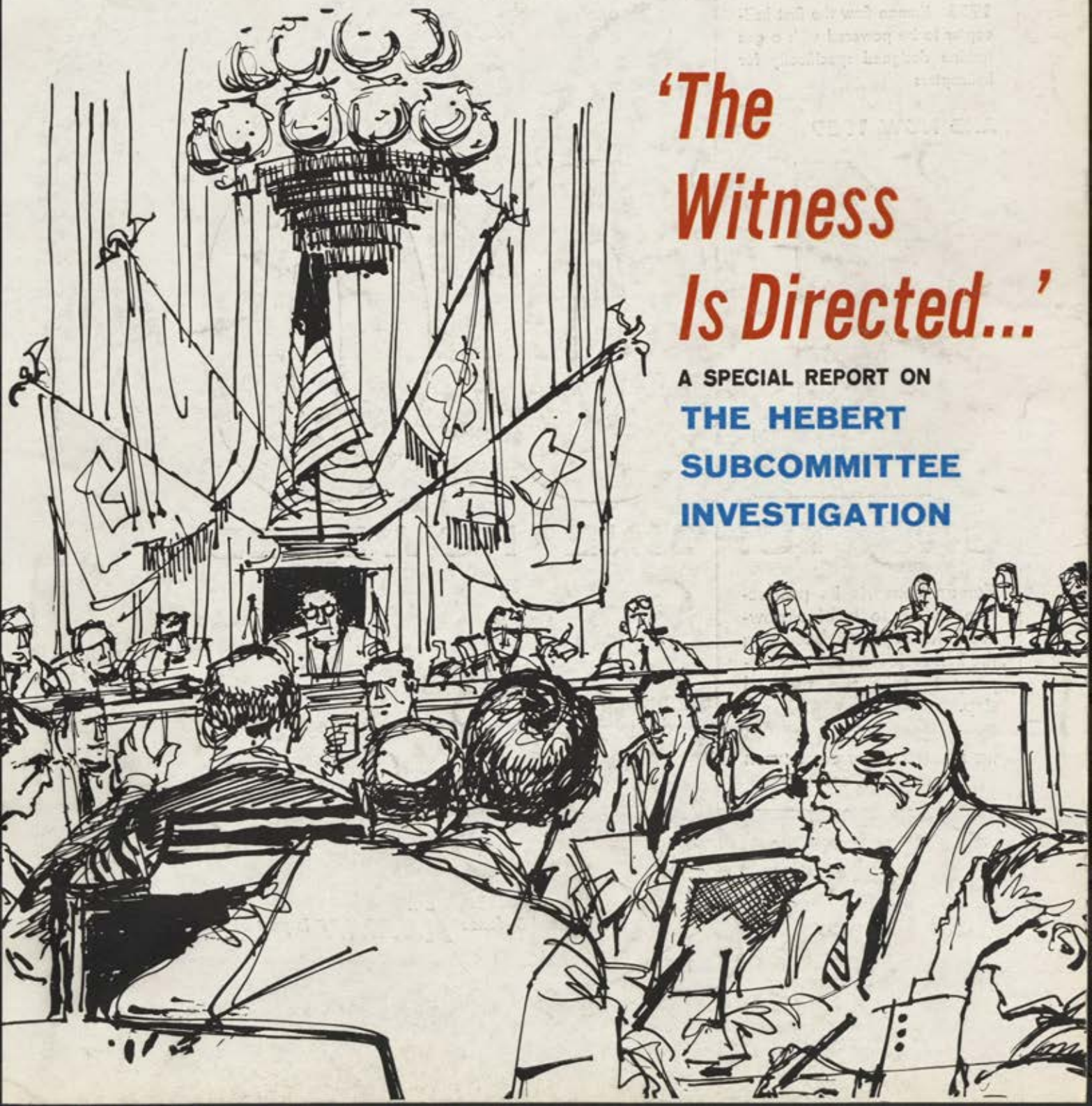
OCTOBER 1959 / 50c

# AIR FORCE

and **SPACE DIGEST**

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



## 'The Witness Is Directed...'

A SPECIAL REPORT ON

**THE HEBERT SUBCOMMITTEE INVESTIGATION**

PIONEER K-225

**1951** First to fly a shaft turbine helicopter *anywhere*

**1954** First to fly a helicopter powered by twin turbines

**1956** Kaman flew the first helicopter to be powered with a gas turbine designed specifically for helicopters

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# GAS TURBINE POWERED

Kaman converts its production 100% to turbine powered helicopters, becoming the first major helicopter company to take this forward step.

THE KAMAN AIRCRAFT CORPORATION
BLOOMFIELD, CONN.


PRODUCTION HU2K-1

*In National Defense* **KAMAN** *is part of the plan*

B.F.Goodrich

WHAT IS IT? Probably the biggest homogeneous void-free laminate ever built . . . a B. F. Goodrich ablation shield for an experimental re-entry vehicle designed and built by General Electric to be test flown on an Air Force Atlas ICBM.

Fabricated by a special B. F. Goodrich winding technique, the shield contains about five miles of high-temperature resin tape. This fabricating technique, which is also being used for many other specialized B. F. Goodrich products of various types and sizes, completely eliminates precision matched metal molds, cuts tooling costs by hundreds of thousands of dollars, and saves plenty of lead time. Autoclave curing replaces massive high pressure presses.

Throughout the construction of this re-entry vehicle shield, B. F. Goodrich maintains constant quality control of resin content and residual volatiles. Modern radiological facilities are used for final checking.

The fabrication and curing of such huge void-free parts illustrates the advances made by B. F. Goodrich in producing high-temperature, reinforced plastic products. So if you're up in the air and want down-to-earth answers on plastic laminate constructions, contact *B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. AF-109, Akron, Ohio.*

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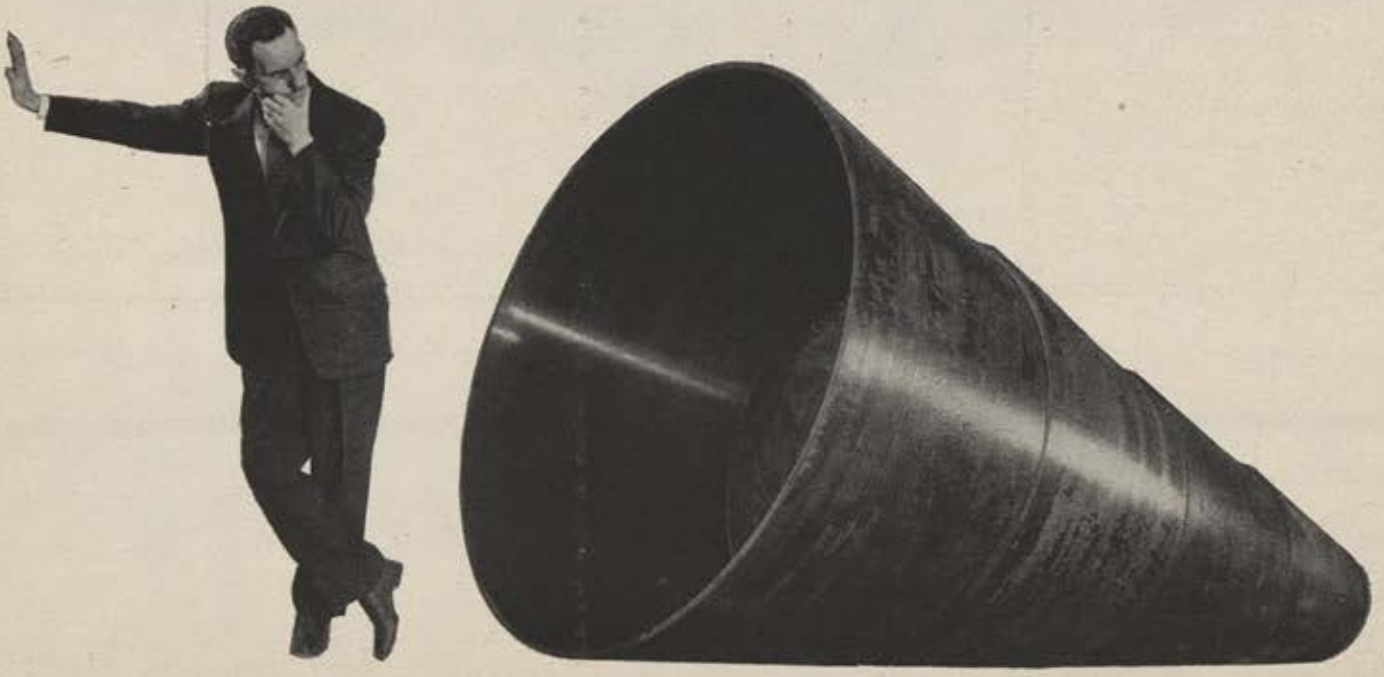

**YOU ARE INVITED** to inspect the airplane at one of the following distributors: Atlantic Aviation, Wilmington, Delaware; Southwest Airmotive, Dallas, Texas; Pacific Airmotive, Burbank, California; and Timmins Aviation, Montreal, Canada.

# THE INSIDE STORY ABOUT AMERICA'S NO. 1 BUSINESS AIRCRAFT— THE GRUMMAN GULFSTREAM

**GULFSTREAM—by Grumman.....POWER—by Rolls-Royce.**
**INTERIOR—by the purchaser!**

The pictures show how one leading corporation has "fitted out" its Gulfstream. The point is that the Gulfstream's basic configuration enables each corporation-owner to choose the interior layout, decor and equipment that individualize the aircraft to the company's precise needs and tastes. There is no "re-doing" airplanes originally designed for other purposes.

The Gulfstream has been conceived by Grumman expressly for corporate use. It uniquely combines performance, utility, reliability and safety to make it America's No. 1 Business Aircraft—and, therefore, the logical first choice of leading corporations. It carries 10-12 passengers.

