the Congress. Under current systems of fiscal review, intelligence review, and other measures for executive as well as legislative checks and balances on US military spending, the danger is not too much additional deterrence too soon, but perhaps too little too late.—END

ABOUT THE AUTHOR

For the past nineteen years, Mrs. Jonas, a previous contributor to AIR FORCE/SPACE DIGEST, *has been engaged in research on various national-security problems. Now a free-lance writer and consultant, she previously has held staff positions with the RAND Corporation, the Weapons Systems Evaluation Division of the Institute for Defense Analyses, and the Stanford Research Institute. All opinions in this article are those of the author and are not necessarily endorsed by any government agency or contractor.*

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Good show!

Civil aviation's explosive growth is squeezing the vital national resource—the airspace—which it shares with military aviation. There are potentially detrimental effects so far as training, safety, and ground facilities are concerned. Military aviation, which has been a generous contributor to and efficient partner in the operation of the national air traffic control system, in order to preserve its full operational integrity must have long-term assurance of . . .

Room Enough to Fly

By Edgar E. Ulsamer
ASSOCIATE EDITOR, AIR FORCE/SPACE DIGEST

THE Federal Aviation Administration's basic task, set forth in the 1958 law that chartered it, is the "development and operation of a common system of air traffic control and navigation for both military and civilian aviation." In the past this arrangement of sharing the national airspace, essentially on a first-come, first-served basis, has worked very well. The relationships and rapport between the Department of Defense and the individual military services on the one side, and the Department of Transportation and its Federal Aviation Administration on the other, continue to be "excellent." (To a large measure, the FAA's regulations and air traffic control standards apply, and concomitantly affect military operations, worldwide because ICAO, the UN's International Civil Aviation Organization, frequently adopts the US criteria.)

But there are "formidable clouds on the horizon, which could lead to a serious crisis eventually," this reporter was told by Philip N. Whittaker, Assistant Secretary of the Air Force for Installations and Logistics and chairman of the DoD Advisory Committee on Federal Aviation.

Burgeoning General Aviation

At the nub of the problem is the rapid increase of civil aviation, especially general aviation, while mili-

Assistant Secretary of the Air Force for Installations and Logistics Philip N. Whittaker warns that military aviation may experience a serious crisis in terms of airspace available in the future.

Assistant Secretary of Defense for Installations and Logistics Barry J. Shillito terms civil aviation operations "incompatible" with military airfields, which may initiate major alert missions.

tary aviation has been, and until 1980 is expected to remain, stable at about 30,000 aircraft. The number of civil aviation aircraft movements from controlled airports, according to FAA forecasts, will triple during this decade.

As the threat of saturation and paralysis of the airways and ground facilities mounts, civil aviation correspondingly increases pressures that threaten to curtail military flying as well as impair its safety. At the same time, demands for joint use of military ground facilities or for their complete takeover are being intensified.

"We are facing the possible involuntary loss of many major military installations in the years to come. These potential losses are heavily concentrated in the coastal and metropolitan areas, and are of great concern to the Department of Defense," according to Barry J. Shillito, Assistant Secretary of Defense for Installations and Logistics.

DoD's Contributions to Traffic Control

According to Mr. Whittaker, the 242 airfields (including ninety-four Air Force bases) operated by the Department of Defense in the continental United States are a "huge investment, and it is in the nation's interest that the integrity of these airfields be preserved." Of this total, eighty-five military airports have advanced radar approach control centers, while an additional ninety-six have ground-control approach radar installed to assist in all-weather landing operations. These are not only compatible with but often are integral elements of the Federal Aviation Administration's air traffic control system.

This is true also of 471 military navigation aid installations comprised of Tactical Air Navigation (TACAN), Instrument Landing System (ILS), and Very-high-frequency Omnidirectional Range (VOR) facilities as well as of the Department of Defense's 13,000 air traffic controllers. Of the Department of Defense's seventy long-range radar installations in the United States, twenty are allocated to joint use with the civilian system, providing both radar and beacon surveillance to the air traffic control system of the FAA as well as to the Air Force's SAGE air-defense system. According to John W. Klotz, head of DoD's technical liaison with other government agencies, of the sixty-four long-range radar installations operated by the FAA for air traffic control purposes, only two are used jointly to provide radar and beacon surveillance for air defense as well as to serve the civilian needs.

The High Cost of Compliance

The Department of Defense's cooperation and compliance have been unstinting and costly. According to Mr. Klotz, the cost of making the fleet of 30,000 military aircraft compatible with FAA standards will be about $1 billion and will require about ten years to implement. Modifications include individual airborne identity and altitude-reporting beacons necessary to meet the requirements of FAA's computerized air traffic control program, known as the National Airspace Utilization System Stage A.

Compatibility with the civilian requirements is not only expensive but at times difficult to attain. Efficient use of the national airspace requires separating aircraft not only laterally but also by altitude. The altitude separation is 1,000 feet, which in turn requires that altimeter errors do not exceed 250 feet. According to Mr. Klotz: "Put quite simply, our high-performance supersonic tactical aircraft with the earlier central air data computer designs just don't behave like subsonic airliners." Specifically, he explained that reporting altitude in 100-foot increments with a repeatable accuracy of plus/minus 250 feet has been "flunked" by the F-4 and the A-7, which recorded variations as great as 450 feet. By contrast, the T-38, F-111A/E, the C-141, and RF-101 aircraft have passed the FAA's stringent altitude-reporting criteria.

Microminiaturized AN/APX transponder, which is compatible with the commercial system for FAA air traffic control.

To date about 8,000 military aircraft have been equipped with expanded identity-code capability, with the Environmental Science Division of the Bendix Corp. delivering the needed transponders at the rate of 650 per month.

But equipping military aircraft and commercial jetliners with modern air traffic control systems does not by itself constitute a solution to the problem. General aviation either will have to follow suit—which may not prove possible because of the cost factor—or else current plans to segregate low-flying and slow vehicles from high-speed, sophisticatedly equipped aircraft may have to be implemented.

Categorizing the Airspace

Mr. Whittaker pointed out that according to FAA's *Near Mid-Air Collision Study* of 1968, near-misses involving military aircraft occurred primarily in the vicinity of large civilian terminals. "In most of these cases the other aircraft involved was a small general-aviation aircraft. Furthermore, the study found that missions such as our undergraduate pilot training in the vicinity of heavy general-aviation activity were affected to a particularly great degree. Another problem area involves military aircraft operating necessary

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training flights over low-level, high-speed navigation routes when light-aircraft activity is going on in the vicinity," he said.

The problem is especially acute in the increasingly crowded lower airspace. Mr. Whittaker explained that, although the FAA is "responsive to military requirements," it must also be responsive to civilian requirements on an equitable basis. As a result of this competition for airspace, the FAA has been "unable to absorb military operations into the system to the full extent that we all recognize would be desirable," Mr. Whittaker said. "As an example, in some cases combat training maneuvers and tactics cannot be performed as desired in a selected area because the area is located close to the periphery of the radarscope where the radar blip is ten miles or more wide. Although controllers are permitted to use five miles of separation, the size of the blip forces them to use fifteen miles or more of separation between aircraft, severely restricting the number of aircraft that can be accommodated in these peripheral areas," he pointed out.

The Joint-Use Issue

But military aviation will be affected in still another way by projected increases in the civil aircraft inventory. According to FAA forecasts, 900 additional airports will be needed within the next five years to accommodate the ever-growing civil requirements. As a result, many communities are looking at nearby military installations with envy and the intent of joint use.

But the feasibility of accommodating civil aviation at a military airfield "cannot be decided by applying a stereotyped set of criteria because of the varying interrelation of such factors as military mission, traffic volume and type of operation, configuration of the available airfield facilities, and the nature and volume of civil use proposed," according to Mr. Shillito.

What makes military airfields attractive to the advocates of joint use, and seemingly strengthens the latter's case, is that, by commercial standards of aircraft movement, air bases are under-used. But, as Mr. Shillito observed recently, this does not mean that the remaining capacity is available for additional, civilian air activities because of the alert status and mission requirements peculiar to military aviation.

Military missions, especially those of the Strategic Air Command and the Aerospace Defense Command, require alert status twenty-four hours a day, thus dictating constant and unimpeded runway availability.

"As a result," Mr. Shillito continued, "civil operations may be judged incompatible at military airfields having major alert missions, especially those with a single instrumented runway. Individual analysis of each joint-use proposal must consider the public interest involved; however, in no case can joint use be permitted where degradation of the national defense mission would result. The capability of the military services to accommodate the increased operational levels required by the contingency and emergency war plans of the United States must be protected."

Mr. Whittaker also pointed out that "joint use of an air base supporting active tactical missions is particularly difficult to authorize due to unique requirements involving special security weapons-handling, and alerts. There are, however, many situations where joint use of military bases is acceptable [especially if] such joint use has community support, which clearly recognizes the necessary priority of the military missions, and where acquisition of land and construction of additional facilities result in a mutually acceptable installation configuration." On the other hand, he said, "Civil use of military bases should not include that class of general-aviation aircraft that are relatively slow and whose pilots do not have at least a commercial license, both because of the safety problems that use would create and because such aircraft would represent an inefficient use of the large military runways and facilities."

Increasing Civilian Pressures

In testimony before the House Armed Services Subcommittee, Mr. Shillito stated that "we may not be able to retain many of our present resources unless firm action is taken now" because of the rising pressures on military installations from such causes as:

- Urbanization's explosive demands for residential and community developments.
- Airspace congestion—the competition with commercial aviation for airspace and its concentration in and around major cities.
- Conflicting requirements of commercial and general aviation for common airspace and airports.
- Expanded federal highway programs and their attendant demand for land.
- Growing demands for park and recreational areas.
- The decentralization of industry to suburban and rural areas in heretofore military secure areas.
- Demands by counties and municipalities for an increased real-estate tax base and the growing desire of municipalities to annex military installations.
- Competitive demands within the mineral development industry at the outer continental shelf.
- The overall increased standard of living for the American people with its attendant change in public attitudes toward the military.

The Need for Joint Planning

The course to be taken to prevent a confrontation between military and civil aviation was set forth by Mr. Shillito:

"The risks that are now developing and the adverse consequences that could result are so severe that every effort must be taken to forecast these impacts and to explore the alternatives available prior to the time a confrontation arises. The accelerated pattern of these risks also dictates that planning for our military installations must be developed with the full knowledge [of] and in concert with federal, state, county, and municipal agencies in order that a constructive long-range plan can be achieved."

Upon completion of a number of studies of the problem, which are currently under way, a White House conference might well be indicated to sort out the national priorities. The national airspace is a resource worth preserving, and allocation of its use is sufficiently important to give it far greater attention than it has received in the past.—END

Educating for the World of Work




Sponsored by the Aerospace Education Foundation, affiliate of the Air Force Association, the Second National Laboratory for the Advancement of Education brought together in Washington, for a unique conference, a broad spectrum of Americans. They were there to explore new approaches to preparing our youngsters for the world of work. Here is a special report on . . .

The Second National Laboratory for the Advancement of Education

BY WILLIAM LEAVITT

SENIOR EDITOR/SCIENCE AND EDUCATION

Photos By Ted Muis

WHY, in the midst of history's greatest technological explosion, is American education so largely failing to prepare our children for a useful and rewarding entry into the world of work, where they must spend their adult lives unless they are to be consigned to the wasteland of welfare rolls or to the ramparts of mindless rebellion?

More than 3,000 concerned Americans—teachers, school administrators, industry representatives, government officials, community representatives from the inner city and suburbia, trade unionists, school board members, parents, and youth, both bearded and "straight"—searched together for answers to this plaguing question at a remarkable January conference in Washington, D.C. The conference was the Second National Laboratory for the Advancement of Education. It was sponsored by the Aerospace Education Foundation, educational affiliate of the Air Force Association, in cooperation with the United States Office of Education. General chairman was Dr. L. V. Rasmussen, Aerospace Education Foundation president. Dr. Rasmussen heads the Department of Education Administration at Florida State University, Tallahassee.

The National Laboratory, held at the Washington Hilton Hotel, was a follow on to the first such meeting, held in late 1968 (*see* AIR FORCE/SPACE DIGEST, *January 1969, page 61*). It proved to be unique in its format, its thrust, and its mix of participants. Instead of sweating through organized panel presentations for endless hours, participants spent their mornings at scores of round tables—all in one huge ballroom—each devoted to no-holds-barred discussion of educational issues ranging from community involvement to the imaginative use of media in the educational process. This was called the Multi-Forum. Literally millions of words were uttered, thousands of ideas were exchanged, and more than a few minds were changed.

The conference air each morning smoked with argument. Participants were free—and encouraged—to

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Intense dialogue on a vast range of current educational issues provided Multi-Forum participants at the Lab with new ideas on how to bring education into the 20th century.

move from round table to round table. Once done with their morning discussions, they could feed "real-time" reactions through special phones into a battery of tape recorders so that an instant record of their views, demands, complaints, and even compliments about the Laboratory proceedings could be rapidly handled by the National Lab staff. The phone-and-tape system, called Tele-Critique, was pioneered at the First National Lab, in 1968. It was further refined the second time around.

But the morning Multi-Forum, with its freewheeling dialogues on everything from community control of urban schools to the potential of computer-assisted instruction, was only one feature of what a participant described as the "best damned educational conference I've ever attended." For, while the morning Multi-Forum proceeded at one end of the hotel, a collection of nine specially selected classroom demonstrations—featuring imaginative approaches to preparing children, high schoolers, and adults, too, for future productive roles in the world of work—were being readied for "three-a-day" showings in the afternoons. Each of the classroom demonstrations had received a National Laboratory award for its innovative approaches to instruction. They were as close to the real thing as ingenuity could devise: Real students learned real lessons from real teachers, using real equipment that ranged from power jigsaws to closed-circuit television and remote computers.

Beyond the Multi-Forum and the classroom demonstrations there were additional National Laboratory features. They included a dramatic array of some fifty industrial, government, and other educational-technology exhibits in the Laboratory's Technology Center. These were exhibits with a difference. Through technical demonstrations, participants got a taste of "live" educational technology, so that a tour of the Technology Center would be what educators call a real learning experience. And if Multi-Forum, classroom demonstrations, and the Technology Center were not enough to keep participants actively rather than passively busy, there was also an Education Theater in continuous operation each evening throughout the conference. The Education Theater showed an array of dramatic films on current problems of American education, ranging from drug abuse to the crying need for greater individualization of instruction and relevance to the world of work.