Powered by two Rolls-Royce prop-jet engines, the Gulfstream cruises at 357 mph and has a range of 2600 miles plus reserve. Pressurization at 25,000 feet provides a comfortable air-conditioned cabin altitude of 5500 feet—permitting operation above the weather and traffic. The Gulfstream's ability to get in and out of smaller airports—those with runways of approximately 4000 feet—substantially increases its utility and scope of operations.

F.A.A. certified Gulfstreams are now being delivered to leading corporations through our distributors.

# GRUMMAN

**AIRCRAFT ENGINEERING CORPORATION**

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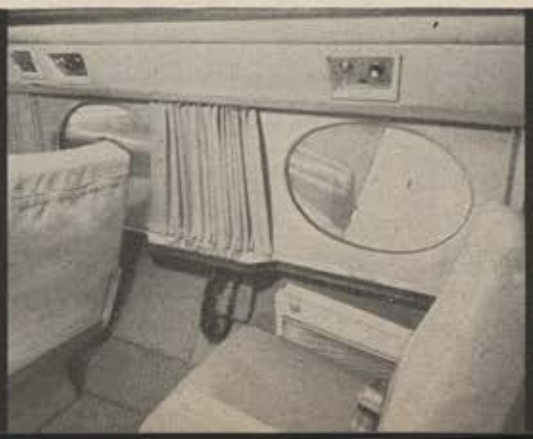

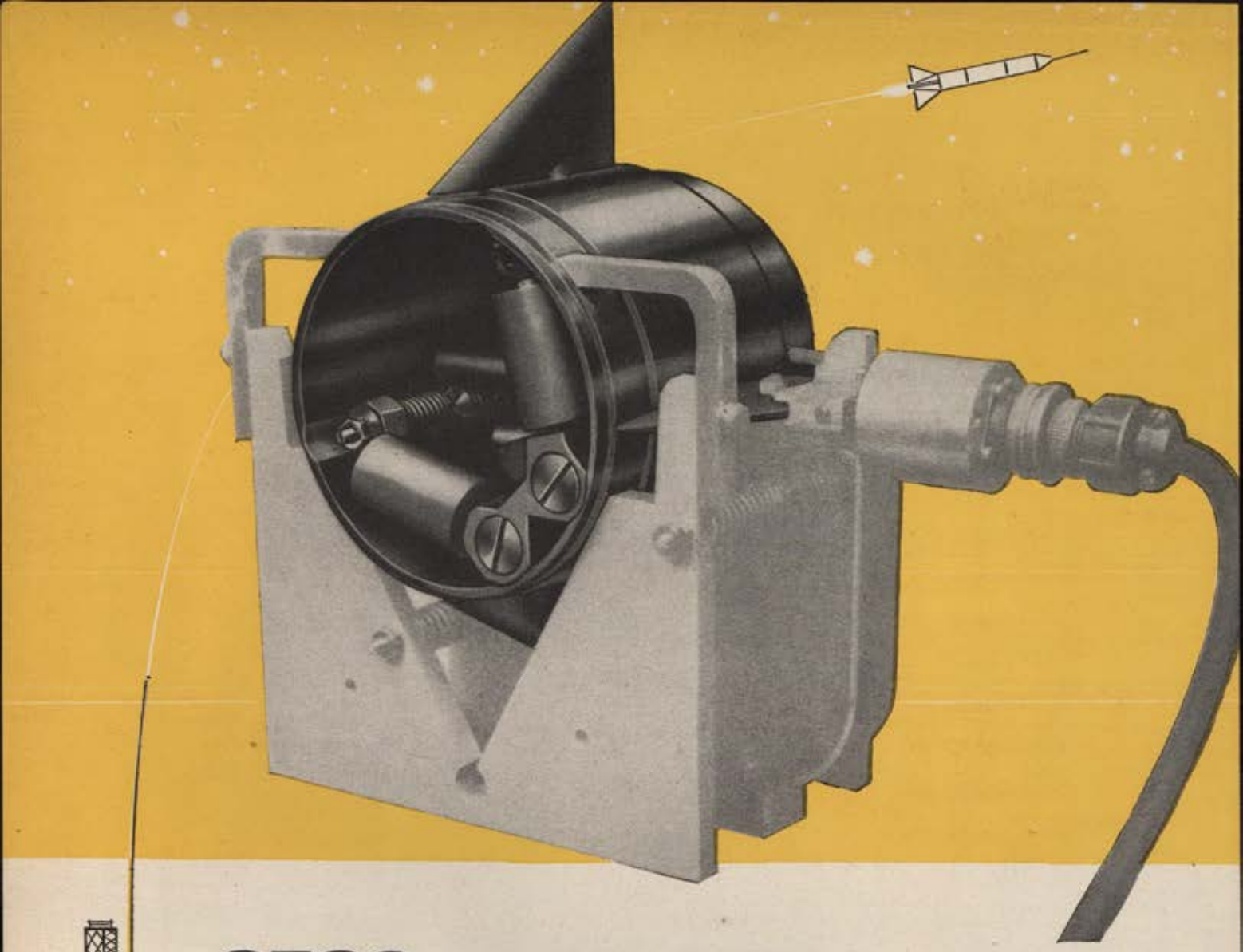

# CECO has run HOT GAS SERVO CONTROL SYSTEMS on both solid and liquid propellants

Aided substantially by design and precision manufacturing experience in the field of highly sophisticated gas turbine control systems, Chandler Evans has been furthering the development of high-pressure pneumatic systems for missiles and satellites. Backed by highest technical and analytical skills, work on each new system includes thorough investigation in CECO's well-equipped Computer Laboratory.

Typical of progress made during the past several years is the new guidance control unit shown above in a test rig. A hot gas servo control system fueled by solid charge, it operates with gas inlet temperature in the 1800°F. range. Charge, control hardware and missile section—the entire system weighs only 6.9 lbs.

Reliability, simplicity and readiness capability suit systems like this to a wide range of missile applications.

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*For a new folder on CECO hot gas servo control systems, address your request to Department 59.*

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# AIR FORCE

THE MAGAZINE OF AEROSPACE POWER

*Volume 42, Number 10 • October 1959*





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## FEATURES



## DEPARTMENTS

*An Editorial*

# You Can't Deter War

**John F. Loosbrock, Editor**

A FEW years ago a great Secretary of Defense, Robert A. Lovett, explained his wariness of the peaceful intentions of the Soviet Union in this succinct sentence:

"You don't take off your coat every time the sun shines in Moscow."

As this is being written, we don't know what the weather is like in Moscow. But we do know that the sun is shining in Washington—the warm, caressing sun of early autumn. On a Sunday drive with the family we saw it bathe the slopes of the Catoctin Mountains north and west of Washington, where the leaders of the two most powerful nations in the history of the world were discussing problems on which that same sun never sets. On our way home a fleet of motorcycle police sirened us to the side of the road where we watched the big black Cadillacs flash by, followed by open cars crammed with tense security agents of both countries.

Nikita Sergeevich Khrushchev was going home.

We're afraid our reaction was typically American. We didn't have to take off our coat. That had been shed long since. We drove back to the house and, while the roast was sputtering in the oven, opened a can of beer, shucked off our shoes, and settled ourselves comfortably in front of the television, the better to see a lethargic Washington Redskin professional football team get slaughtered by the tough, aggressive Chicago Cardinals.

Not that we didn't have plenty to worry about. The crabgrass should be raked out of the lawn and fertilizer spread so that next spring we can fret about not getting the grass cut. The National League pennant race was, as usual, a tight one, and we hoped Milwaukee would pull it out. This editorial had to be written and posted before midnight.

But we put our troubles aside for the moment, hypnotized by the action on the TV screen.

Thus insulated from reality, lulled into temporary euphoria, we drowsed contentedly—America in microcosm.

• • •

Walter Lippmann, who has just celebrated the seventieth birthday of a good and useful life, has put it better than we could ever hope to. After the first day of Mr. Khrushchev's visit, Mr. Lippmann wrote:

"Mr. Khrushchev's first day in Washington went off with tact and good sense on the part of all concerned. Both the President and he were in excellent form and quite aware of the nature of their meeting. There were big crowds to see Mr. Khrushchev, but they were quiet. What else could they have been?

"Mr. K. is the chief adversary of the United States. He has come here to talk seriously with the President, and to persuade the American people that while he is their challenger, their rival, and their competitor, he is not their enemy. He is not bent on destroying them but on outdoing them in every field of material and intellectual endeavor.

"This is a sobering prospect, and it cannot be said that Mr. Khrushchev is concealing the seriousness of the challenge which he poses. For the true inwardness of this challenge is aimed directly at the critical weakness of our society.

"The critical weakness of our society is that for the time being our people do not have great purposes which they are united in wanting to achieve. The public mood of the country is defensive, to hold on and to conserve, not to push forward and to create. We talk about ourselves these days as if we were a completed society, one which has achieved its purposes, and has no further great business to transact.

"The strength of the Soviet regime, which accounts for its hardness and its toughness, and also for its cruelty, is that it is above all else a purposeful society in which all the main energies of the people are directed and dedicated to its purposes. This sense of purpose accounts for the astounding success of the regime in science and in technology, both civilian and military. The Soviet nation has its energies and its resources focused on purposes which its rulers define, and all else must make way for the achievement of these purposes.

"Thus in our encounter with the Soviet rulers, in the confrontation of the two social orders, the question is whether this country can recover what for the time being it does not have—a sense of great purpose and of a high destiny. This is the crucial point. For without a revival of American purpose, Mr. K. is likely to win the competitive race in which he is the challenger. If he does win that race, our influence as a world power will inevitably decline.

"It is shocking, and indeed something in the way of a disgrace, that this country, which as so many are telling Mr. K. these days is so rich, has not had the purpose or the will to keep from falling behind in the rocket competition, or had a sufficiently responsible sense of the future to provide an adequate school system. The Eighty-sixth Congress was, no doubt, a political triumph for Mr. Eisenhower. But how many more years can this country afford to have such political triumphs when they neglect the needs of the age we live in?

"There are some among us, it would seem, who think that the Soviet challenge—the most formidable in the history of Western society—can be dealt with by not talking with the Russians and by passing resolutions condemning communism and then by continuing business and pleasure as usual. They fancy themselves as great defenders of our civilization when they have made a speech or written an article which answers some point made by Mr. K.

"They are mistaken. This contest will not be won by nitpicking and pinpricking. They do not realize the might of

# by Hope Alone

**'THOSE WHO EXPECT TO REAP THE BLESSINGS OF FREEDOM MUST, LIKE MEN, UNDERGO THE FATIGUE OF SUPPORTING IT'**

**—THOMAS PAINE**

our adversary. The only answer to Mr. K. is to stop worrying whether he will seduce us, to stop huddling together for fear of his witchery, and to become again the confident and purposeful people which, except when we have doped ourselves, we really are."

• • •

These are strong words from an ordinarily calm and reasonable man. Having written a few articles and made a few speeches ourselves, we feel more than a twinge of conscience upon rereading Mr. Lippmann, particularly after this lazy afternoon in front of the television set. We also recall a recent news story wherein one of the leading candidates for the Presidential nomination in next year's conventions listed what he believes will be the big political issues. Nowhere among the so-called issues appears the word "defense," or "national survival," or indeed anything that might suggest that all may not be right with our military posture. And there is little to indicate that this might not be a sound assessment of the political scene. We've had our little chat with Mr. K. and, like the man who wasn't there, "Gee whiz, we wish he'd go away." And take our problems with him.

Well, Mr. K. has gone away. But the problems that existed before he arrived are still with us. And while we are still basking in the glow of international good will, it might not be a bad idea to take a look at some of them. These facts have not changed:

- The free world still stands under the Soviet gun.
- Ballistic missiles of the Soviet Union, armed with nuclear warheads, are even now poised against vital targets of our allies.
- Soon, if not already, the Soviet Union will be able to launch intercontinental ballistic missiles against United States targets from bases on Soviet soil. And the United States has officially conceded numerical superiority to the Soviet Union in these long-range weapons.
- We do not have a weapon system capable of stopping ballistic missiles once they are launched, and we may never have one.
- The successful Soviet moon shot, carefully timed to coincide with the Khrushchev visit, points up the fact that this nation is playing second fiddle in the field of space technology and exploration, with all the implications that may hold in the field of long-range military rocketry.
- As Soviet military might continues to grow, the security of the free world becomes more dependent than ever upon the ability of the United States to inflict such a degree of destruction upon an aggressor that he will be deterred from risking an attack.
- Under a national policy which concedes the first blow to an aggressor, the power to deter must be based on overwhelming initial superiority, because it depends on the ability to survive the first blow and, with the forces remaining, inflict unacceptable losses on the enemy.
- With the Soviet Union's delivery capability growing at a faster rate than our own, any margin of deterrence possessed by the United States is steadily shrinking. As this margin disappears, the world balance of power automatically shifts to the Soviet Union.
- In this period of great technological change, the margin of deterrence and the resultant balance of power can be maintained only through a unified and accelerated national effort and not without some sacrifice.

Against the Soviet challenge, so effectively spelled out by Mr. Lippmann, the United States is showing evidence of softness, a softness which breeds on complacency—complacency fed from the highest level of government. It manifests itself in heedless preoccupation with the outward trappings of the American way of life—cost of living, taxes, inflation, and the like—with little regard for the basic investment needed to ensure continuance of that way of life.

There is grave danger that the nation's set of values is being perverted by miscalculation both of Soviet capabilities and intent. Inflation is being heralded as a greater enemy than the Soviet war-making machine. For deterrence through strength we are beginning to substitute deterrence through hope.

Everyone fervently desires that the issues now splitting the world can be resolved short of the holocaust of war. But the willingness to talk must not be seized on as an excuse for holding military expenditures below needed levels.

There is a tendency to look on anyone who points out these factors as being opposed to peaceful solutions of international tensions. Nothing could be farther from the truth. One can be a realistic pessimist without being a warmonger. Armaments are the result of tensions, not the cause of them. Thus we must guard against the very natural desire to relax, to wish away our troubles. While the causes of war remain, the military means to deter it must not be allowed to wither away.

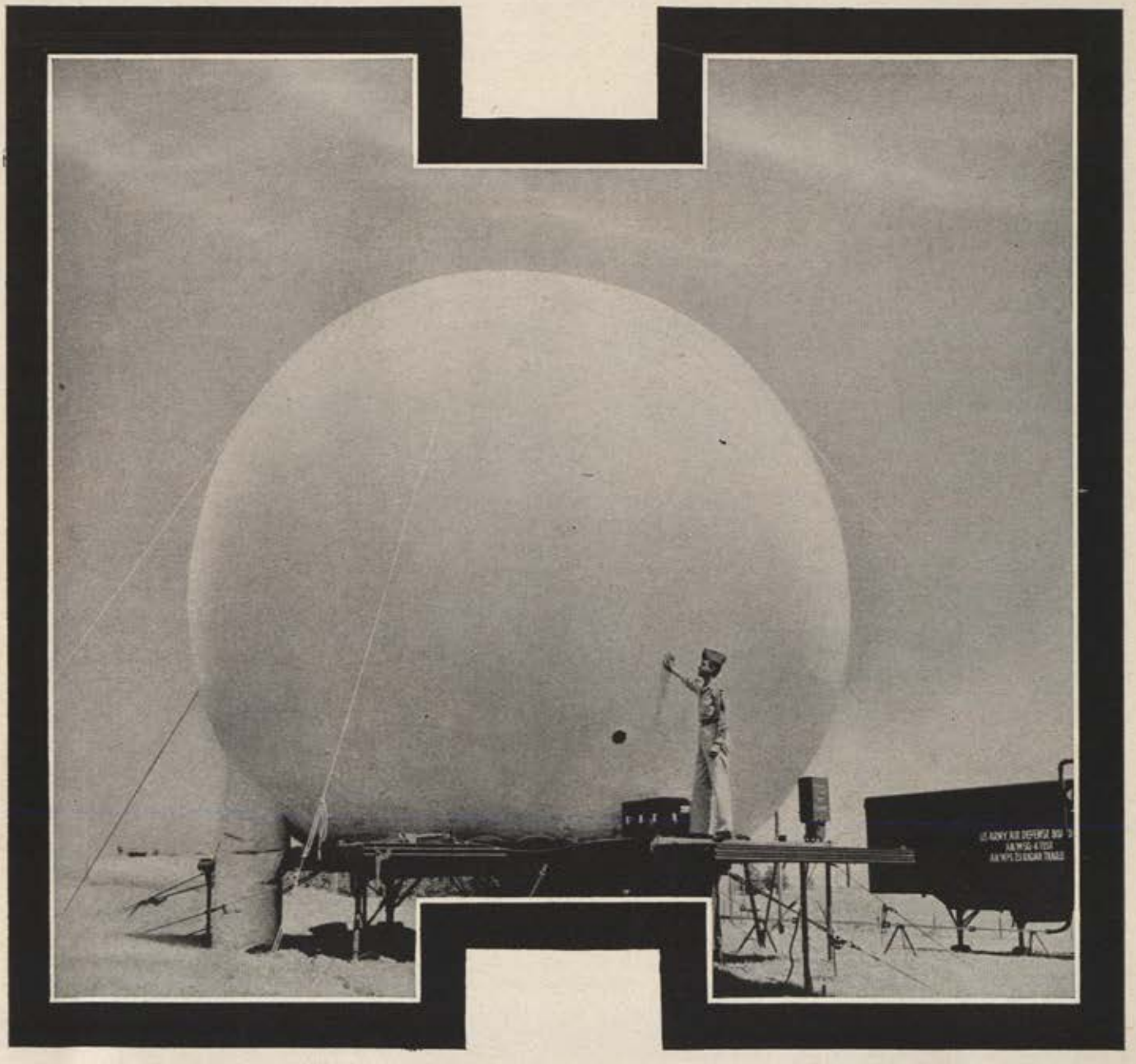
The important effect of Mr. Khrushchev's visit is what he may have learned about us, as well as what we may have learned about him. How he feels about the can-can is irrelevant. But how he feels about our national strength and will is all-important.

We assess him as a tough-minded, dedicated, strong national leader who deeply believes in what he is doing and in its ultimate success.

The free world can avoid being buried only by matching toughness with toughness, dedication with dedication, strength with strength. This nation contains all these qualities in ample measure if the need to use them is made clear.

The need exists. It is up to our national leaders to ensure that it is met—END

# The strange shape



# of defense

**This plastic balloon,** resting on a mobile trailer bed like a golf ball on a tee, protects the new Hughes three-dimensional radar antenna.

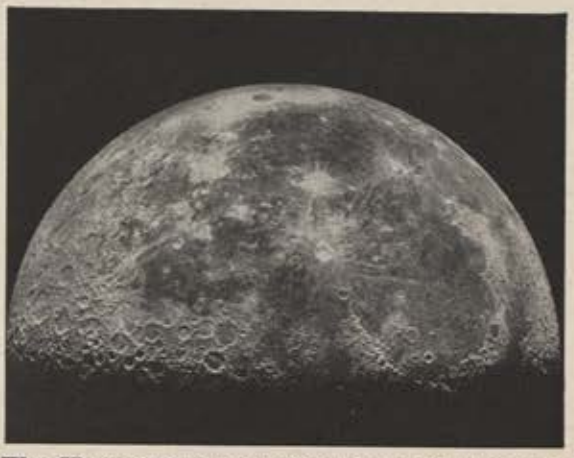
It is part of Frescanar, the exclusive system combining high-speed data processors and a frequency scan radar antenna, developed by Hughes for the U.S. Army air defense system.