An additional event that went on throughout the National Lab was a live "Charrette"—a kind of super-brainstorming session—at which a couple of hundred residents of the Anacostia section of Washington, D.C., grappled with the problems of designing a new high school for their community. The Charrette is a technique designed to give people a real say in the determination of what kind of services and designs they want from their public school facilities.

The National Lab Charrette was sponsored by the United States Office of Education. It was a refreshing experience for anyone brought up to believe in the democratic process. The Charrette attracted a wide representation of Anacostia citizens. The observer who might have thought that the age of the town meeting was gone forever left with the conviction that when the democratic process is given a real chance to operate, it can bring out the very best in people. Parents, youngsters, planners—the whole range of people involved in school services—worked together to create their composite idea of what a school should be like physically and in terms of the needs of the community it is supposed to serve.

The Charrette room was festooned with instant conceptual drawings of the proposed new school, with lists of key services the school should be expected to provide, and with jottings of ideas on how the services could best be provided. Participants in the Charrette were predominantly black and poor. But there was no doubt about their passion or sophistication concerning what schools should be like in this technological day and age.

There were few formal presentations, few speeches during the Lab. But some things were said that particularly pointed up the theme of the conference, "Educating for the World of Work."

Dr. Robert F. Mager, Director of Research for the National Laboratory, summed up the great dilemma of American education in a few words during the first day's opening exercises.

This classroom demonstration packed them in. It showed a unique TV instructional system designed for gifted math students. It's used in Dade County, Fla., public schools.

In its classroom demonstration, the Community College of Baltimore, Md., showed how dance is used to dramatize the cultural heritages of students. Often the audience joined in.

"If what we are now doing in our schools," he said, "if the cheating of students with irrelevant tests and tracks and curves is humanism—then let's have no more of it. If alienation and resentment . . . are the fruits of humanism, then let's have no more of it.

"Nor will we have the kind of humanism in our schools that truly demonstrates concern with the dignity of the individual until we learn how to make effective teaching *matter*—until we learn how to change the system from one that reveres publication and credit hours and months of service into a system that reveres results in terms of student change and student growth. Until we learn how to do this basic thing, we will be deliberately avoiding the main issue and we will be deliberately designing for failure."

Dr. Mager's challenge to the National Lab participants was echoed by former Aerospace Education Foundation President Dr. Leon M. Lessinger. Also former Associate Commissioner for Elementary Education in the US Office of Education, Dr. Lessinger is now professor of urban education at Georgia State University, in Atlanta.

"There have been crises in education before," Dr. Lessinger told the National Laboratory assemblage, "but none like the present crisis. Formal education stands revealed in a mortal condition, a crisis of non-achievement. After unprecedented federal, state, and local expenditures for compensatory and innovative practices, repeated investigations have found little or no difference in student achievement; nor have the funds produced improved social, school, and personal attitudes, classroom behavior, study habits, educational goals, or truancy rates for so many disadvantaged youth."

Rep. Roman C. Pucinski, Democrat of Illinois, a member of the House Education and Labor Committee and Chairman of the House General Subcommittee on Education, also had some hard and candid words for National Laboratory participants:

"The entire education curriculum should be centered around preparation for the world of work," the Congressman declared.

"An effort of this magnitude will require unique vision and perspective, reaching into the rest of the twentieth century and even beyond, into the twenty-first century. That is why I speak of 'career education'—which encompasses not only the teaching of specific vocational skills but also a comprehensive orientation to the challenges of working in the adult world.

"Existing programs in our present institutions have tended to overlook these broadly based needs. Instead, such concerns have been reserved to vocational education departments and guidance counselors, while the rest of the academic community has become sidetracked by the college-prep syndrome.

"At the elementary level," the Congressman said, "the subject of career is either ignored or treated unrealistically through stereotypes of such roles as policeman, fireman, farmer, [or] engineer, through the old 'Dick and Jane' type readers.

"Consequently, our young people face the future with apprehension, misinformation, and confusion. And one message of the contemporary youth rebellion seems clear—our students have been given no real understanding of the meaning of adulthood. They find their classes ivory-towerish, superficial, misleading, and—above all—disillusioning. This is hardly surprising, given the fact that our schools have not begun to struggle with the question of preparation of students for the world of work. . . .

"We must create," Representative Pucinski declared, "an educational system that serves all Americans, throughout their lives—one which offers training and retraining for the rapidly shifting occupational spectrum."

While grownups did the worrying and arguing and idea-exchanging at the National Laboratory, the stars of the conference were the youngsters who took part in the classroom demonstrations. Eager, responsive, and oblivious of the photographers who recorded their performances in the demonstration classrooms and of the hundreds of adults who watched them at work, they showed how fast young people can "get" what's being taught when the presentation is exciting and the teachers are patient and sympathetic.

National Laboratory participants, during the three

(Continued on following page)

This was the "Learning Through Aviation" demonstration in which high school students were motivated to study basic academic skills through use of a learning-to-fly curriculum.

days, saw, by way of the classroom demonstrations:

• A presentation by the Community College of Baltimore that showed how the college's staff and students literally go into the streets of the inner city to attract students, using a "recruitmobile," and then follow up with individualized planning of educational and remedial programs for incoming students. Viewers also saw a dance troupe from the college, which demonstrated how the college's performing arts workshop relates its art to the community's cultural and ethnic backgrounds.

• A presentation by the J. F. Cook School of the District of Columbia in which third, fourth, and fifth graders, in a special program called Project Read, used scientifically developed textbooks and teaching aids in the learning-to-read process.

• A presentation by the Directorate of Aerospace Safety, Office of the Inspector General, US Air Force, of the Air Force's multimedia driver-safety course, which has been credited with reducing markedly the traffic-accident toll among Air Force personnel. Lab participants themselves took portions of the course, including a segment on motorcycling survival.

• A presentation by School District No. 17, Hicksville, N.Y., of a computer-supported individualized-instruction program for elementary school children in reading, language arts, social studies, mathematics, and science. First-grade children were shown learning, each at his own pace, while their progress was kept track of by a distant computer.

• A presentation by the Milwaukee, Wis., Area Technical College in which homemade keyboards were linked to a computer and hooked up to closed-circuit television—a low-cost system designed to give "hands on" experience in computer technology.

(*Continued on page 52*)

The Technical Demonstrations: A Capsule Report

A major feature of the National Lab was the series of dramatic demonstrations by industry of how technology is helping educators update instruction. They included:

★ **The Multi-Media Response System with Video** (by Visual Educom Co.). Participants saw the inner workings of the film-sound-slide system used in the Air Force's Driver Safety course shown in the demonstration classroom. They also served as subjects for Visual Educom's new version of the Edex system which uses closed-circuit television and videotape for getting student response and automated scoring.

★ **Computer-Supported Individualized Instruction** (by Westinghouse Learning Corp.). Participants saw Westinghouse's Project Plan in action. Supported by the American Institutes for Research, Project Plan is a system that serves some 10,000 students in sixty-one schools in nine states. Each classroom is linked to an IBM 360 computer at Iowa City, Iowa. The computer keeps track of individual student progress. Project Plan was also shown as a demonstration classroom.

★ **Bench-Top Learning Systematized for Results** (by Scott Engineering Sciences). This demonstration, featuring Washington, D.C., high school students, showed how movable miniaturized equipment, made to scale, creates realistic and inexpensive laboratory conditions in which scientific principles can be taught as needed for vocational-technical courses.

★ **Automated Self-Instruction for Early Learners** (by Edufax Inc.). Using students from Ventnor, N.J., this demonstration showed how automated self-instruction equipment, with materials based on the Metzger early-learning program shown in one of the classroom demonstrations, can be used to create a total "learning environment" teaching language arts, perceptual skills, social development, music, manual arts, and crafts.

★ **Equipment Simulation for Learning Stimulation** (by Educational Computer Corp.). This exhibit demonstrated a general-purpose computerized simulator device called SMART, which can be programmed to simulate equipment for technical training. Students from the Washington Technical Institute served as subjects.

★ **Self-Instructional Film-Based Learning** (by VIP Inc.). Lab participants became students in this exhibit demonstration. They were shown a film from the 1968 National Lab covering subjects ranging from individualization of instruction to drug abuse. Before seeing the film, they took "entry-level tests" and were tested again after viewing the film. If they "failed" these tests, they viewed an automated, programmed self-instructing version of the film and were retested. The self-instructing version of the film was developed by Dr. Gabriel Ofiesh and colleagues.

★ **Guaranteed Performance in the Texarkana Project** (by Dorsett Educational Systems). This demonstration showed how, for the first time, a public school system has contracted with a private firm to develop and implement a system of instruction for teaching academic skills—all under an incentive contract that makes the firm accountable for results. This was the first public report on an effort that has earned national repute in educational circles. Catholic parochial students from the Washington area served as demonstrators.

★ **Audio Tape Course for Job Adjustment** (by Educational Resources Inc.). This demonstration featured a course based on audio tapes highlighting real-life, on-the-job problems ranging from "New on the Job" to "Dealing with Supervisors." Washington-area students served as subjects.

★ **From Project Read to Project Learn and Beyond** (by Behavioral Research Laboratories). This exhibit took participants behind the scenes of BRL's nationwide instructional systems in which more than 100,000 students are learning to read under Project Read (which was also shown in action in a classroom demonstration) and projected the Project Read technique into non-graded, individualized curricula for teaching language arts, social studies, and arts and crafts. BRL also showed a new individualized program called the Sullivan Mathematics Laboratory in which students who can't read can study math.

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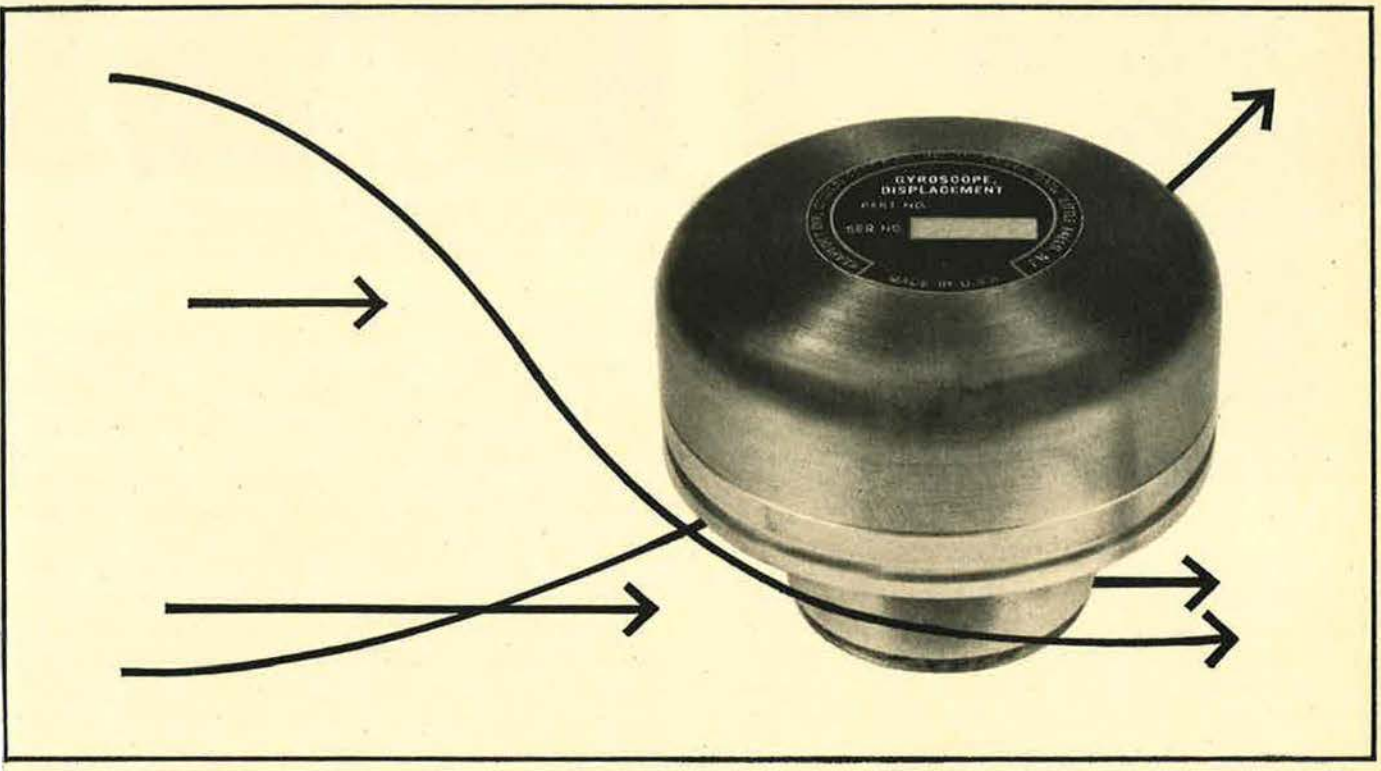

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The Technical Center in the exhibit hall attracted Laboratory participants between Multi-Forum and classroom demonstrations. There they viewed new hardware and software.

At the Charrette, community people from Washington, D.C.'s Anacostia section brainstormed the planning for a projected new high school, and everybody had a chance to speak out.

• A presentation by the Anita Metzger School for Early Learning of Ventnor, N.J., in which preschoolers and kindergartners learn reading using the British-developed Initial Teaching Alphabet (ITA), a forty-four-letter set of symbols that accurately represents the basic sounds in the English language. The children learn to read, at first using ITA. Then they are switched, as they become ready, to the conventional alphabet.

• A presentation called "Technology for Children" by the State of New Jersey Department of Education, Division of Vocational Education, in which elementary school children—using specially designed kits of tools —built their own TV scenery, wrote and produced a scenario, built toy characters, and presented their "show" on video.

• A presentation entitled "Learning Through Aviation" by the Richmond, Calif., Unified School District, in which potential high school dropouts are motivated to stay in school through a program centering on aviation. They learn to fly, get actual experience in light craft, and find new, real-world reasons to study math and the other tools they need for their aviation-centered special curriculum. At the Lab Demonstration, students from a Washington, D.C., inner-city high school where the Richmond program is being tried, blocked out flight plans for the Washington area.