Sensitive to the inadequacies of conventional radar, Hughes has devised a new radar antenna principle where the pointing direction is made sensitive to the frequency of the electromagnetic energy applied to the antenna. This frequency sensitivity results in the radar beam being radiated from the antenna at different angles, depending on the frequency of the energy supplied. With the supply of a succession of frequencies, the antenna beam can be moved through a succession of positions. Utilizing this greatly advanced technique... range, bearing and altitude can be detected...on a single antenna.

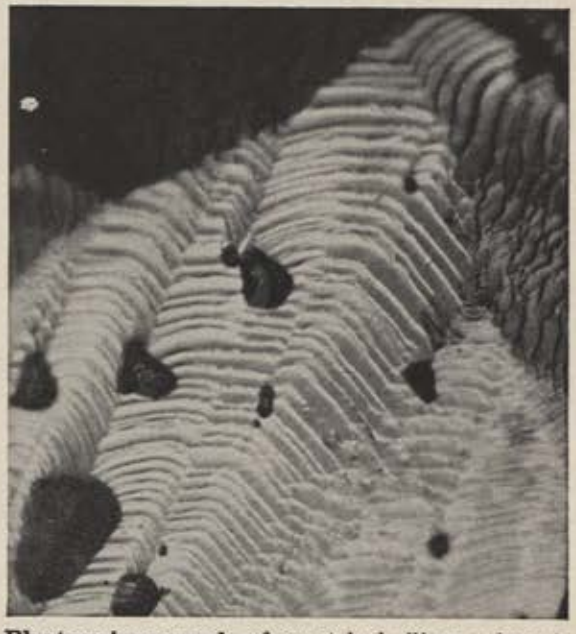
This Hughes-developed radar system has been combined with compact, high-speed Hughes data processors to provide a completely self-sufficient, mobile radar defense system...with traditional Hughes *reliability* engineered in.

At Hughes, reliability is the criterion that sets the value of a project. It's so with Advanced Airborne Electronics Systems, Space Vehicles, Nuclear Electronics, Subsurface Electronics, Ballistic Missiles...and many more. And it's so with research, development and manufacture of semiconductor devices and microwave tubes at Hughes Products, the commercial activity of Hughes.

In *every* Hughes activity, you will find reliability is of prime importance. To date, Hughes has delivered over $2 billion in electronics systems and components...all designed and built to operate reliably under the most rugged conditions. This ability is a prime reason why Hughes is America's largest producer of military electronics.



**The Hughes Communications Laboratories** have as one objective the development of systems capable of deflecting their signals from meteors, artificial satellites and even the moon.



**Photomicrograph** of an etched silicon sphere is used in basic studies of semiconductor materials at Hughes Products, the commercial activity of Hughes Aircraft Company.

*The West's leader in advanced ELECTRONICS*

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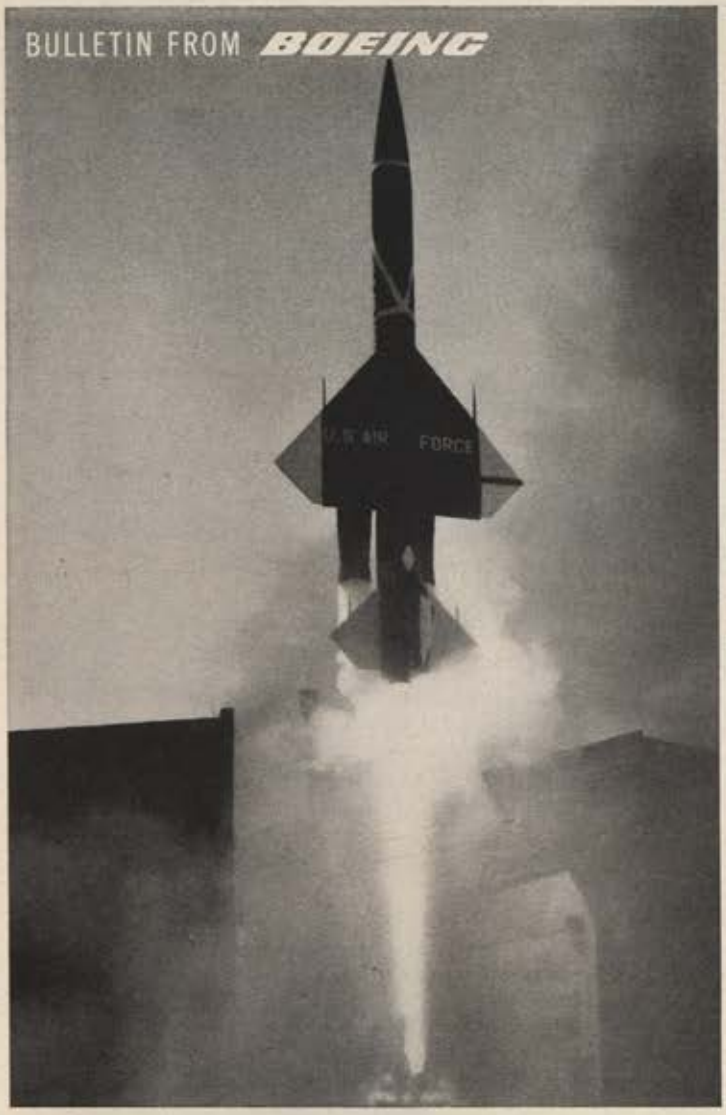
*Tucson, Arizona*




**SUPERSONIC DEFENDER.** Boeing BOMARC, the Air Force's longest-range defense missile, can seek out and intercept single or multiple targets long before they reach U.S. borders. One base, armed with a squadron of BOMARCS ready for instant action, can provide interceptor cover over thousands of square miles.

**MAN IN SPACE.** Space-age projects at Boeing include research to develop protective environments and efficient controls for crews of advanced aircraft and space vehicles. Boeing is also at work on orbital systems, a boost-glide vehicle, and Minuteman, a solid-propellant intercontinental ballistic missile under development.


**MISSILE BOMBER.** Boeing B-52G, now in operation with the Strategic Air Command, is world's longest-range jet, and U.S. Air Force's most versatile long-range weapon system. B-52G carries supersonic air-to-ground missiles for in-flight launching hundreds of miles from target areas, in addition to regular nuclear bomb load. B-52G can strike several targets thousands of miles apart on a single retaliatory defense mission.

BOEING


### Convention Comments

*Gentlemen:* It has been my privilege to attend most of the Air Force Association's Conventions in the past, and I should like to say now that never have I been more impressed or proud to be a member of this fine organization than at the recent Convention.

I want to extend my congratulations to you for the magnificent job your staff did in order that the Convention could be the outstanding success that it was. The past year's activities and the 1959 Convention of the Air Force Association can long be remembered as one for which we may all be proud. . . .

Speaking for myself, and in fact for all of us here in Tactical Air Command, our congratulations for a job well done!

Lt. Gen. W. D. Eckert
Vice Commander, TAC
Langley AFB, Va.

*Gentlemen:* . . . the program was extremely interesting and informative. This was my first opportunity to attend an Air Force Association Convention, and I was greatly impressed by the fine manner in which the Convention was conducted. . . .

Maj. Gen. Harold R. Maddux
Commander, Tenth Air Force
Selfridge AFB, Mich.

*Gentlemen:* American Machine & Foundry Company wishes to congratulate the Air Force Association on their wonderful Convention recently held at Miami Beach. . . .

H. F. Winterling
Greenwich, Conn.

*Gentlemen:* I attended your Panorama at the Miami Beach Exhibition Hall. . . . I must admit it was something rarely seen. I particularly enjoyed the Titan and other missile exhibits. . . .

Schell A. Amos
Miami, Fla.

*Gentlemen:* For the wonderful job in handling the Convention in Miami, I am certain you will receive numerous letters of this type. Please add my congratulations to this list. The briefings were the most informative Convention sessions I have attended to date. The panel approach was excellent and was a highlight of the Convention.

Congratulations and many thanks for a job well done.

F. W. Botts, Jr.
Chance Vought Aircraft, Inc.
Washington, D. C.

### To Set the Record Straight

*Gentlemen:* I was pleased to note in the September Anniversary Issue of AIR FORCE/SPACE DIGEST that Senior Editor Claude Witze had set the record straight on the performance of the General Electric X405 engine which provides the first stage of Vanguard (*"Airpower in the News," page 40*).

I am mystified that Drew Pearson could have been so wrong about the X405. On November 10, 1958, the Vanguard director, Dr. John P. Hagen, sent a letter to me in which he commended the X405 as having demonstrated "a degree of reliability which I believe is unequaled in American rocketry."

The fact is that our X405 engine has performed correctly in eleven out of twelve Vanguard launching attempts. In the one instance, the engine stopped shortly after start up. Our analysis of the test data and high-speed motion pictures of the firing convinced us that an explosion in the missile some distance away from the engine severed the fuel line. The engine itself was operating correctly up to that point.

Like Mr. Witze, we wish Mr. Pearson had taken the time to check the X405 record with NASA before he made his blatantly false charge.

Our thanks to Mr. Witze and your publication for pointing out the truth of the X405's outstanding record of performance.

David Cochran, Gen. Mgr.
Flight Propulsion Laboratory Dept.
General Electric Company
Cincinnati, Ohio

### Keen Edge of Leadership

*Gentlemen:* Your editorial, "Leadership in Being," in the September issue of AIR FORCE/SPACE DIGEST is a fine piece of writing.

You set the stage well, and told your story simply and earnestly. Thanks for presenting this tribute, and this capsule review of the challenge that faces the Air Force.

Will Hilbrink
Columbus, Ohio

### Not a Reentry Failure

*Gentlemen:* The article on the Air Research and Development Command appearing in your September issue refers to ". . . three reentry test failures . . ." of the Atlas missile.

There have been no failures of the Atlas reentry vehicle during test, either before or after separation.

J. C. Hoffman
Missile & Space Vehicle Dept.
General Electric Company
Philadelphia, Pa.

● *Sorry. The "reentry test failures" was an aerospace typo. It should have read ". . . despite three* recent *test failures."*—THE EDITORS

### Chart Omission

*Gentlemen:* Congratulations for your excellent Air Force Almanac Issue. We think it's better than the 1958 one.

There was an omission on our part —and we call your attention to it only for possible use in future publications of our chart. Aeronautical Systems Center was omitted from the AMC chart, although given three paragraphs in the story. It should be shown on any future charts as having equal status with BMC.

Thanks again for a job well done.

Harry A. Haberer, Chief
Public Information Div., OIS
Air Materiel Command
Wright-Patterson AFB, Ohio

● *Thanks for calling this to our attention. Correction will be made next time around.*—THE EDITORS

### Minnesota's Own

*Gentlemen:* The paragraph in the August issue "Ready Room" ("Notes in the News") has Minnesotans much concerned. Capt. Don Slayton, Astronaut, was a member of the 109th

*(Continued on following page)*

## AIR MAIL——CONTINUED

Fighter Squadron, Minnesota, not Washington, Air National Guard, when mobilized in 1951. . . .

Actually, Don was twice a member of the Minnesota Air Guard. First in 1948 and 1949. Then, in 1951, when we got the word we were to be called to EAD for the Korean affair, he rushed back to Minnesota from his position with Boeing Airplane Co. in Seattle, Wash., to again take up his commission with the ANG. . . .

The "Ready Room" is read with great interest every month here, and you are doing a great job in Reserve and Guard affairs. . . .

Col. John R. Dolny
Commander, Minnesota ANG
Minneapolis, Minn.

• *That reference to Don's job in Seattle, Wash., made us lose our bearings.*—THE EDITORS

### Material for History

*Gentlemen:* The US Army Medical Service Historical Unit in Washington, D. C., under the direction of the Surgeon General, is engaged in the preparation of the History of the US Army Medical Service Corps.

The introductory chapter of this volume will depict, by historical example and analogy, the background that led to the establishment of the former Sanitary, Medical Administrative, and Pharmacy Corps as well as the present-day Medical Service Corps within the Army Medical Department and the Army Medical Service. Other chapters will be devoted to the discussion of the detailed organization, administrative aspects, and achievements of the Medical Service Corps and each of its progenitor corps.

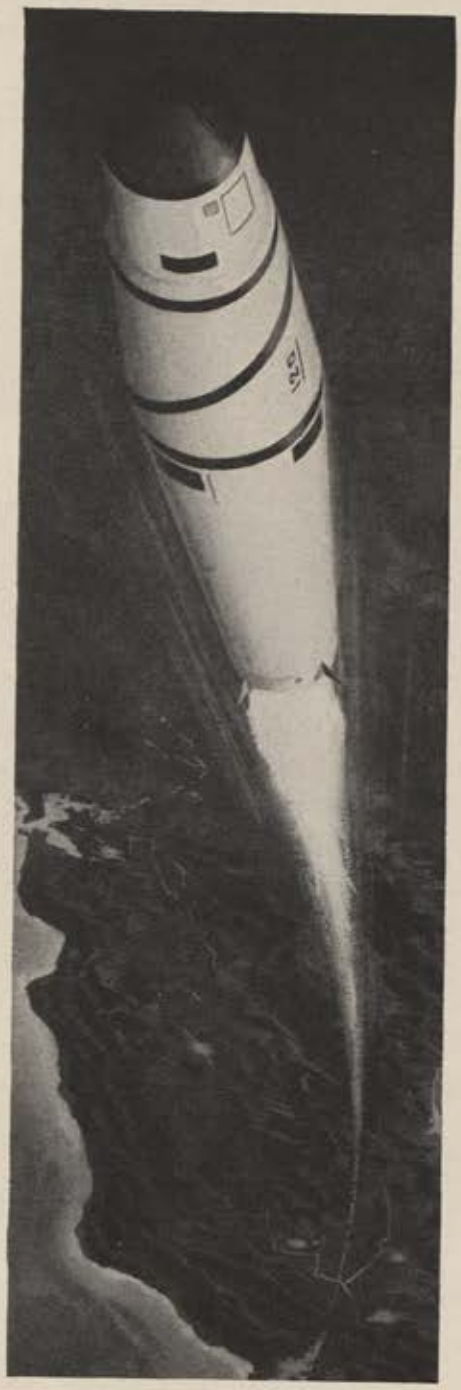
Military documents of all descriptions, records or articles of professional and scientific significance, personal letters, and photographs which relate to the activities of the present Medical Service Corps and each of its predecessors are needed to highlight this history and to augument official references.

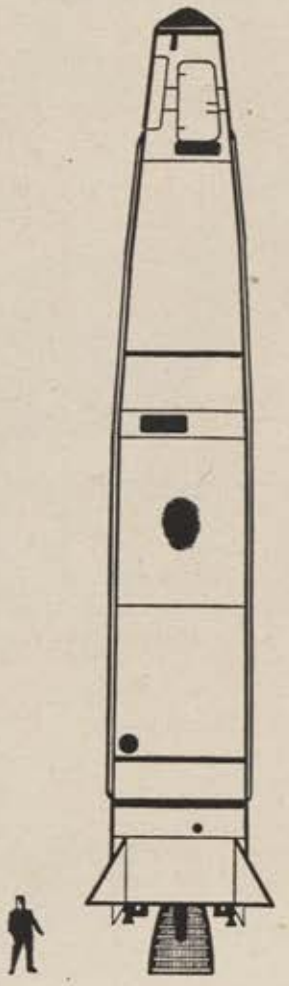
Any material forwarded to the Historical Unit will be returned to the owner after duplication of the material, if that is his wish, or retained and filed in the Historical Unit.

It will be greatly appreciated if individuals who possess such material would forward it directly to:

Director
Historical Unit, USAMEDS
Forest Glen Section
Walter Reed Army Medical Center
Washington 12, D. C.

SAC INTERMEDIATE RANGE BALLISTIC MISSILE





## The man:

. . . a launch-control specialist in a *Thor* SAC squadron. His instruments report each automatic step in the launching procedure of the big IRBM. U.S. Air Force and Royal Air Force missilemen are receiving *Thor* training side-by-side . . . have readied and fired these missiles within a 20-minute count-down.

## The missions:

. . . are many—because of the Douglas *Thor's* versatility. As a highly mobile weapon with atomic capability, it sternly warns potential enemies against aggression. As a powerful and reliable booster, it is playing a leading role in our exploration of outer space with satellites and probes.

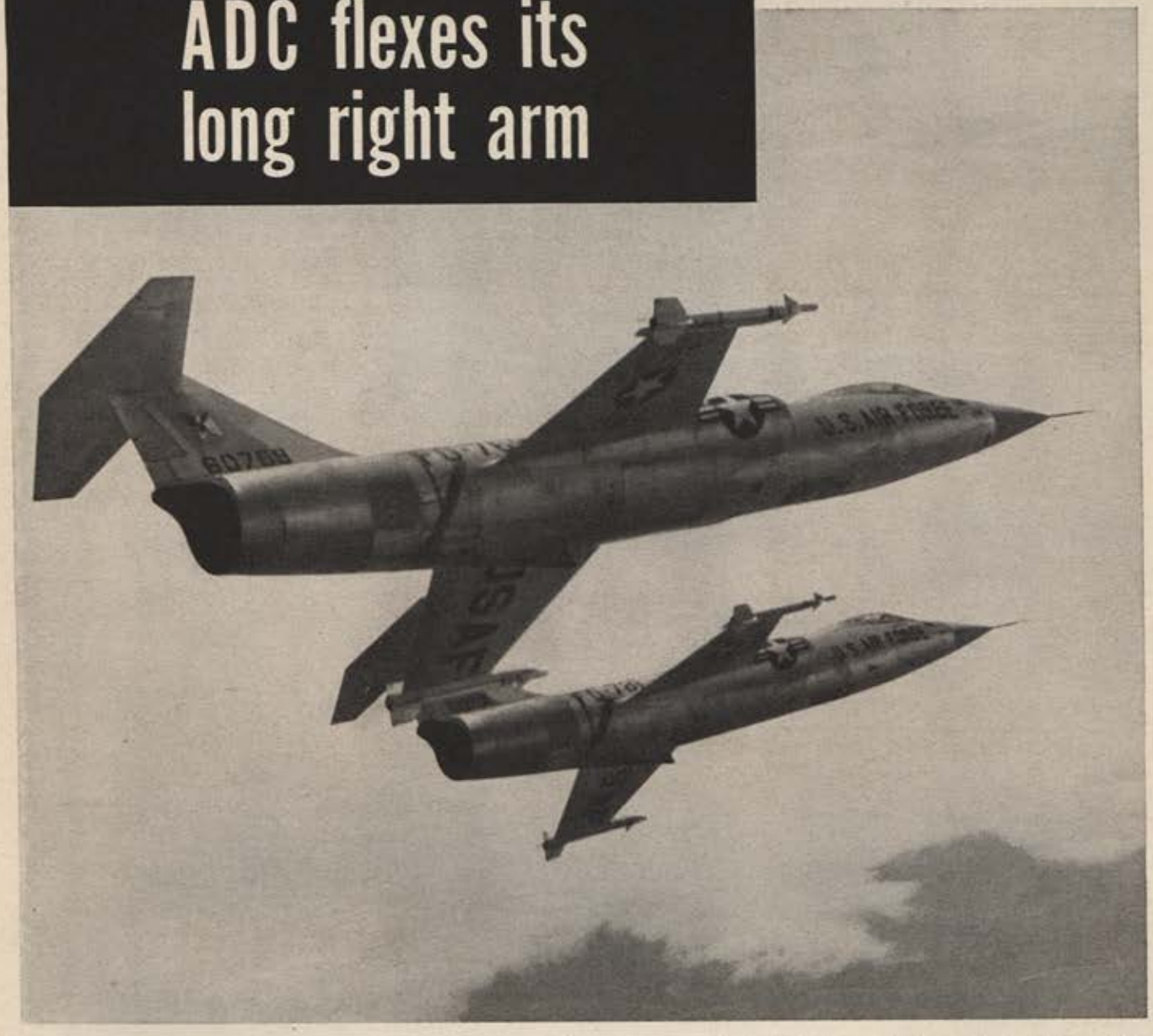
## The missile:

. . . can destroy targets as far as 1500 miles away within minutes after hostile action is detected. Douglas *Thor* missiles were the first intermediate range ballistic missiles to be deployed overseas. The United Kingdom has announced the delivery of the first *Thors*, for operation by Royal Air Force personnel.