• A presentation by the Dade County, Fla., public schools of a unique math program for gifted sixth graders, using closed-circuit television that provided twenty-minute "tele-lessons" followed by conscious encouragement of the children to work out answers among themselves, helping each other. The youngsters were then tested to validate their understanding of the mathematical concepts being taught. Washington, D.C., children who until shortly before the demonstration had never seen the equipment, or the instructor, performed admirably.

Each day, in the late afternoon, viewers of the classroom demonstrations had the opportunity to question instructors in special "talk-back sessions."

Like its 1968 predecessor, the 1970 National Laboratory for the Advancement of Education was a one-of-a-kind event, a learning experience for adults as well as children, a marketplace for ideas, and a giant dialogue among the many segments of the national community interested in creating a meaningful revolution in American education.

There was no question, as the conference ended, that most participants went away with the feeling that solutions to the dilemmas of education are available —if only people would start listening to each other's good ideas.—END

John C. Flanagan, American Institutes for Research, right, accepts achievement award from Aerospace Education Foundation President L. V. Rasmussen for AIR's role in development of Project Plan, shown at the National Lab.

posture is both possible and prudent.

Retrenchment also is an inherently dangerous process, given the climate of the times. Public opinion—disillusioned by the protracted and inconclusive course of the war, dismayed by the virulence of domestic problems, and disturbed by the costs of national defense—might overreact as it did following both World Wars. That course could lead to a military posture incapable of supporting a foreign policy that has been considered appropriate to a great power, the *de facto* leader of much of the non-Communist world.

The wealth of this nation probably is adequate to cope with domestic problems and also to support a dynamic foreign policy, if that is what a majority of our people want. Our wealth would have to be used wisely, with a sense of real national emergency and dedication, which now is generally lacking.

Too few people realize how drastically our power position has changed from the clear-cut, strategic nuclear superiority we held between the close of World War II and the mid-1960s. In the last two years we have descended through functional and numerical parity with the USSR in the ICBM area. Now the US is slightly inferior in numbers of ICBMs and greatly inferior in missile-deliverable megatonnage.

It should not be forgotten that relative strategic strength can dominate national attitudes and decisions. Most international confrontations are resolved short of war. The side that is militarily inferior can lose on a

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Although we need to regain a more favorable strategic balance, strategic nuclear parity or even superiority is not, of itself, sufficient. Nuclear power cannot be tailored to meet all military requirements; hence the resources available for national defense also must provide conventional forces to operate in areas where nu-

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Looking Ahead

Both US stature and global stability will be determined by evolving US policy choices. Our economic/technological base enables us to provide military backing for a variety of international options that are compatible with support of domestic programs. The advantages of each must be balanced against its cost. An experienced strategist here outlines his recommended posture, and warns that neither emotionalism—spawned by Vietnam—nor nostalgia for the perquisites of overwhelming nuclear superiority should supplant rational analysis in determining . . .

What Kind of Posture For What Kind of Commitments

By Maj. Gen. H. S. Hansell, USAF (Ret.)

REDUCTION and realignment of our military forces has begun, in anticipation of an end to US operational commitments for the defense of the Republic of South Vietnam. As the military forces of that country take over the major tasks of defense, retrenchment of our military posture is both possible and prudent.

Retrenchment also is an inherently dangerous process, given the climate of the times. Public opinion—disillusioned by the protracted and inconclusive course of the war, dismayed by the virulence of domestic problems, and disturbed by the costs of national defense—might overreact as it did following both World Wars. That course could lead to a military posture incapable of supporting a foreign policy that has been considered appropriate to a great power, the *de facto* leader of much of the non-Communist world.

The wealth of this nation probably is adequate to cope with domestic problems and also to support a dynamic foreign policy, if that is what a majority of our people want. Our wealth would have to be used wisely, with a sense of real national emergency and dedication, which now is generally lacking.

Too few people realize how drastically our power position has changed from the clear-cut, strategic nuclear superiority we held between the close of World War II and the mid-1960s. In the last two years we have descended through functional and numerical parity with the USSR in the ICBM area. Now the US is slightly inferior in numbers of ICBMs and greatly inferior in missile-deliverable megatonnage.

It should not be forgotten that relative strategic strength can dominate national attitudes and decisions. Most international confrontations are resolved short of war. The side that is militarily inferior can lose on a vital issue without fighting. And actual military defeat can come from the fear that inhibits vigorous prosecution of military operations.

Even when the Soviet threat was much weaker than it is today, our military credibility and our powers of decision were weakened by fear of escalation. The constraints this fear placed on US military forces in Vietnam have resulted in ineffectual military operations; a minor war has been prolonged beyond the limits of American popular support.

Although we need to regain a more favorable strategic balance, strategic nuclear parity or even superiority is not, of itself, sufficient. Nuclear power cannot be tailored to meet all military requirements; hence the resources available for national defense also must provide conventional forces to operate in areas where nu-

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While the Soviet buildup of strategic missile forces has been widely publicized, less public attention has been given to improvements in Soviet general-purpose forces. Mobility has become a key word for Soviet planners, as evidenced by these missiles being paraded through Red Square. Increased Soviet ability to project military power beyond their borders is an important consideration in determining future US military posture.

—Novosti

clear power is not appropriate, and to supplement the strength of our allies in areas where nuclear engagement is equivocal.

During a brief period of US nuclear monopoly or overwhelming superiority in the early 1950s, we had sufficient military power to assume the role of world arbiter and champion of human freedom. That same advantage cannot be regained, so we must consider a spectrum of feasible postures something like this:

- Primary bulwark against aggressive communism, and champion of free nations that are willing to fight for themselves.
- Primary military power among the Western democracies and proponent of collective security where the benefits are mutual and risks and costs are warranted.
- Military defender of US security and proponent of US rights and interests.
- Champion of Western Hemisphere security only.

We must select the level at which we are willing and able to support a great-power role. That role conveys immense potential advantages in terms of the security, freedom, and cultural and economic enrichment of its citizens. But these advantages do not come free of cost, individual sacrifice, or collective responsibility.

The choice of an international stature that we wish to maintain, and which will continue dependent on military strength, should be based on rational analysis, balancing advantages against costs. The equation needs to be reassessed frequently, since costs are determined largely by the magnitude and type of threat to our security and external interests.

A brief review of the elements of this equation may be helpful in thinking through the question of national options and compatible military postures. In broad terms, the elements are:

- The advantages and responsibilities of great-power status;
- The threat to our interests and those of allies;
- The cost of great-power status in terms of required and feasible military capabilities.

Advantages and Responsibilities

Geography and a stable European balance of power allowed the United States to enjoy the advantages of a great power even before our actual strength was compatible with that status. We became accustomed to the perquisites of a great power without its responsibilities. We were free to control our destiny, to travel and trade pretty much where we wished, to live in political isolation, or to become an active member of the community of nations, as we chose. The philosophical values inherited from Europe and developed in our own pattern never were seriously impaired.

After World War II, our unequaled military and economic power thrust us into the role of THE GREAT POWER. We played that role responsibly by defending freedom in many parts of the world and by helping to rebuild war-devastated areas of friend and foe alike. The willingness to help others and to defend the values of free society have characterized latter-day Americanism. Most of these values aren't quantifiable. What price the Four Freedoms? What price human dignity? What price credibility? Their true worth is apparent only when one contemplates what life would be like without them.

Concurrently with the defense of freedom, we achieved an immense prosperity. The freedom to seek prosperity through trade and enterprise abroad is somewhat more tangible than philosophical values. It is much greater than the dollars involved would indicate.

Our foreign trade averages $25 billion to $30 billion a year, not a great sum compared with domestic trade. It accounts, however, for the margin of production that determines prosperity. And many of our domestic needs are dependent on foreign imports. This trade can continue only if a large part of the world remains free to control its economic relationships.

Deep under the surface of the collective American personality there still is a very solid foundation of idealism. A renunciation of our support of American ideals beyond our shores would leave the free world in jeopardy and our national conscience in a troubled state. It doubtless also would attenuate our commercial activities and affect our prosperity.

It seems inevitable that international friction will continue if we seek to maintain or help create relatively free institutions in the face of Communist determination to project a different value system. The option to abandon this American obligation does not appear realistic. In the face of a growing threat, the temptation to retain the obligation without the substance to support it is dangerous and foolhardy.

The Threat

The rapid expansion of Soviet military forces has been discussed so widely that it needs no more than a reminder here. In the last two years, the USSR has surpassed the United States in numbers of ICBMs and has far exceeded our capacity for missile-deliverable megatonnage. The Secretary of Defense has stated that the USSR will have a first-strike capability in less than four years if present rates continue. Concurrent with its missile buildup, the USSR has deployed an early ABM system, improved its air defenses, introduced several new interceptors and tactical fighters of high quality, increased the size of all general-purpose forces, and pushed rapidly ahead with naval construction, including ballistic-missile-carrying submarines. The Soviets have achieved an ability to project military power beyond the borders of Soviet-controlled territory and across or under the oceans. Communist China has become an infant nuclear power with a technical potential for considerable growth.

Soviet intentions are obscure. There are strong groups in the United States that contend that the USSR, like the US, seeks détente. But Soviet leaders proclaim the aim of Soviet communism to be the destruction of capitalism. This is not Stalin speaking. It is the thrust of statements by present Soviet leaders.

The 1968 edition of *Military Strategy,* edited by Soviet Marshal Vasily Sokolovsky, Chief of the General Staff from 1953 to 1960, develops the theme that the next world war will end in victory for the Communists. The Soviet Rocket Forces are held to be the primary element of victory, but by themselves cannot achieve victory. Victory is finally achieved by the Ground Forces that occupy the land of an enemy. The purpose of the Rocket Forces is to make this possible. This strategy appears oriented toward contiguous areas in Europe, the Middle East, and Asia, rather than those in the Western Hemisphere.

If the Soviet Rocket Forces are able to inhibit or prohibit our use of nuclear weapons, they will have done their job. The massive Soviet Ground Forces, as presently manned and equipped, seem quite capable of achieving victory in Europe or the Middle East if their opponents are denied the use of nuclear weapons. Fear of escalation is a powerful leverage toward inhibiting their use.

We should, of course, keep an open channel of receptivity to Soviet actions that may indicate a willingness to reduce tensions. We can hope for productive Strategic Arms Limitation Talks (SALT) and for subsequent discussions that might reduce the possibility of aggression with conventional weapons. But fifty years of Communist aggression and duplicity have bred an attitude of skepticism among realists of the free world. The truth of the matter is that the SALT talks comprise one of the most dangerous ventures we have yet undertaken.

In the first place we do not now have strategic nuclear parity with the USSR. As we continue to curb missile and bomber production during the discussions while the Soviets do not, the imbalance becomes steadily more unfavorable to us. If present ratios of Soviet/US nuclear strategic power were frozen, the Soviets would enjoy a marked advantage, probably sufficient to support an aggressive policy based on the conviction that the United States would not initiate intercontinental strategic nuclear warfare short of response to actual nuclear attack on the United States proper.

If they were to gain sufficient strategic nuclear advantage to embrace a first-strike strategy, they might elect to cut the Gordian knot in one stroke of violence and accept the consequences. This concept is openly discussed in the USSR, where strategic nuclear exchange is viewed much more calmly than in the United States.

It was pointed out earlier that the fear of escalation already has largely neutralized the effectiveness of our strategic deterrent in any situation other than a direct attack on the United States. We still have, and probably can retain at reasonable cost, adequate defenses of US territory, as will be demonstrated later. But our external interests are at hazard to a far greater degree than is the security of the homeland. Our status as a great power is, or can be, gravely challenged in several vital areas.

From all points of view, Western Europe is the most decisive area of contention between the Soviets and ourselves. There is little evidence of a deliberate Soviet move against Western Europe despite the dominant capability of Warsaw Pact forces. There is, however, a strong belief among NATO officials and students of Alliance affairs that effective defenses against Soviet opportunism are essential. If adequate defenses are not provided, further disintegration of European military strength or open confrontation with the Soviets could happen. Our relative strategic posture will largely determine which course will be followed, and to an even larger extent the outcome, if it is the latter.

There is growing evidence that the Soviets *are* following a deliberate plan of expansion through the Middle East into South Asia. The likelihood of direct confrontation with the USSR in either or both of these areas appears to be a growing danger.

It seems apparent that adoption of an isolationist

(Continued on following page)

policy, concerned solely with deterrence of attack on the United States, would carry heavy penalties for the US and for the free world. It is equally apparent that we could not again rely on massive retaliation to deter all forms of aggression. Other alternatives must be considered, along with the capabilities to support them.

Capabilities and Costs

Our military posture should be based on capabilities that are most likely to be needed in support of political decisions. Military posture will vary enormously, depending on policy choices, the appraisal of the threat to US interests, and the cost of implementing the selected policy. It may be useful to block out some of the limits within which our military power is intended to be operative.

During the past twenty years, our military posture has been designed to support two related concepts: preservation of the United States itself; and support of our interests, objectives, and rights abroad.

The interpretation placed on these concepts has an immense influence on the costs and the nature of supporting forces. At the bottom rung of the ladder of military postures, national security might be interpreted to mean simply the physical security of the United States itself.

We probably could achieve this minimal posture primarily through "Assured Destruction Only," that is, military forces that could, beyond question, deliver a mortal blow in response to an attack on the United States. The defenses to ensure survivability of the deterrent strategic element are a part of this "assurance." This is a purely defensive posture. It would require small general-purpose forces for policing actions in the Western Hemisphere, but the need for large conventional forces to repel major invasion would seem remote, and the probability of their deployment abroad even more so.

Assured Destruction Only could mean isolated security, withdrawal from many commitments abroad, or the tacit acknowledgment that we would be unlikely to support them. It would jeopardize our world trade, upset the great-power balance, and leave the Soviet Union militarily supreme.

This floor-level isolationist interpretation is far below the level of international influence that the US is accustomed to exerting. Our present military capabilities are considerably greater, and may be adequate to support all policies short of direct confrontation with the Soviets on major issues. But in the case of direct confrontation, our urban centers stand naked, since we have no urban ABM defenses and are preparing none. As long as this condition lasts, it is not likely that our threats of strategic response to aggression abroad will be credible to anyone.