*Depend on* **DOUGLAS**

*The Nation's Partner in Defense*

# ADC flexes its long right arm



OPERATION
WILLIAM TELL II

OCTOBER 14-23

How good is our defense against enemy bombers approaching our coast? Can we stop them far out at sea where neither bomb blast nor fall-out will destroy key factories, military bases and population centers?

"William Tell II"—the Air Defense Command's 10-day maneuver at Tyndall Air Force Base, Florida—will supply the answers.

Fastest interceptor ADC will test is its Lockheed-built F-104 Starfighter—holder of the world's records for speed (1404 mph), altitude (91,243 feet), and time-to-climb.

As the F-104s streak skyward they'll be guided to the target area by ground radar. Their targets: elusive radar-guided jet drones—a hundred miles out, 50,000 feet up, and coming in at near-sonic speeds.

The F-104's own radar locks onto the tiny drone . . . its electronic systems guide it in to the kill . . . and the pilot launches deadly Sidewinder missiles to destroy the "invader."

Up where the air is thin or down on the deck—Lockheed's F-104 is the hottest fighter flying today . . . or programmed through 1965.

**LOCKHEED**

JET TRANSPORTS • JET FIGHTERS • JET TRAINERS • COMMERCIAL & MILITARY PROP-JET TRANSPORTS • ROCKETRY
BALLISTIC MISSILE RESEARCH & DEVELOPMENT • WEAPON SYSTEM MANAGEMENT • ANTI-SUBMARINE PATROL AIRCRAFT
NUCLEAR-POWERED FLIGHT • ADVANCED ELECTRONICS • AIRBORNE EARLY-WARNING AIRCRAFT • AIRPORT MANAGEMENT
NUCLEAR REACTOR DESIGN & DEVELOPMENT • GROUND SUPPORT EQUIPMENT • WORLD-WIDE AIRCRAFT MAINTENANCE

# What's New With ★ RED AIRPOWER

*Here's a summary of the latest available information on Soviet air intelligence. Because of the nature of this material, we are not able to disclose our sources, nor document the information beyond assurance that the sources are trustworthy.*

Russia claims Red Air Force planes have set new altitude and distance records.

Two unspecified Soviet planes are credited in a Russian report with flights of more than 10,000 miles at average speeds exceeding 500 miles an hour. One plane, according to the Russian information, covered 10,685 miles in twenty-one hours and fifteen minutes, an average speed of 502 mph, and had enough fuel remaining to fly another hour at the end of the flight. In neither case was inflight refueling said to have been used.

Although there was no identification of the aircraft involved or description of their routes, one may have been the Soviet turboprop bomber that is NATO code-named Bear. The commercial equivalent of the Bear, the TU-114 transport, flew nonstop from Moscow to New York, something over 7,000 miles, this summer. In its slimmer bomber plane configuration, it might have a cruising speed approximating the 500 miles an hour of the report.

The Russian claim to the altitude record was set in an airplane designated T-431. Either it was a special aircraft or an existing type given a special designation for this particular flight. No pictures were published, but it was described as a "single-seat cantilever monoplane with a centrally mounted delta wing and one jet engine."

The Russians claim to have reached 94,333 feet with the aircraft, just over the altitude achieved in the US with a production model Lockheed F-104. The Reds say they used no supplementary acceleration devices, like solid- or liquid-fueled rockets, to set the altitude record.

This altitude figure is particularly significant in the bearing it may have on Russian air defense capabilities against high-flying nuclear bombers.

• • •

**Soviet Air Forces are engaged in an all-out effort to equip their interceptors with infrared homing missiles. The lessons of last year's Formosa air war, when the Sidewinder air-to-air missile was used with deadly effect, have hit home.**

**The Russians have for some time had missiles that homed to target by an infrared device, but the Red Air Force has considered them subpar operationally. Now a major drive is under way to improve performance and at the same time step up production to equip all types of Russian fighters with these missiles.**

• • •

Watch for Russia to begin a new airline "peace offensive" shortly. The Soviets have long wanted very much to fly into New York on a regular basis, and into Tokyo via Siberia or Red China. New proposals to the US and Japan can be expected later this year, as part of the over-all Russian "coexistence" effort highlighted by Premier Khrushchev's visit to this country.

• • •

The Czech state airline is expanding its service to India by way of Cairo. Using TU-104s and IL-18s that it has on order, the Czechoslovakians expect to run their flight from Prague to Cairo farther east, with New Delhi the terminal point. This, in effect, is an exchange arrangement for Air India operates into Prague on a regular basis.

The East Germans are hard at work on a turboprop version of their new jet transport. The turboprop prototype is under construction at Dresden under the supervision of two engineers, one named Freitag, who is chief of engineering for the project, and the other named Besinger, who is chief of design.

The airplane is meant for short-haul, mixed passenger and freight traffic. Its range will be about 1,000 miles, and the cruising speed will be between 400 and 450 miles per hour.

The powerplants are under development at the aircraft engine factory at Pirna, and it is interesting that the design apparently harks back more to the early German turboprops built near the end of World War II than to Russian turboprops developed with German assistance at Kuibyshev since World War II.

• • •

**In this connection, a Red Chinese-Russian clash in the field of jet transport may be in the offing. The Red Chinese want to develop their own jet transports rather than copy the Russians, and the USSR, for its part, is not too anxious to give its airframe and engine designs to Peiping. Red China, with its limited railways and great internal distances, has almost as much need for good air transportation as Russia. Last year the Red Chinese developed their own twin-engine transport, using piston engines that apparently were based on US designs taken over at the end of World War II.**

**DC-3 type aircraft taken from the Nationalist Chinese and also acquired from Russia currently predominate in Red China's civil air fleet.**

• • •

Some thirty programs have been put on a high priority list by the Soviet Academy of Sciences. Atomic physics, including controlled nuclear reaction, and space exploration top the list. Traditional Marxist problems, such as the "laws of the development of socialist society" and long-range planning of a socialist economy, were far down the list—numbers twenty-four to twenty-seven.

Improved metallurgy, with particular emphasis on metals that can withstand high temperatures, better metal processing techniques, improved radio and related communications technology, and automation were major items.

The Academy of Sciences directs all of Russia's pure research and much of the applied research.

• • •

Moscow's Air Museum has a new exhibit—a cutaway model of the jet engine that powers the YAK-25 Flashlight. The engine has a six-stage compressor, a two-stage turbine, and develops 8,000 pounds of static thrust without afterburner, 12,000 pounds with afterburning.

Two interesting facts seem apparent from the exhibit. First, the Russians don't feel they are revealing any secrets in displaying the powerplant—which could mean they have engines of more advanced design in production. Second, it seems the powerplant is a direct descendant of the German JUMO series, which shows that as recently as the early 1950s, when the displayed engine was developed, the Russians still were quite dependent upon German jet engine technology and were copying it rather freely.—END

# AIRPOWER in the news

**Claude Witze**
SENIOR EDITOR

## Now MATS Looks Subversive

WASHINGTON, D. C.

Congress has gone home, just in time to escape shaking hands with Nikita Khrushchev, but it is a cinch that it cannot get away with equal alacrity from the consequences of what it did and did not do in the past session. Nobody seems to be very happy with the results; Democrats and Republicans are attacking Democrats and Republicans, blaming each other for the legislative record.

One of the subjects on which no progress was made is modernization of the Military Air Transport Service. This has left the enemies of MATS gleeful and appears to have spawned a new flood of editorial comment, much of it grossly unfair and based on inaccurate or inadequate information.

The esteemed New York *Times*, for example, senses "general agreement that MATS should turn over much of its routine worldwide airline operations to private lines and concentrate on its job." To show the magnitude of this part of the operation, the *Times* reports that MATS has "more than 400 aircraft and some 480 stewardesses."

Well, to begin with, MATS has about 250, not 480 female flight attendants. In addition to getting the correct arithmetic, the *Times* also should be told that these women are WAFs and that they would not be stewardesses in time of war, but would have traffic assignments where their flight experience would be part of their necessary training.

It is true that MATS has more than 400 aircraft, as the *Times* reports. The exact number for fiscal 1960 is 442. These include thirty-three C-133 heavy cargo transports, 218 C-124 heavy cargo transports, fifty-one C-121 Super Constellations, 104 C-118 Liftmasters, and thirty-six C-97 Stratofreighters. The *Times* aviation editor could have told his editorial writer that only a small percentage of this fleet is suitable for "airline operations." The total figure is about 100 of the 442, and some of these, now in passenger configuration, can be converted to cargo use.

A more vicious attack is a column in the magazine *Airlift*, where an editor turns to the dirty-word file and calls MATS a "Soviet-style airline" and, at least indirectly, accuses USAF Secretary James H. Douglas of favoring state socialism. The article is filled with such phrases as "The People's Airline," "entrenched and creeping state socialism at work in an unsuspecting republic," "pure state socialism," "bureaucratic organisms," "Soviet ideology." The fact, of course, is that MATS operates to meet requirements determined by the Joint Chiefs of Staff, who are not part of any "Soviet-style" creation.