At the top rung of the military posture ladder, national-security objectives could be interpreted as deterrence of all forms of major action inimical to our interests and national policies, whether or not they involve confrontation with the Soviets. It would be based on an acknowledged high probability that we would initiate strategic nuclear response to any major Soviet aggression.

This posture would require a completely new set of military capabilities, including massive offensive nuclear forces, plus highly effective antimissile defenses and systems to keep damage to a low level as a support to the national will. In effect, it would be a return to a policy of massive nuclear retaliation to inhibit all forms of major aggression. As suggested earlier, it is most unlikely that this condition could be recaptured. As a matter of fact, massive retaliation proved inadequate to meet every form of aggression even when we were under little strategic threat from the Soviets.

A posture useful and appropriate to a spectrum of US needs and more likely to come within a range of public acceptability is one of "Partial Deterrence." In this posture, mutual fear would inhibit intercontinental nuclear exchange between the Soviets and ourselves, but would not rule out theater-type war. We would continue to need Assured Destruction to discourage intercontinental nuclear exchange and, in addition, urban ABM defenses to support our national courage and to minimize damage if Partial Deterrence failed. And we would also require the capability to achieve our objectives in a theater of conflict.

This latter ties us directly into collective security. Geography, which favored us for so long, now operates against us. The most vital areas of contention are close to the USSR, but distant from us. We simply do not have and cannot provide by ourselves the forces needed for military success in Europe and the Middle East.

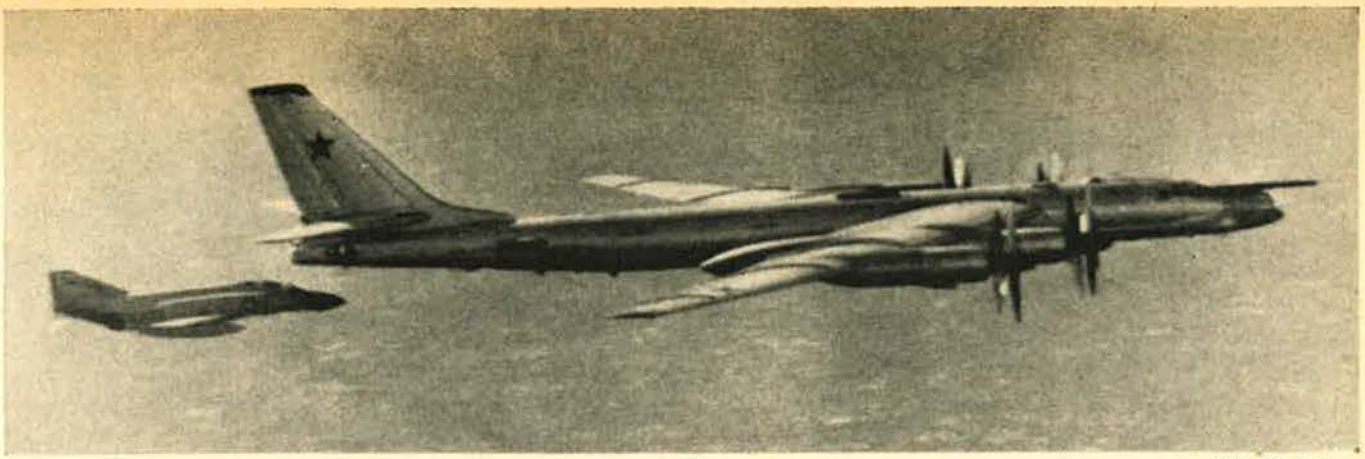
If the capability and will of the United States and its allies to carry out such a strategy can be made sufficiently evident, there is hope that a second order of deterrence based on US and allied general-purpose and tactical nuclear forces might inhibit major theater-type war as well.

If the Partial Deterrence concept is sound, and if we plan to retain our status as a great power, a national ABM system must have first priority. An effective system to defend cities is likely to be some radical new approach, probably totally or partially space based, and possibly using weapons effects and control systems that lasers may make feasible. Or it might involve integration of several systems, some space based, some air based, some surface based. It is certain to be expensive. However, that is the *sine qua non* of any overseas military option.

This is well illustrated in the case of NATO, where strategy should be based on a combination of conventional forces provided primarily by our European partners and on readiness for early tactical use of nuclear weapons. Under existing circumstances the decision to employ tactical nuclear weapons would fall on the US, since nearly all the nuclear weapons in Europe are under our control. Unless we have an urban ABM system and offensive nuclear forces, a nuclear defense of NATO would be far more risky than use of conventional forces. ABM at home would be critical to our national decisions.

To reduce the risk to the United States, we should assist our NATO partners in developing a European nuclear force. Then the tactical nuclear choice would not be laid solely at our door, inviting the threat of strategic escalation, and our NATO partners who would bear the brunt of nuclear effects would openly authenticate the decision.

In either approach to NATO strategy, conventiona



—Wide World Photos

A Soviet "Bear" reconnaissance plane shadowing NATO naval units in a recent exercise is itself shadowed by a US Phantom fighter. The viability of NATO defenses and NATO's strategy options are directly related to the effectiveness of the US strategic posture. NATO's tactical nuclear capability, the author believes, needs to be reevaluated.

or tactical nuclear, development of a balanced US nuclear strategic posture as a backup to theater forces is fundamental to all our actions. The strategic force should contain offensive systems to provide Assured Destruction and to assist a superior urban defense with damage limitation. The offensive element should be balanced between missiles and bombers, with an advanced-bomber replacement for the aging B-52s given priority next to effective missile defenses. The defensive element should include a new and much advanced "Urban Defense" system.

Providing these strategic capabilities would lead the way toward supporting a posture of Partial Deterrence. The next step is the capability to exert appropriate force where needed. In many areas, including NATO and the Middle East, it is likely that conventional weapons would be used initially. We need the option of applying sustained conventional force to halt conflict. Even if it is necessary to use nuclear weapons, we will want the ability to be highly selective and to operate from remote bases. This kind of strategic flexibility is unique to the strategic bomber, which can be employed in any of these major options: to deter strategic nuclear attack on the US through Assured Destruction; to supplement theater war operations by strategic use of nuclear weapons; and to support theater war, or to exert compelling force almost any place in the world with conventional weapons.

These are the tickets that permit us to enter into foreign confrontations or conflicts that threaten our vital external interests. They are the fundamental, but obviously not the sole, requirements.

Conclusions on National Military Posture

Unless the American people are willing to accept a secondary position vis-à-vis the Soviet complex and to leave the Soviets unchallenged in their acquisitive expansion of Communist control, we should provide for ourselves the military means to oppose expansion, in concert with allies. Primary among these means are strategic offensive forces (where we should at the very least regain parity) and urban missile defenses by systems not yet developed or proved. Close behind these is the requirement for limited strategic application of either nuclear or conventional force by means of new strategic bombers.

Even if we apply massive effort to the timely attainment of these ends, we have no assurance that it is not already too late. Furthermore, the current wave of public reaction against all things military, coupled with hopes focused on the SALT negotiations, is not likely to support the efforts needed to recapture military preeminence.

Nevertheless, accepting as inevitable a position of military inferiority would be self-destructive. Until there is evidence that the USSR has abandoned its intention to undermine us, and unless the SALT discussions produce a reversal of current Soviet missile trends, we should make every effort to attain a military posture that is appropriate to our aspirations as well as to our safety, and whose cost burden is tolerable to our economy and compatible with domestic needs. We should gear our strategy to the concept of Partial Deterrence.

This is not an aggressive military posture, nor does the related military capability invite adoption of aggressive national policies. On the contrary, it is a posture related to defense against aggression, protection of external interests, and preservation of cherished human rights. It remains keyed to the concept of collective security.

Achieving these military capabilities—and helping our allies develop coordinate capabilities—will not solve all our security problems. But a national military posture based on these capabilities would permit our government to select from a spectrum of options in future contests with other world powers, including the USSR.

Continued reliance on Assured Destruction Only, coupled with the questionable presumption that the Soviets desire détente, will shrink our range of options to one: defense of the Western Hemisphere and avoidance of confrontation with the USSR elsewhere.

In the long run, the effects of such a policy would be most harmful—perhaps even fatal—not only to the United States but harmful also to the entire free world. —END

LETTER FROM LOS ANGELES

By Irving Stone

WEST COAST EDITOR, AIR FORCE/SPACE DIGEST

Cost of Competing

By the end of May a contractor should have been selected for the design, development, test, and evaluation (DDT&E) of the B-1, the Air Force's projected advanced manned strategic aircraft (formerly called AMSA). This decision will be an encouraging lift for the winner in what now is a decidedly low-level market. But it will be a rough blow for the two losing competitors, who will miss the chance to develop and produce the bomber if the acquisition phase subsequently is approved.

There'll be other unhappy factors associated with losing. One is the probable need for substantial reduction of the engineering work force, a situation always harmful to company morale and to that of the industry. Another is the realization that company funds expended in supporting the proposal effort are irretrievably "down the drain."

In the case of a large, sophisticated system like the B-1, the investment can be sizable—perhaps $10 million for each losing contractor, depending on the size of the work force (perhaps 500 to 1,000) assigned to the proposal effort. This work force, in part, would have to be maintained while proposals are being evaluated in order to ensure continuity of effort until a contract is awarded. In the contract-definition phase (CDP) competition for the Air Force F-15 fighter, recently won by McDonnell Douglas, an even larger irrecoverable financial contribution was made by the losing contractors (Fairchild Hiller and North American Rockwell). Each of the three contractors was funded at $9.6 million for the six-month CDP effort, but each may have kicked in as much as an additional $20 to $25 million in company funds in order to support the study adequately and to maintain a work force during the six-month evaluation period that followed submission of study results.

Frequently, high-level personnel in the aerospace industry wonder: "How many of these competitions can we afford to enter and lose?" Industry is aware of the risk inherent in competition, but also feels that competitive efforts aren't funded realistically. It has been customary in aerospace-industry competitions to expect a sizable company investment in addition to government funding, but there is a feeling in industry that, with the increasing trend in weapon-system sophistication, the competing contractor's "ante" may become an intolerable financial drain. This aspect should be considered, many industry members feel, in the government funding allocated for parallel, competitive efforts, as in the recent CDP for the F-15.

There's feeling, too, that, when the selection of companies requested to submit proposals for a contractual phase is rigidly limited because of competence or experience in a particular field of weaponry, some arrangement should be made to lessen the skyrocketing costs of preparing a complicated and voluminous proposal. The situation is further aggravated for competing contractors because, in this era of sharply reduced military budgets, the initiation of large programs has been drastically curtailed, making it almost imperative for a contractor to compete. Thus, the contractor invests ever-increasing sums in preparing a proposal, or commits funds substantially greater than those allocated by the government, in a paid, parallel, competitive-program phase.

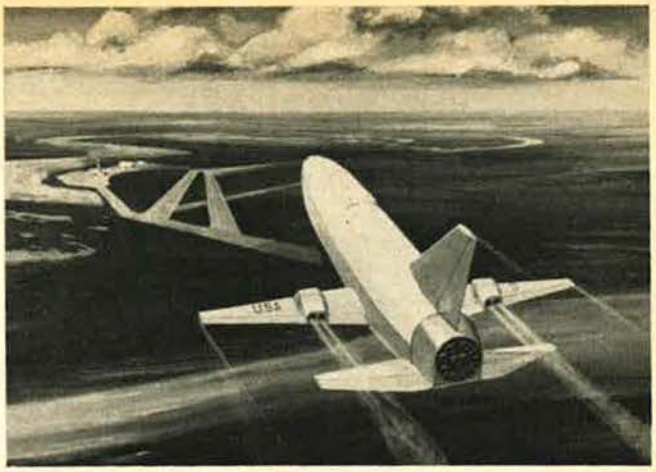
Bomber Schedule

The requests for proposals (RFPs) for the DDT&E phase of the B-1 program were issued to industry early last November. Only three airframe companies were selected to bid—Boeing, General Dynamics, and North American Rockwell. Lockheed asked for the RFP but elected not to respond. Technical proposals were submitted January 12 with management and cost proposals

Developed for rapid deployment to any part of the world, the shelter shown above has an air-inflatable roof and walls. The Air Force Electronic Systems Division's 407L program involves the design of a whole generation of such equipment to meet USAF's requirement for quick response.

Lt. Col. Charles J. Turner checks out display console built by Hughes Aircraft Co.'s Fullerton, Calif., facility for the Air Force's 407L program. Such lightweight, multipurpose electronic gear is being integrated into the overall role planned for future mobile centers handling tactical air operations.

In this artist's concept, a space shuttle "orbiter" vehicle returns from a mission to land on a conventional airport runway. The concept has been developed by North American Rockwell's Space Division, which will compete for the next-generation space transport study contract.



Teaming with North American Rockwell in the space transport effort is General Dynamic's Convair Division, which is designing a "booster" vehicle (see the illustration above), which will carry the "orbiter" to the fringe of space and then return and also land conventionally.

due a month later. The engine proposals (by General Electric and Pratt & Whitney) followed the same schedule. The period of evaluation by the Air Force is expected to be about three months.

The engineering portion of the DDT&E phase will probably consume about two years. By the time the five contemplated test aircraft are built and evaluated, five to six years will have elapsed from the time of the DDT&E go-ahead. Commitment for the production phase likely will come before the first flight of the No. 2 aircraft. If projected schedules are met, the B-1 would be operational in 1978 or 1979. Cost of the DDT&E phase, including the five test aircraft but not considering inflationary or unexpected technical hurdles, may approach $2 billion. And it's estimated that flyaway cost of the B-1, based on a production run in excess of 200 aircraft, may approach $20 to $25 million each. This would not include cost of ground-support and training equipment, and related factors.

Despite the B-1's decided jump in the state of the art, industry members feel that there will be relatively little technical risk involved in developing it. This is because, since Fiscal 1965, various requirement studies related to the advanced manned strategic aircraft have been performed by industry under Air Force funding exceeding $140 million. Analyses have involved operational concepts and design and performance factors. Because of these in-depth studies, a formal CDP phase has been bypassed, with competition initiated directly for the DDT&E phase.

Cargo Concepts for Shuttle

An advanced-technology study to develop comprehensive cargo-handling concepts for the next-generation space vehicle—the space-shuttle transportation system—will be supported by the National Aeronautics and Space Administration. Industry proposals for the study, submitted late in January, are under evaluation. NASA's John F. Kennedy Space Center, Fla., is the sponsoring activity.