Far from trying to "grab off, under pure state socialism a very large transportation market," MATS is a friend of the air transport business, if not of *Airlift*. MATS has recommended expanded use of air transportation by the Department of Defense and through its own salesmanship, at least in part, already has the Army considering a program to move all its personnel overseas by air. This would mean generation of a substantial new market for the airlines. USAF's early adoption of air logistics to supply overseas bases and permit closing of many depots also should get credit for creating a new market from which the civilian operators are benefiting. It is responsible for much of the gain shown by the airlines, who collected $4.5 million from MATS in fiscal 1955 and $71 million in fiscal 1959. The trend still is up.

"The revolutionary growth of the civil air cargo industry is just around the corner," says Lt. Gen. William H. Tunner, Commander of MATS. And the growth, he adds, is welcomed by his office. "But, I cannot overemphasize that this civil growth must be generated by new markets, civil and military. It should not be realized out of pressures that would jeopardize the strength of MATS and thereby weaken our responsiveness to an emergency."

In most aviation magazine files there is a copy of the 1958 report of Special Subcommittee #4 of the House Committee on Armed Services, which says:

". . . the rising trend in expenditures for the purchase of civil airlift by the Defense Department is a result of changing strategic and logistic concepts, which include the elimination of certain overseas depots and the redeployment of certain overseas units. These changing concepts, however, cause the over-all military requirements to fluctuate continually. Because of this fluctuation it is impractical for this committee or for any other committee to select an arbitrary percentage of MATS traffic and to direct that it be carried by civil airlines. To do so could force MATS . . . on occasion to fly its transport empty or with dummy loads in order that the airlines may carry the percentage of traffic specified. Such a procedure would be wasteful of public funds."

A specific charge in *Airlift* against Secretary Douglas is that he "has come out of his well insulated isolation booth in the Pentagon to fight doggedly for funds to provide [MATS] a fleet of costly new jet passenger planes."

For the record, it must be made clear that *nobody in MATS, the Air Force, or the Department of Defense ever asked for jet passenger aircraft*, and if there are any isolation booths in the Pentagon they should be used to isolate people who spread this kind of misinformation.

Maj. Gen. Raymond J. Reeves, Vice Commander of MATS, said recently that the Strategic Air Command mission could be disrupted at a crucial moment if the only aircraft moving people, supplies, and rearmament move at less than half the speed of the bombers. To prevent this, he said, "we need a high-speed turbine-powered *cargo* aircraft of long range on the same alert as the nuclear bombers." This requirement is known to the major manufacturers, and at least two of them have offered what are known as "swing-tail" cargo jets. These proposals have been publicized in some aviation publications. The planes would be capable of carrying either cargo or passengers.

*(Continued on page 19)*

# PINCH PLASMA ENGINE
## NEW POWER FOR SPACE VEHICLES

***"The experimental model of a new concept . . . a magnetic pinch plasma engine for interplanetary space travel is in operation at our laboratories,"*** *says Alfred Kunen (R) Project Engineer, Plasma Propulsion Project, shown with Milton Minneman of Republic's Scientific Research Staff, during actual operation of the engine. ➤➤➤ Republic's plasma engine unique in that it utilizes intermingled positively and negatively charged particles in a single jet thrust, can operate on fuels more readily available than required for an ion engine, and attains greater thrust. By compressing these particles in an invisible cylindrical magnetic girdle and shooting plasma out the rear at tremendous velocities, sufficient thrust is generated to push a vehicle through the near-vacuum of outer space. ➤➤➤ Republic is working on advanced plasma engine studies for the U. S. Navy Office of Naval Research and the U. S. Air Force Office of Scientific Research. ➤➤➤*

***Today's pinch plasma engine is but one of many bold concepts under development at Republic to create for the space world of tomorrow. It is part of Republic's multi-million dollar exploration into the realm of advanced aircraft, missiles and space travel.***

**REPUBLIC AVIATION**

FARMINGDALE, LONG ISLAND, N. Y.

*Designers and Builders of the Incomparable* **THUNDER-CRAFT**

*Republic's new $14,000,000. Research and Development Center, is scheduled for operation early in 1960.*


A BIG STEP AHEAD

Pratt & Whitney Aircraft's new turbofan engine . . . the JT3D-1 . . . delivers 42% more takeoff thrust and operates on 13% less fuel than the latest JT3 (J-57) jet engine.



The new engine handles 140% more air than the JT3, although basic twin-spool structure and aerodynamics are essentially unchanged. Dry takeoff thrust increases from 12,000 lbs. for the JT3 to 17,000 lbs. for the turbofan.

American Airlines has announced its fleet of Boeing 707s will be converted to our turbofan. KLM will use it in five of its twelve Douglas DC-8s on order.

# POWER IS THE KEY!

The key to flight achievements is dependable power. And dependable power is Pratt & Whitney Aircraft's business.

Nine out of ten of the Boeing 707s and Douglas DC-8s flying or on order are powered by Pratt & Whitney Aircraft's jet turbines. Besides its many contributions to the jet field, Pratt & Whitney Aircraft has made significant advances in nuclear aircraft reactors, solid rocket components, and liquid hydrogen rocket applications.

*Flight Propulsion by* **PRATT & WHITNEY AIRCRAFT**

East Hartford, Connecticut

A division of United Aircraft Corporation

They would comprise what General Tunner calls "our runway alert force."

MATS has not succeeded in having funds allocated for this purpose. Certainly one of the most potent reasons for the failure is the effort, recognized in at least one congressional report, that the Air Transport Association is opposed to anything approaching modernization or strengthening of MATS.

In addition to the jet, General Tunner has for about a year been discussing the possibility of developing a low-operating-cost, long-range workhorse that would be capable of meeting both military and commercial specifications. MATS favors this program and has a mission for the airplane. It is not true that this idea originated with Elwood R. Quesada, chief of the Federal Aviation Agency, and Senator Mike Monroney, although they did promote a program under which airlines could buy the all-cargo aircraft with loans guaranteed by the government. We don't believe MATS or Secretary Douglas or anyone else favors a "Soviet-style" operation. We also have not heard from any authoritative source that USAF or the Department of Defense has opposed the government-guaranteed loan proposal.

Not long ago there was a conference report circulated in Congress in which the House members observed that USAF is not ready to buy new planes but is eager to pursue development of the turboprop T61 engine. It also is clear to the authors of the report that Mr. Quesada would deny USAF funds for the engine work. The FAA chief, the report says, "intimates that MATS should be on its way out."

Pundits, editorial writers, and some congressmen are growing increasingly bitter, inaccurate, and unfair in their condemnation of MATS. The congressional report finds it "disturbing that the Air Transport Association actively enters into the MATS picture every year and in every other phase of aviation that even remotely affects its interests." This is more than a suggestion; it is a charge that ATA is lobbying for the frustration of MATS in its effort to carry out an assignment from the Joint Chiefs of Staff. If Congress finds this "disturbing" Congress should do something about it.

## How to Shoot Down a General

The Defense Department has ruled that a military commander can't write a book about his job. He is free, the Department says, to discuss anything he wishes in official publications, interviews, press releases, on television shows, or before congressional committees. But if he puts this stuff between covers it becomes "inappropriate."

The specific ban was on the book, *Design for Survival*, by Gen. Thomas S. Power, Commander in Chief of the Strategic Air Command. It was the opinion of the Air Force that the opinions and views in the manuscript were purely those of General Power and that they constituted a valuable contribution to military literature. As far as the facts are concerned, all of them were from open sources and already exist in printed form.

The best possible editorial defense of the book was written by General Power himself in the preface to *Design for Survival*. Here it is:

"It was most encouraging to find so much real interest because I maintain that our citizens have not only the right but the urgent need to know the full truth about the problems that are of such vital importance to them. Indeed, I am more concerned about any attempt to keep unpleasant facts from the people than about their reaction to these facts. It has been my experience that the average American is not easily frightened nor discouraged and that, once he knows what is expected of him, no one and nothing can stop him.

"In my discussions, I have endeavored always to present the facts as I knew them, frankly and in terms anyone could understand. To do so on a broader and more inclusive scale is the purpose of this book. It is, therefore, intended neither as a text book nor as a vehicle for advancing startling new ideas and theories. It is intended mainly as a report to our stockholders—some 175 million of them.

". . . I decided to write this book because I sincerely believe that there is a need for it. To be sure, there is already an extensive literature of thorough and thought-provoking studies on every facet of nuclear strategy and policy. But this book was not written for the military or political scientist; it was written for the American people. It was written for them in the conviction that we cannot solve the problems entailed in our design for survival unless the people fully understand these problems and decide to do something about them.

"This country has had problems before, and it has always managed to cope with them once it gained the understanding and support of its citizens. Still, none of the dangers we have faced in the past can compare to the formidable threat of nuclear aggression which we are facing today. Nor will we ever again have the time to plan, to rally, and to act after the aggressor has struck. If he were to strike today, he would find us ready to strike back but ill prepared to ward his blow."

Why it is inappropriate for a military man to face such a responsibility has not been made clear. It has, however, been made clear that the Administration disagrees sharply with General Power's conviction, also expressed in his preface, that the public has become aware that military problems no longer are the "sole concern of men in uniform and their civilian superiors."