The space shuttle is envisioned to have a capability of fifty to 150 flights per year and is projected to provide lower-cost transportation for a variety of cargo between earth and low earth orbit. Mission planning for the space shuttle has progressed to the point of defining a capability for delivery of up to 50,000 pounds of cargo to low orbit or returning a like amount to earth.

The cargo compartment within the shuttle vehicle would be a fifteen-foot-diameter cylinder, sixty feet long. Opening of longitudinal clamshell doors on the top of the vehicle would expose a rectangular opening fifteen by sixty feet.

The overall shuttle system would be a two-stage, reusable vehicle consisting of a booster plus the orbiting shuttle. Both vehicles could return and land horizontally on a runway near the refurbishing site. Broadly, the cargo would include personnel, propellants, space-station support items, space-station modules, manned and unmanned satellites, and various other items. All items would have to be self-contained. Thus, a manned cargo item would contain its own life-support, pressurization, and comfort systems. In this way, cargo would have a minimum interface with the shuttle vehicle. Typical types of cargo envisioned for the space-shuttle program could include:

- Passenger modules that would accommodate twelve people, weigh about 12,000 pounds, and require approximately 200 cubic feet of space per man. Maximum gravity-loading that would be reached in flight is anticipated to be about four Gs.
- Laboratory and satellite cargo packages that would be used for experiments to be conducted in earth orbit. This category of cargo would range in weight from 6,000 to 30,000 pounds, and have diameters from five to fifteen feet, lengths from eight to sixty feet, and volumes from 157 to 10,600 cubic feet.
- Major equipment for the lunar surface, including large packaged items such as a roving vehicle with a cabin to accommodate two astronauts; a drill for deep penetration of the lunar surface; and radio, optical, and X-ray telescopes. Apparently this lunar equipment would be flown to the moon from the space station by another shuttle or space tug.
- Mars-surface-sample return (MSSR) probe now envisioned for the planetary program. It's anticipated that the MSSR probe will be flown on the space shuttle for tests in earth orbit. The probe would be shaped much like the Apollo command module, would be fifteen feet in diameter at its heat shield, and would taper aft for a length of about ten feet. It would weigh 5,800 pounds. An operational version would contain an injection rocket, a sample-acquisition roving vehicle, landing rockets and fuel tanks, and a sample-return rocket.

In addition to these typical examples, the cargo concepts would have to be capable of accommodating specific units such as a liquid-hydrogen tank, sixty feet long and fifteen

(*Continued on following page*)

Shown on this F-4 Phantom is a pod housing a high-performance bomb-delivery system that permits great accuracy in tracking targets. The new system is being built for the Air Force by Philco-Ford's Aeronutronic Division, of Newport Beach, Calif., and has passed a series of tests.

feet in diameter. The tank would be installed at the refurbishing site for the space shuttle and would be filled with liquid hydrogen at the launching pad. A container of these dimensions also could be filled with miscellaneous cargo and then loaded into the vehicle. The cargo concept also would have to accommodate any type of container for hypergolic propellants or monopropellants used for thrust or attitude control.

Cargo Packaging, Support

To facilitate the handling of the various cargo items, and to obtain maximum utilization of each space-shuttle flight, it will be necessary to develop concepts for high-density, fast-turnaround cargo packaging and handling systems, using low-weight, reusable flight hardware. It would be advantageous if these packaging systems could be adjusted freely in size and shape, without tools. Items to be carried in these systems would be liquids, gases, or solids. Shapes to be accommodated could range from spheres and cylinders to cubes of different proportions. The design of a lightweight reusable packing blanket would also be analyzed for the function of filling cargo-hold voids and to provide cushioning.

A tie-down system within the vehicle compartment would have to provide high flexibility and adequate strength, while adding little weight to the vehicle, because the weight problem would be critical. The addition of one pound to the orbiter vehicle would cause an addition of seventy pounds to the total liftoff weight.

Besides the major cargo items, which essentially would be provided with their own packaging containers, numerous smaller items would have to be secured in some manner. These items might include various expendables, experiments, spares, and space-station and satellite support equipment. It is estimated that 20,000 pounds of logistics support will be required for a twelve-man space station for ninety days.

The study contractor also will make recommendations for a cargo-shoring system that probably would be reusable and capable of being reshaped or adjusted to meet changing conditions for loading cargo on the ground and in space. Obviously, it would be preferable if no tools were required to install or adjust this shoring system.

To cut launch-pad time, it would be desirable to load cargo and expendables into the space shuttle before moving the shuttle to the launching pad. It is expected that erection and launch of the shuttle system will require only a few hours; hence the schedule would not allow time for much pad activity. Also, it's assumed that cargo loading could be handled in parallel with shuttle-refurbishment work at the refurbish site. It's planned to keep the total shuttle-turnaround time between launches to eighty hours or less, and the cargo system would have to allow for completing the combined loading and unloading operations in a single eight-hour period.

Mobility and Restraint

The space station, the follow-on space base, and the logistics shuttle vehicle will require the integration of mobility and restraint devices with the total system design as a result of the increased roominess and activity in these future spacecraft and the longer mission durations. The mobility and restraint devices investigated for these applications would include:

- Electromagnetic and electrostatic units for personnel mobility.
- Devices for equipment transportation and personnel transporters.
- Chairs, couches, and other restraint devices applicable for habitability in manned spacecraft.
- Mobility and restraint aids for levels of gravity from zero-G to one G.

These and other items would be considered in a six-month study expected to be supported by NASA's Manned Spacecraft Center, Houston, Tex. The study would include concepts, designs, and engineering-evaluation models of selected approaches for mobility and restraint devices. Applications in single-launch space stations and multiple-launch configurations with orbital mating, crew sizes of six to 100, volumes of 10,000 to 400,000 cubic feet, and mission durations from thirty days to ten years would be studied.

The orbital shuttle vehicle considered in the study would have a crew ranging from two to twelve, a volume of 5,000 to 10,000 cubic feet, an on-orbit stay time of seven days in a self-sustaining condition, useful payload to orbit of 5,000 to 50,000 pounds, and return payload of 100 to 20,000 pounds.

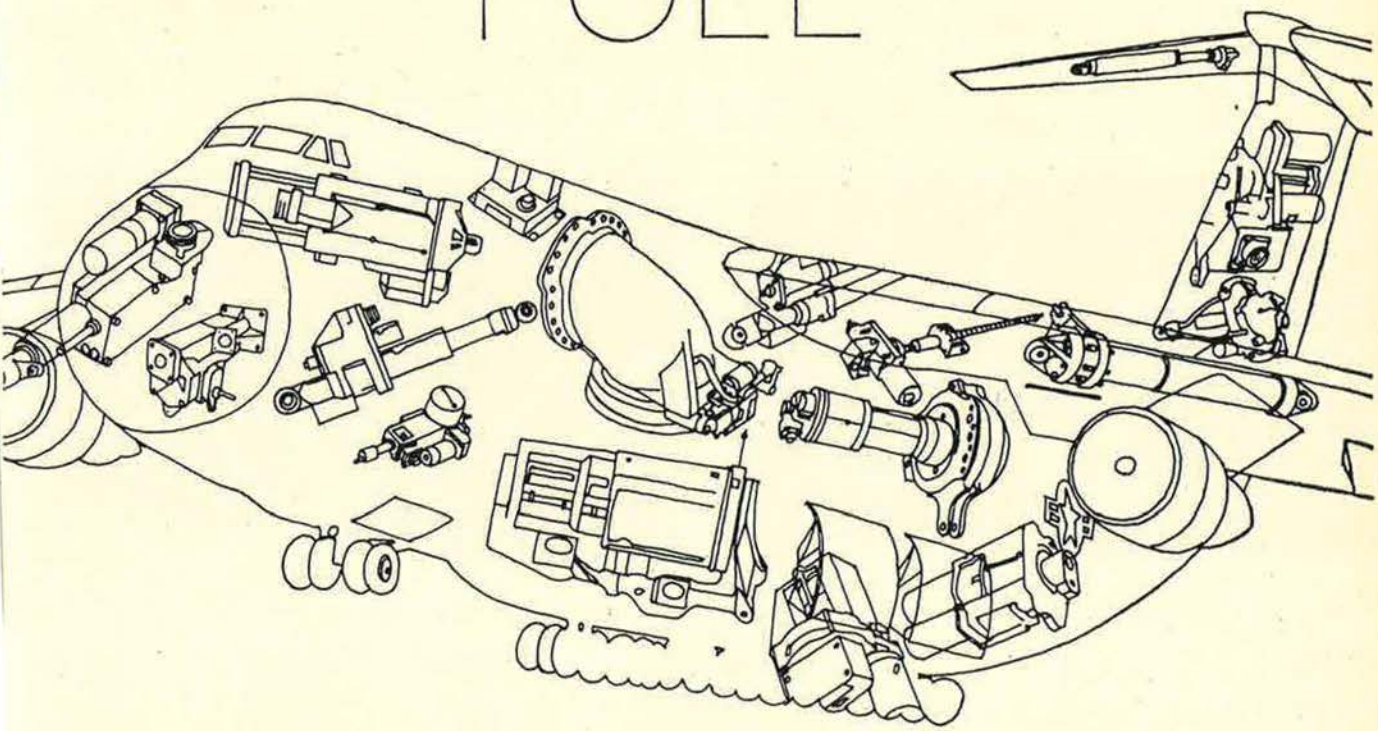
Structural Manufacturing Concepts

NASA will investigate the fabrication technology of aerospace structural systems in sufficient detail to establish the important manufacturing factors that influence overall structural system costs. NASA's Ames Research Center, Calif., will support this effort with a nine-month study, funded at approximately $100,000. The analysis also will establish the interrelationship of manufacturing parameters with other system factors such as design, development, engineering, and management.

Three aerospace manufacturing lines will be considered —a practical, state-of-the-art line to reflect current practices (*e.g.*, Saturn booster stages, Apollo command modules) and which will be used as a base comparison for the other two lines; the best, currently realizable practical line; and an advanced line based on the best combined manufacturing technologies from aerospace and related fields. The analysis will be conducted so that cost-difference comparisons among the lines can be traced to a specific test.

The production rate for the manufactured components will encompass the range from a low rate—perhaps two units per year—to a higher rate such as twenty units per year. Program duration will be considered to be ten years. To simplify capital costing for all three lines, the study contractor would assume that everything required for the manufacturing facilities is bought new, including land. To provide a basis for cost and inflation, 1969 would be established as the base year.—END

PUSH AND PULL—



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1970 ANNUAL NATIONAL AEROSPACE BRIEFING

Washington, D.C. — September 21-22-23-24

AFA's 1970 National Convention, now combined with its Annual Fall Meeting and Aerospace Development Briefings and Displays, will be held in Washington, D.C., September 21-24. All major Convention activities will be conducted at the Sheraton-Park, Shoreham, and Washington Hilton Hotels. Additional housing also will be reserved at the Windsor Park Hotel. Please note the list of hotels and rates below and the reservation request form addressed to the AFA Housing Office at 1129 20th St., N.W., Washington, D.C. 20036. ALL reservation requests for rooms and suites must be mailed (no phone calls, please) to the AFA Housing Office. Do not make any reservation requests directly with the hotels listed.

AFA's 1970 National Convention activities will include the Air Force Awards Luncheon, a luncheon for the Air Force Chief of Staff, a luncheon for the Air Force Secretary, a reception in honor of the Secretary and Chief, and the Annual Air Force Anniversary Reception and Dinner-Dance. The National Convention also will feature AFA's Business Sessions, Seminars, and several other activities, including a dinner in honor of AFA Chapter Officers, the Annual Outstanding Airmen Dinner, and the Chief Executives Buffet.

HOTELS AND RATES

HOTELS	SINGLES	DOUBLES	TWINS	SUITES
Sheraton-Park	$18-24	$24-30	$24-30	$40-135
Shoreham	$20-26	$22-35	$22-35	$40-175
Washington Hilton	$22-32	$30-40	$30-40	$66-250
Windsor Park	$18-22	$22-26	$22-26	$35-65

AFA HOUSING FORM

MAIL TO:
AFA Housing Office
1129 20th St., NW
Washington, D. C. 20036

NAME _____ DATE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

NAME OF HOTEL PREFERRED _____

TYPE ROOM/SUITE DESIRED _____ PREFERRED RATE _____

ARRIVAL DATE & HOUR _____ DEPARTURE DATE _____

Attach list of names and addresses of all occupants of above room(s)

ONVENTION AND
ND DISPLAYS

MORE THAN 50 COMPANIES TO PRESENT NEWEST HARDWARE—

More than 50 major aerospace/defense companies will participate in the 1970 Aerospace Development Briefings and Displays, to be held in conjunction with AFA's Annual National Convention at the Sheraton Park Hotel in Washington in September. The majority of the companies will display equipment and conduct briefings; however, some companies will exhibit only.

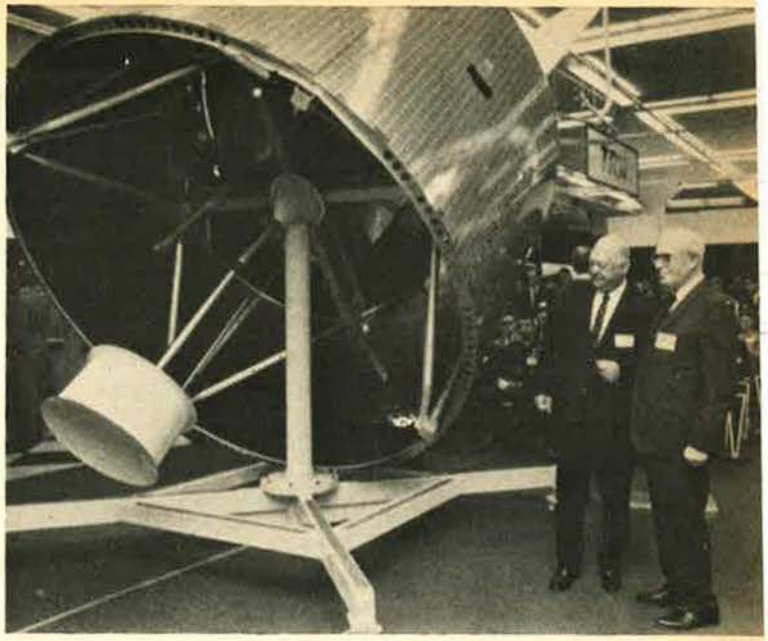
This briefing concept was pioneered by AFA in 1964 and combines displays of equipment with company presentations in the booth to audiences of key military, government and industry personnel. Morning attendees are assembled into parties of 15 to 20 persons each and escorted on schedule to briefings in the group of companies selected. Afternoon attendees may select any of the presentations offered in any order of preference.

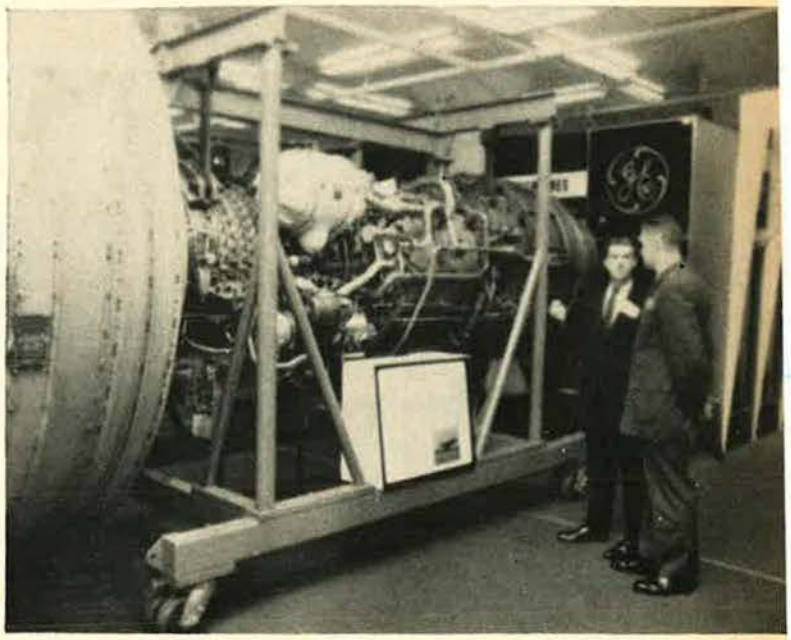
Top military and government leaders attend this event annually. Last year, 6,080 attended the Briefings and Displays, with 2,359 escorted to the morning presentations and 3,721 attending in the afternoons. They represented 54 government and military agencies and some 51 companies. With AFA's National Convention being held at the same time this year, the attendance is expected to double.

Space for participating companies is expected to be an early sell-out, as has been the case each year. A few booths are still available for companies that would like to brief or exhibit, or both. A minimum of 300 square feet of booth space is required to conduct briefings. No minimum is required to exhibit only. Companies interested in reserving space should contact AFA as quickly as possible.

TO RESERVE BRIEFING/DISPLAY SPACE, WRITE OR CALL:

AFA Briefing & Display Office
1040 Shoreham Building
Washington, D.C. 20005
Telephone: (202) 347-0425





THE IDAHO STATE ORGANIZATION

cited for effective programming in support of the missions of the Air Force Association and the Aerospace Education Foundation.

Two symposiums of unusual interest were held in conjunction with the December 5-6 annual convention of the **Idaho AFA.** An educational symposium, "The Other Eighty Percent," brought together key citizens of Idaho to discuss the needs and demands for vocational and technical education. The second dealt with "Air Transportation as It Relates to Idaho."

Sponsored jointly by the **Idaho AFA,** the **Aerospace Education Foundation,** and leading **Idaho educators,** the educational symposium was hosted by the **College of Southern Idaho** (CSI) in its beautiful new Fine Arts Auditorium at Twin Falls.

The symposium, moderated by **Dr. Paul Terry Smith,** Academic Dean of CSI, opened with welcoming remarks by CSI President **Dr. James L. Taylor** and Idaho AFA President **Harry F. LeMoyne.** Keynoter was **Albert V. Mayrhofer,** Special Assistant to the Associate Commissioner, US Office of Education.

Other speakers included AFA's Northwest Regional Vice President **Clair G. Whitney** of Boeing, who discussed the needs for vocationally trained people in industry; and **Mr. Mayrhofer,** who spoke on national priorities in education. **Lt. Col. William D. Barry,** DCS/Personnel, Hq. USAF, described successes of "Project 100,000" (the military training of "untrainables"); and **David Whitesides,** a Past President of the Utah AFA, reported on the use of USAF training material in Utah's public schools under the "Utah Project." **Roy Irons,** Idaho Director of Vocational-Technical Training, summarized state activities in his field. A showing of the Aerospace Education Foundation film, "Real Revolt in Education," which depicts actual classroom examples of innovative instruction, and a summation of the day's activities by Mr. Mayrhofer completed the program.

The Education Luncheon featured a presentation by **John Sailors,** District Manager for IBM, on the "impact of computer technology on career patterns." The Hon. **Ray Lincoln,** Utah State Representative from Twin Falls, was toastmaster.

An evening reception, followed by dinner and entertainment at Jackpot, Nev., rounded out a most effective, productive, and enjoyable education symposium.

The Air Transportation Symposium was moderated by **O. A. "Gus" Kelker,** Editor, Twin Falls *Times-News.* Participants included **Chet Moulton,** Idaho State Director of Aeronautics; **James H. Prendergast,** Supervising Inspector, FAA, Boise; **Ross Lee,** Owner and President of Trans-Magic Airlines; and **Don Cooper,** Idaho Sales Manager of Air West.

Gordon Kent, Assistant to the Chairman of the Board, Air West, was guest speaker at the convention luncheon. **Col. Joseph Schreiber,** Wing Commander at Mountain Home AFB, was toastmaster.

At the business session, delegates elected **Donald M. Riley** of Boise to succeed **Harry F. LeMoyne** as President of the Idaho AFA for 1970. Elected to serve with Mr. Riley were: **Carl Tipton, R. C. Ashenbrenner,** and **C. R. Lynch,** Vice Presidents; **Lee Vernastoni,** Secretary; and **Holly Moore,** Treasurer.

Special guests included AFA National Directors **James Trail** and **Warren Murphy,** Washington AFA President **Clyde Stricker,** and Washington AFA Secretary **Margaret A. Reed.**

* * *

Fort Lauderdale's Pier 66 Hotel was headquarters for **Florida State AFA's Convention,** held November 14-15. Hosted by the **Broward County Chapter,** with **Col. Randolph E. Churchill** of the Host Chapter and **Jack O. Kirby** of the **Eglin Chapter** serving as cochairmen, the convention was in every respect a successful effort by one of

Principals in Idaho AFA's Education Symposium included, from left, Dr. James L. Taylor, President, College of Southern Idaho; John Sailors, District Manager, IBM, luncheon speaker; Idaho AFA President Harry F. LeMoyne; Keynoter Albert V. Mayrhofer, US Office of Education *(see text).*

Florida AFA President Herbert M. West, Jr., left, presents the State AFA's "Special Recognition Award" to Jerome A. Waterman, a former AFA National Director and Regional Vice President, during the Florida AFA's recent convention at Fort Lauderdale's Pier 66 Hotel *(see accompanying story).*

AFA's fastest growing, most effective state organizations.

Maj. Gen. Henry B. Kucheman, Jr., Director of Development, DCS/Research & Development, Hq. USAF, spoke at the Family Awards Luncheon honoring Chapter Presidents; and AFA President **George D. Hardy** was the principal speaker at the Awards Banquet.

Albert J. Clark, President of the Host Chapter, was master of ceremonies at the Luncheon, and Florida AFA President **Herbert M. West, Jr.,** performed that role at the Awards Banquet. Awards were presented by President West.

Other events on the program included presentations on "Operation Bomex" by the **Environmental Science Services Administration** (ESSA) of the Department of Commerce; "Hurricane Hunting" and USAF participation in Bomex by the **Air Weather Service** (MAC); Atlantic Underwater Test and Evaluation Center (AUTEC) by the **US Navy;** and USAF Development Progress by the **Air Force Systems Command.** A full-sized, fully equipped pararescue mannikin was presented to the International Swimming Hall of Fame by the **Aerospace Rescue and Recovery Service** (MAC), and a New Officers' Workshop Breakfast was conducted by **Don Steele,** AFA's Director of Field Organization.

Lester C. Curl, AFA's Southeast Regional Vice President and a Past President of the Florida AFA, was recognized as the State AFA's "Member of the Year," and **Lee R. Terrell,** President of the **Central Florida Chapter,** accepted the "Chapter of the Year" award for his Chapter. **William H. Brown,** Chief Engineer, Florida Research and Development Center, Pratt & Whitney Aircraft at West Palm Beach, received the General Lewis H. Brereton Award, and **Maj. Robert Hibarger,** Weapons Officer, 15th Tactical Fighter Wing (TAC), MacDill AFB, received the Jerome Waterman Award.

Jerome A. Waterman, a former AFA National Director and Regional Vice President, received a Special Recognition Award for his outstanding contributions to the Florida AFA and to AFA in general. **Col. Randolph E. Churchill** and **Charles Widaman** each received the State AFA's Exceptional Achievement Award, and Sustained Superior Service Awards went to **George J. Burris, Jr., Marion Chadwick, Gerald C. Frewer, Leonard T. Geyer, Martin H. Harris, Herman Hauck, Wayne A. Hilton,** and **Robert H. Saber.**

Taylor Drysdale, immediate Past President of the Central Florida Chapter, was elected to head the Florida AFA during 1970. Other officers elected are: **Herbert M. West, Jr., Frank J. Collins,** and **Albert J. Clark,** Vice Presidents; **Gerald C. Frewer,** Recording Secretary; **Forrest A. Eason,** Corresponding Secretary; and **Leonard T. Geyer,** Treasurer.

Delegates adopted ten resolutions, including one pertaining to **POWs** and one opposing all forms of **war-protest demonstrations** "as openly undermining and weakening the government and leadership of the United States to the benefit of the worldwide Communist conspiracy."

In his remarks to the delegates, **President Hardy** discussed the POW situation and introduced wives and relatives of POWs and men missing in action. These included, **Mrs. Carl Crumpler, Mrs. Jean Smith, Mrs. Mary Stone, Mrs. Fugitt, Mrs. Jack Young, Mr. and Mrs. Elmer Emrich,** and **Mrs. Linda Gray.**

While in **Fort Lauderdale,** President Hardy spoke to the **Greater Fort Lauderdale Chamber of Commerce** and received a standing ovation—only the second time in the Chamber's sixteen-year existence a speaker has been so honored.

* * *

The Fifteenth Annual Convention of the **Utah AFA,** held November 14-15, 1969, in Salt Lake City at the Ramada Inn, opened with an informal social and dancing. The program also included two business sessions, an Awards Luncheon, a presentation of the film "Navajo Story," a Ladies' Social, and an Awards Banquet.

Col. Jack H. Alston, Base Commander of Hill AFB, the guest of honor at the Awards Banquet, received the State AFA's "Big Belt" and became the first recipient of its "Order of the Ruptured Duck." US Senator **Frank E. Moss** (D-Utah) was the featured speaker.

Harry L. Cleveland, newly elected President of the Utah AFA, was designated the State AFA's "Man of the

(*Continued on following page*)

1969 AFA MEMBERSHIP AWARD WINNERS

REGION WINNER	REGIONAL VICE PRESIDENT
Southeast	Lester C. Curl
STATE WINNERS	**STATE PRESIDENTS**
Alabama	Dr. Boyd Macrory
Florida	Herbert "Bud" West, Jr.
Georgia	William H. Kelly
Utah	Jack C. Price
CHAPTER WINNERS	**CHAPTER PRESIDENTS**
Alexandria (La.)	Michael M. Wahlder
Badger State (Wis.)	Richard D. Downing
Beaver Valley (Pa.)	John J. Ross
** Big Spring (Texas)	Jeff Brown
Binghamton (New York)	Gerald V. Hasler
Broward County (Fla.)	Albert J. Clark
Cape Canaveral (Fla.)	Frederic H. Miller
Central Florida (Fla.)	Taylor Drysdale
Central Utah (Utah)	Vernon D. Fraughton
Chicago S. W. (Ill.)	Len Luka
* Gen. Claire Chennault (Mich.)	Mrs. Dorothy Whitney
Colin P. Kelly (New York)	Kenneth C. Thayer
Concho (Texas)	Bob G. Ford
* Duluth (Minn.)	Vernon H. Theyson
* Eglin (Fla.)	Lee R. Terrell
** Erie (Pa.)	Charles Sharp, Jr.
Garden State (New Jersey)	Mrs. Joan Capriglione
Golden Spike (Utah)	Max L. Muir
Hap Arnold (New York)	Frank X. Battersby
Holiday Highland (Fla.)	Frank E. White
* Jack Manch (Va.)	Orland "Jack" Wages
Lansing (Mich.)	James L. Crabb
Magic Valley (Idaho)	Paul F. Carl
Middle Georgia (Ga.)	Dr. Dan Callahan
Midnight Sun (Alaska)	Charles W. Lafferty
Mifflin County (Pa.)	Joseph J. Marrone
Minute Man (Mass.)	John A. Luongo
*** Montgomery (Ala.)	Frank J. Sego
Northwest Evergreen (Wash.)	David A. Tate
Sal Capriglione (New Jersey)	Joseph Capriglione
Santa Clara County (Calif.)	E. H. Millson
* Savannah (Ga.)	Rex C. Stone, Jr.
Selma (Ala.)	Jack Sherer
Silver Wings (Colo.)	Mrs. Mary Perkins
Spokane (Wash.)	Clarence A. Miles
Tennessee Valley (Ala.)	John H. Haire
Ute (Utah)	Cecil E. Child
Waco (Texas)	W. G. Bushell
*** Wasatch (Utah)	Glen L. Jensen

* Award winners for 2 consecutive years
** Award winners for 3 consecutive years
*** Award winners for 4 consecutive years

At Utah AFA's convention, a Charter was presented to a new Rocky Mountain, and AFA's sixth all-female, Chapter. Regional Veep Nolan Manfull holds Charter as Utah AFA President Jack Price reads text to new Chapter President Doris Edvalson.

Year," while the "Outstanding Chapter Award" went to the **Wasatch Chapter, Glen Jensen,** President.

The following individual awards were presented: an AFA Life Membership to President **Jack Price;** Exceptional Service Award to **Lynn Summers;** Awards of Merit to **Cecil E. Child, Ed Sparr, Glen Jensen, Verl Williams,** and **David Whitesides;** and the Golden Spike Plaque to **Nathan H. Mazer.** Citations went to **Larry Barton, Lee Gilbert,** and **R. W. Cassell;** and a Special Award to **Bob Bowman,** Utah AFA Publicity Chairman.

Chapters honored were **Ute Chapter,** Cecil Child, President, Exceptional Achievement Award; **Wasatch Chapter,** Glen Jensen, President, Membership Achievement Award; and **Golden Spike Chapter,** Max Muir, President, Special Achievement Award.

The Utah AFA's Aerospace Education Trophy was presented to **Dr. Evan J. Memmott,** of Weber State College; and its Arts and Letters Trophy was awarded to **Darlene Galbraith** of the Salt Lake *Tribune.*

Other awards and recipients were: Industrial Associate Award to Key Airlines, The Boeing Co., and Whitfield Transportation Co.; Industrial Service Award, William A. Dunn of the Salt Lake Area Chamber of Commerce, Robert H. Woody of the Salt Lake *Tribune,* and Salt Lake City Commissioner Conrad B. Harrison. Awards of Merit to KSL-TV, KCPX-TV, KUTV, KLO, and KLUB. Citations were presented to Flora Ogan, Ogden *Standard Examiner;* to the *Deseret News;* to Doug Green, Public Information Officer, Hill AFB; and to Phil Jensen, Ogden *Standard Examiner.* Hill AFB Majs. Arnold Dolejsi and Paul L. Chesley were recognized as the "Servicemen of the Year."

Other officers elected to serve for 1970 are: **Glen L. Jensen, Grant Sims,** and **Gil Fredericks,** Vice Presidents; **Thomas Buller,** Secretary; **Ed Sparr,** Treasurer; and **Les Richardson,** Judge Advocate.

It is the Utah AFA's policy to honor all individuals and firms who have contributed to the success of its outstanding programs. No doubt this recognition contributes immeasurably to the continued success and effectiveness of the organization that won the **President's Trophy** two consecutive years (1968 and 1969) as "AFA Unit of the Year."

* * *

Following the unique "family" type of convention format established for its 1968 State Convention, the **Ohio AFA** held its **1969 Convention** at the Atwood Lake Lodge in Ohio's Atwood Lake State Resort on Saturday, November 15.

Members of some seventy AFA families and thirty-two AFJROTC cadets attended the State AFA's Annual Awards Banquet during the convention. **Col. Robert A. Rushworth,** Astronaut, and Director of the AGM-65 (Maverick) SPO at the Aeronautical Systems Division, Wright-Patterson AFB, was the featured speaker. He received the Ohio AFA's Aerospace Power Award for his "contributions to aerospace technology as Project Pilot in the X-15 program." AFA National Secretary **Glenn D. Mishler** was master of ceremonies.

Robert H. Maltby, President of the Wright Memorial Chapter of Dayton, was designated the State AFA's "Man of the Year" for "an impressive array of 'firsts' in unique programming, and expansion and improvement of annual events held by the Chapter." **Jane Maltby,** Bob's wife, received the "Patient Wife Award."

The State AFA's "Superior Sustained Service Award" went to **Francis D. Spalding,** Columbus Chapter President, for his many years of service to AFA. **Ellen Spalding** was also cited for her "Patient Wife" role.

Outgoing State President **George A. Gardner** was awarded a Life Membership in AFA for "three terms of exceptional state leadership."

Bernard D. Osborne, Ohio AFA Vice President and Convention Chairman, was elected to head the State AFA in 1970. Elected to serve with him are: **Ernest E. Pierce,** Executive Vice President; **William C. Curp, Francis D. Spalding,** and **Fred D. Bardwell,** Vice Presidents; **Lewis Michael,** Secretary; and **Kenneth E. Banks, Jr.,** Treasurer.

Delegates unanimously adopted a statement of policy that called for backing the nation's Vietnam actions, and condemning demonstrations that inhibit efforts to negotiate prisoner returns.

Out-of-state guests included Michigan AFAers **William M. Whitney, Jr.,** AFA's Great Lakes Regional Vice President; **Marjorie O. Hunt,** President of the Mount Clemens Chapter and President-elect of the Michigan AFA; and **Mrs. Dorothy Whitney,** President of the Gen. Claire Chennault Chapter of Detroit.

* * *

CROSS COUNTRY . . . Congratulations to the **Montgomery, Ala., Chapter,** Frank Sego, President; and the **Wasatch, Utah, Chapter,** Glen L. Jensen, President. Both chapters have reached the membership targets assigned them for the fourth consecutive year *(see also box, on page 67).* . . . A word of sincere appreciation to the **H. H. Arnold, N.Y., Chapter,** and its President, **Frank X. Battersby,** for the unit's donation of $500 to the **Aerospace Education Foundation** from the proceeds of its recent, highly successful Military Ball.

AFA President **George D. Hardy** recently announced with regret the resignation of **A. H. "Gus" Duda** from the Air Force Association staff, effective January 1, 1970, after more than eighteen years of dedicated and loyal service. All of us, including his many friends and associates throughout the Association, will miss him. We wish him well.

—DON STEELE

The Rt. Rev. Msgr. William F. Mullally of St. Louis, Mo., died January 29. An Army chaplain during World War I and an Army Air Forces chaplain in World War II, he joined AFA in 1947 and subsequently served seven terms as an AFA National Director, several terms as AFA's National Chaplain, and several terms as Commander of the now-deactivated Chaplain's Division of AFA. Monsignor Mullally was an active and dedicated AFAer and will be greatly missed at all levels of the Association.

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 through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principles of freedom and equal rights for all mankind.

Membership

Active Members: US citizens who support the aims and objectives of the Air Force Association, and who are not on active duty with any branch of the United States armed forces—$7 per year.

Service Members (nonvoting, nonofficeholding): US citizens on extended active duty with any branch of the United States armed forces—$7 per year.

Cadet Members (nonvoting, nonfficeholding): US citizens enrolled as Air Force ROTC Cadets, Civil Air Patrol Cadets, or Cadets of the United States Air Force Academy—$3.50 per year.

Associate Members (nonvoting, nonofficeholding); Non-US citizens who support the aims and objectives of the Air Force Association whose application for membership meets AFA constitutional requirements—$7 per year.

Officers and Directors

GEORGE D. HARDY, President, Hyattsville, Md.; **GLENN D. MISHLER,** Secretary, Akron, Ohio; **JACK B. GROSS,** Treasurer, Harrisburg, Pa.; **JESS LARSON,** Chairman of the Board, Washington, D. C.

REGIONAL VICE PRESIDENTS: Will H. Bergstrom, Colusa, Calif. **(Far West);** John G. Brosky, Pittsburgh, Pa. **(Northeast);** Lester C. Curl, Melbourne Beach, Fla. **(Southeast);** A. Paul Fonda, Washington, D.C. **(Central East);** Jack T. Gilstrap, Huntsville, Ala. **(South Central);** Sam E. Keith, Jr., Fort Worth, Tex. **(Southwest);** Nolan W. Manfull, Roy, Utah **(Rocky Mountain);** Edward T. Nedder, Hyde Park, Mass. **(New England);** Dick Palen, Edina, Minn. **(North Central);** Clair G. Whitney, Bellevue, Wash. **(Northwest);** W. M. Whitney, Jr., Detroit, Mich. **(Great Lakes);** O. Earl Wilson, St. Louis, Mo. **(Midwest).**

DIRECTORS: John R. Alison, Beverly Hills, Calif.; **Joseph E. Assaf,** Hyde Park, Mass.; **William R. Berkeley,** Redlands, Calif.; **Milton Caniff,** New York, N. Y.; **M. Lee Cordell,** Berwyn, Ill.; **Edward P. Curtis,** Rochester, N. Y.; **S. Parks Deming,** Colorado Springs, Colo.; **James H. Doolittle,** Los Angeles, Calif.; **Joe Foss,** Scottsdale, Ariz.; **Paul W. Gaillard,** Omaha, Neb.; **Martin H. Harris,** Winter Park, Fla.; **John P. Henebry,** Kenilworth, Ill.; **Joseph L. Hodges,** South Boston, Va.; **Robert S. Johnson,** Woodbury, N. Y.; **Arthur F. Kelly,** Los Angeles, Calif.; **George C. Kenney,** New York, N. Y.; **Maxwell A. Kriendler,** New York, N. Y.; **Thomas G. Lanphier, Jr.,** La Jolla, Calif.; **Curtis E. LeMay,** Bel Air, Calif.; **Joseph J. Lingle,** Milwaukee, Wis.; **Carl J. Long,** Pittsburgh, Pa.; **Howard T. Markey,** Chicago, Ill.; **Nathan H. Mazer,** Roy, Utah; **John P. McConnell,** Washington, D. C.; **J. B. Montgomery,** Tulsa, Okla.; **Warren B. Murphy,** Boise, Idaho; **Martin M. Ostrow,** Beverly Hills, Calif.; **Earle N. Parker,** Fort Worth, Tex.; **Julian B. Rosenthal,** New York, N. Y.; **Peter J. Schenk,** Arlington, Va.; **Joe L. Shosid,** Fort Worth, Tex.; **Robert W. Smart,** Washington, D. C.; **C. R. Smith,** Washington, D. C.; **Carl A. Spaatz,** Chevy Chase, Md.; **William W. Spruance,** Wilmington, Del.; **Thos. F. Stack,** San Francisco, Calif.; **Arthur C. Storz,** Omaha, Neb.; **Harold C. Stuart,** Tulsa, Okla.; **James M. Trail,** Boise, Idaho; **Nathan F. Twining,** Hilton Head Island, S. C.; **Robert C. Vaughan,** San Carlos, Calif.; **Jack Withers,** Dayton, Ohio; **Charles Azukas,** National Commander, Arnold Air Society, Tulane University (ex-officio); **Rev. Henry J. McAnulty,** C.S.Sp., National Chaplain, Pittsburgh, Pa. (ex-officio).

State Contacts

Following each state name, in parentheses are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma): **Dr. Boyd E. Macrory,** 3721 Princeton Rd., Montgomery, Ala. 36111 (phone 262-2079).

ALASKA (Anchorage, Fairbanks, Kenai, Nome, Palmer): **Robert Reeve,** P. O. Box 3535 ECB, Anchorage, Alaska 99501 (phone 272-9426).

ARIZONA (Phoenix, Tucson): **Hugh P. Stewart,** 709 Valley Bldg., Tucson, Ariz. 85705 (phone 622-3357).

ARKANSAS (Fort Smith, Little Rock): **Alex E. Harris,** 3700 Cantrell Rd., Apt. 612, Little Rock, Ark. 72202 (phone 664-1915).

CALIFORNIA (Antelope Valley, Burbank, Chico, El Segundo, Fairfield, Fresno, Harbor City, Long Beach, Los Angeles, Monterey, Newport Beach, Norwalk, Novato, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Santa Barbara, Santa Clara County, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Gene DeVisscher,** 2775 Cottage Way, Sacramento, Calif. 95825 (phone 487-7818).

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GEORGIA (Atlanta, Savannah, St. Simons Island, Valdosta, Warner Robins): **William H. Kelly,** 241 Kensington Dr., Savannah, Ga. 31405 (phone 355-1777).

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RHODE ISLAND (Warwick): **Matthew Puchalski,** c/o 143 SOG RIANT, T. F. Green Airport, Warwick, R. I. 02886 (phone 737-2100, ext. 27).

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VIRGINIA (Arlington, Danville, Hampton, Lynchburg, Norfolk, Richmond, Roanoke, Staunton): **Richard C. Emrich,** 6416 Noble Dr., McLean, Va. 22201 (phone 962-0710).

WASHINGTON (Bellevue, Port Angeles, Seattle, Spokane, Tacoma): **Clyde Stricker,** P. O. Box 88850, Seattle, Wash. 98188 (phone 534-2396 or 244-8650).

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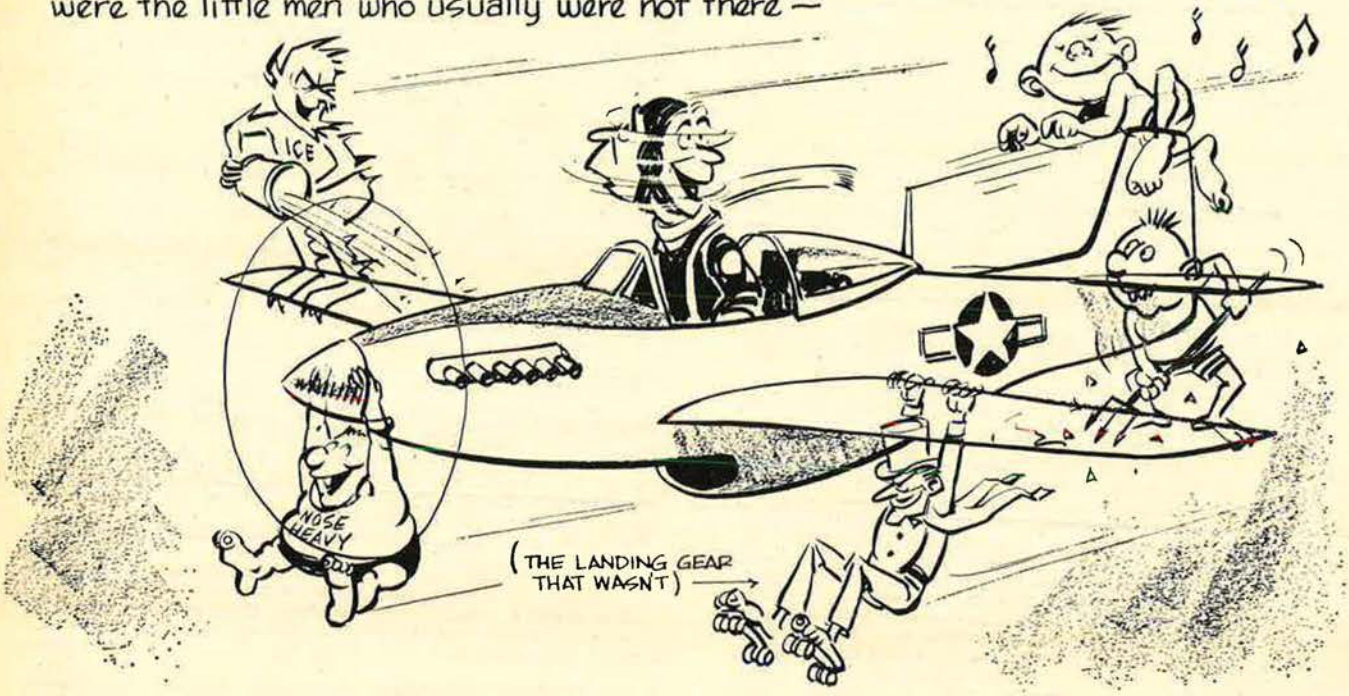
WYOMING (Cheyenne): **Conley B. Stroud, Jr.,** 6421 Evers Blvd., Cheyenne, Wyo. 82001 (phone 638-9517).

Bob Stevens'

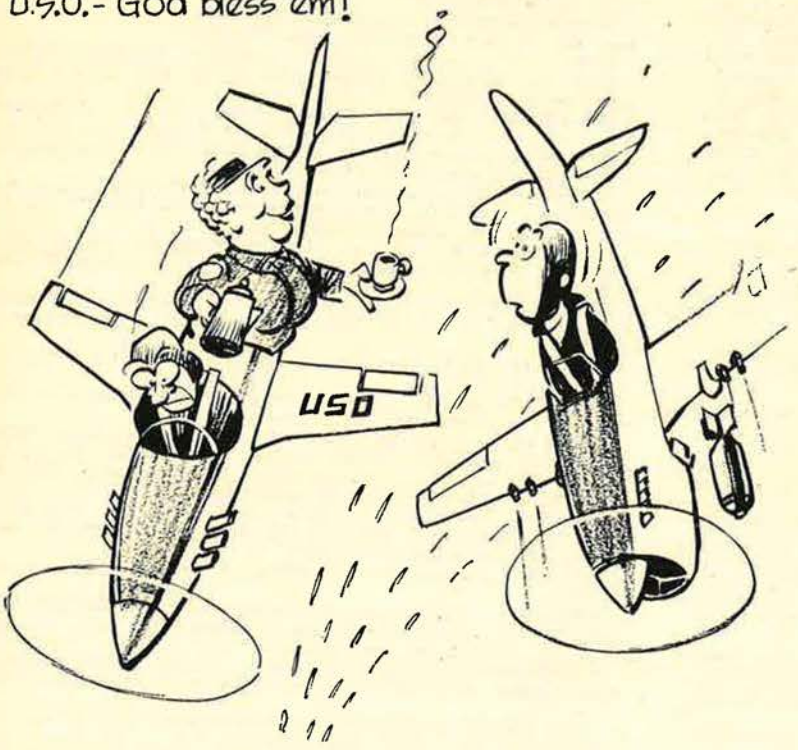
"There I was..."

The good, the bad, the droll, the sad
Add up to war's perdition.
For airmen, long-of-tooth or young,
They're part of our tradition . . .

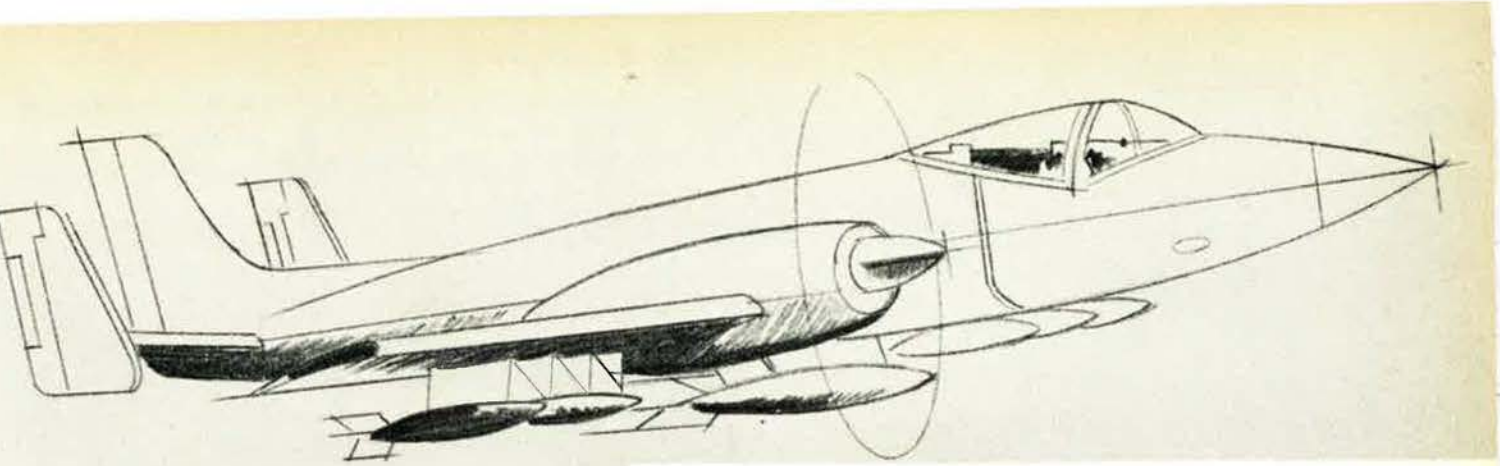
Remember **GREMLINS?** Inherited from the RAF (1928). There were good ones, bad ones, mischievous ones – they all had one thing in common: "They were the little men who usually were not there"–



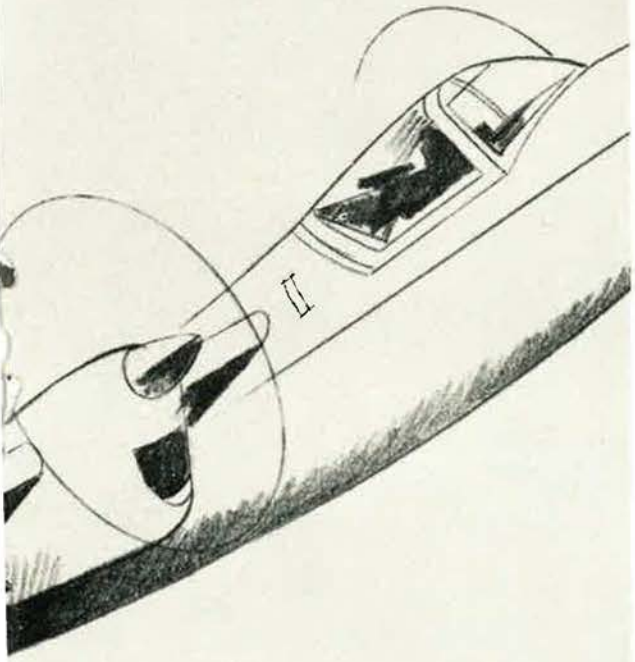
Another ubiquitous group during WW II (and in Korea and Vietnam, too!) was the U.S.O.- God bless 'em!



And will you ever forget *these* characters?...



Proven power to spare for new-generation AX close-support craft



The Air Force's new generation close-support fighter, the AX, presents a particular challenge to the designer: high payload, short take-offs, excellent handling at low and high-speeds, good survivability, maximum simplicity, ruggedness, and great cost-effectiveness—all this in a single aircraft.

Avco Lycoming now offers just the kind of engine to meet these demanding requirements.

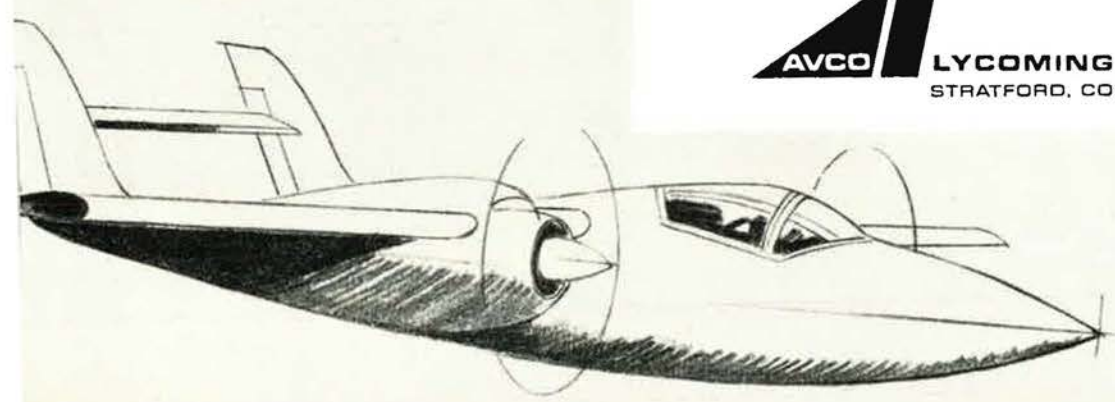
The new LTC4B-12 delivers more than 4,370 hp., but weighs only 680 lbs., just 10 lbs. more than the T55-L-11 engine from which it is directly developed.

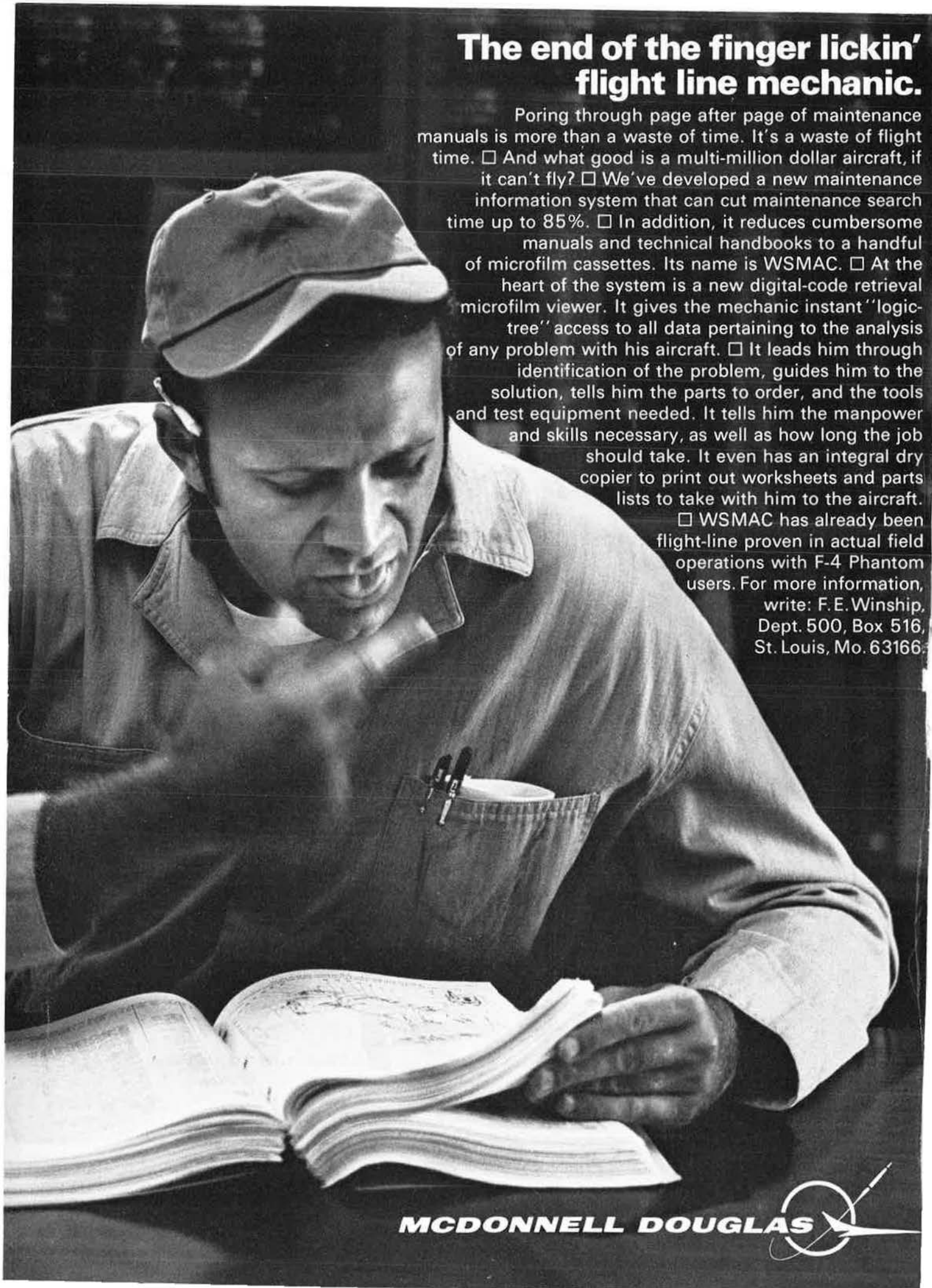
Result: the AX designer can trade on advanced performance from a combat-tested power plant. And he gets that advanced performance even though the new engine has minimal change from those thousands of Avco Lycoming T55's, which have now accumulated more than one million hours of dependable field performance in the combat zones of Southeast Asia.

These are the engines which have taken the severe punishment of enemy action and hostile climate alike in their stride.

Simplicity, performance, and time-tested durability make the Avco Lycoming LTC4B-12 the outstanding choice for the close support fighter of tomorrow.

AVCO LYCOMING DIVISION
STRATFORD, CONNECTICUT




The end of the finger lickin' flight line mechanic.
Poring through page after page of maintenance manuals is more than a waste of time. It's a waste of flight time. ☐ And what good is a multi-million dollar aircraft, if it can't fly? ☐ We've developed a new maintenance information system that can cut maintenance search time up to 85%. ☐ In addition, it reduces cumbersome manuals and technical handbooks to a handful of microfilm cassettes. Its name is WSMAC. ☐ At the heart of the system is a new digital-code retrieval microfilm viewer. It gives the mechanic instant "logic-tree" access to all data pertaining to the analysis of any problem with his aircraft. ☐ It leads him through identification of the problem, guides him to the solution, tells him the parts to order, and the tools and test equipment needed. It tells him the manpower and skills necessary, as well as how long the job should take. It even has an integral dry copier to print out worksheets and parts lists to take with him to the aircraft. ☐ WSMAC has already been flight-line proven in actual field operations with F-4 Phantom users. For more information, write: F.E. Winship, Dept. 500, Box 516, St. Louis, Mo. 63166.
MCDONNELL DOUGLAS