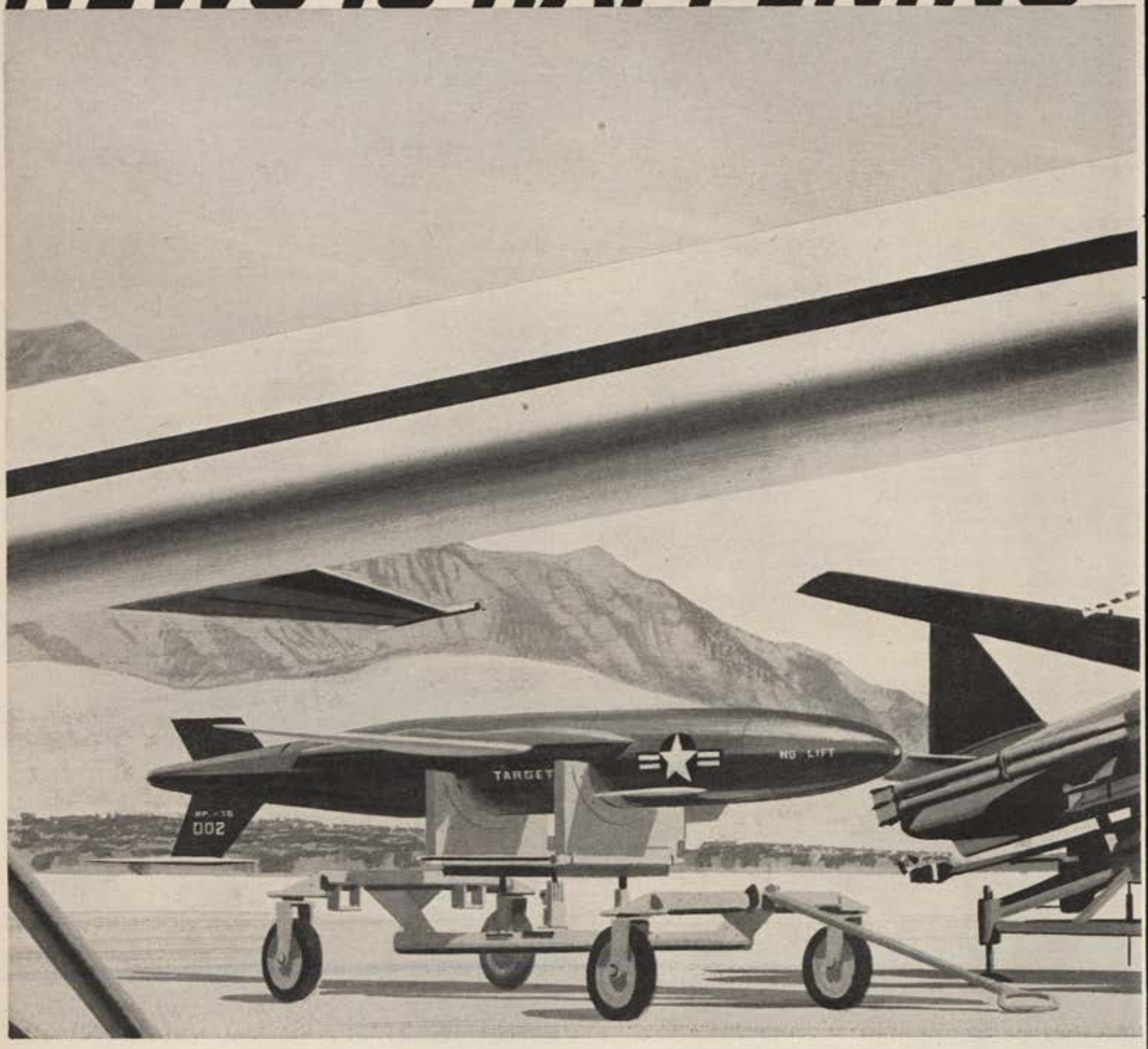
He has found, the General says, that most Americans share an "intense desire to learn more about the threat that the nation is facing and what they, individually and collectively, must do to meet that threat."

There are a lot of important people in the Executive and Legislative branches of the government who dispute this evaluation of the US public. If they want to ignore General Power, they are free to do it. If his book is published, he will be more difficult to ignore.

## Bet on Horses, Not on Youth

It may be fortunate that Arcadia, a suburb of Los Angeles, was not on Mr. Khrushchev's itinerary when he visited the West Coast. In Arcadia ten tents are being used for classrooms because the high school can hold only 2,200 of its 2,700 students. The Superintendent of Schools, identified by the press as William Staerkel, says the situation was forced on him because the voters of Arcadia have rejected two proposed bond issues. Mr. K. could have contrasted this situation with the existence, also in Arcadia, of the Santa Anita race track. There is no evidence of difficulty in financing the track. And at least some of the people at the pari-mutuel windows, it seems reasonable, voted against building schools. We are sure our provocative Russian friend could have used this to illustrate what he meant when he said "we will bury you." He didn't mean in the wreckage of an atom-clobbered race track. He meant in the wreckage of our educational system.—END

# NEWS IS HAPPENING




## RADIOPLANE CREATES FIRST FAMILY OF UNMANNED AIRCRAFT TO TRAIN MEN, EVALUATE WEAPON SYSTEMS, AND SURVEY ENEMY TERRITORY

Radioplane produces an entire family of multi-purpose drones that fly by remote control. As targets, drones perform as aircraft, then are recovered by parachute for re-use. As evaluators, drones simulate the action of enemy aircraft while they score our weapon systems' effectiveness. On surveillance missions, drones fly cameras, take photos, return with information within minutes.

For 20 years, Radioplane has been the leading producer of drones. Radioplane's leadership in the field typifies the years-ahead thinking of Northrop Corporation and all of its Divisions. The Corporation's continuing goal: design concepts for tomorrow, hardware for today – developed, produced, and delivered on time – and at minimum cost.

**NORTHROP**
**CORPORATION** *Beverly Hills, California*

# AT NORTHROP

*Radioplane Drones shown left to right: XQ-4B; RP-76; RP-77D; OQ-19; SD-1.*

**NEWS FROM OTHER MEMBERS OF THE NORTHROP FAMILY**

**NORAIR** designs and builds complete weapon systems, missiles, airframes, related products. In production: Snark SM-62 and the first low-cost twin-jet trainer for America's airmen–the T-38 Talon.

**NORTRONICS** makes news with America's 2 most advanced inertial and astronertial guidance systems – LINS and A-5 – is also a leader in automatic test equipment and mechanical ground support.

**INTERNATIONAL,** Division for foreign operations, is now introducing the supersonic N-156F Freedom Fighter to provide our allies with maximum combat effectiveness – at minimum cost.

**PAGE** Communications Engineers, builders of strategic global networks, has been selected by USAF to link England-Spain-Morocco with troposcatter, telephone, teleprinter and data communications.

# *Solutions to three defense problems demonstrate General Electric's unique systems capabilities*

**GUIDANCE for the Air Force's ATLAS ICBM is provided by a General Electric radio-command system. This system precisely guided ATLAS into orbit around the earth on December 18th as part of Project SCORE.**

**Formation of Defense Systems Department continues to magnify General Electric's military systems skills.**

The new focal point for defense systems capabilities within General Electric, the *Defense Systems Department* offers the specific skills required to provide the solution to the total system requirements of the military departments of the Department of Defense and other government agencies. More than this, the Department can bring to bear proven capabilities including the long-range planning and feasibility studies required for vital defense projects like those pictured here.

The General Electric Company has assigned top systems management and technical talents to the Defense Systems Department. The Department's charter provides specifically for centralized program management with pin-pointed authority, responsibility, and accountability. And it can bring to bear the full resources of a Company whose manufacturing activities cover 14 of the 21 basic industries listed by the Department of Commerce.

For more information—or for a copy of brochure GED-3760, describing the Department's weapon and support system capabilities—write to Defense Systems Department, P.O. Box 457, Syracuse, New York. 226-2

**SEARCH RADAR produced by General Electric detects air targets at greater ranges and higher altitudes than present detection systems. This FPS-7 system determines height, range and azimuth simultaneously.**


**TROPOSPHERIC SCATTER SYSTEM designed and developed by General Electric accomplishes over-the-horizon communications by beaming and reflecting from the troposphere. Defense Systems Department engineers are now applying this concept to development of advanced communications systems.**

**DEFENSE SYSTEMS DEPARTMENT**
OF THE DEFENSE ELECTRONICS DIVISION

**GENERAL ELECTRIC**

SYRACUSE, NEW YORK

# FLIGHT LINES

**Dr. Alexander H. Flax, VP of Cornell Aeronautical Lab, is the new AF Chief Scientist.**

**Wilfred J. McNeil, Ass't Secretary of Defense, Comptroller, since 1947, has resigned.**

**Gen. Curtis LeMay presents the 1958 Cheney Award to SAC 1st Lt. James E. Obenauf for saving a crew member and his crippled B-47 last April. Proud Mrs. Obenauf at right.**

The twin-jet Freedom Fighter, **Northrop N-156F,** designed for multipurpose use with NATO and SEATO countries, **exceeded Mach 1 on its maiden flight.** Designed to operate from **short runways or hidden emplacements,** the N-156F is expected to reach **Mach 2 with further engine improvements.** Equipped with **Sidewinders** and a variety of other weapons, the Freedom Fighter will be able to destroy an aggressor's airpower either in the air or on the ground.

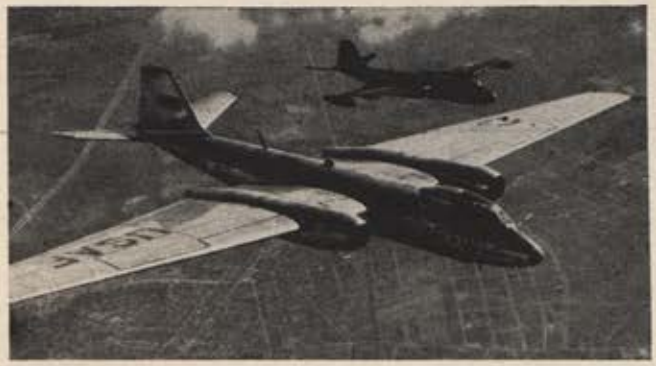
Sons of current or former military men who plan to **enter the Air Force Academy** can get some real assistance from the **Gertrude Skelly Trust,** a new educational fund of a quarter of a million dollars. Mrs. Skelly, widow of William G. Skelly, founder of the Skelly Oil Co., created the trust to pay **prep school expenses** for about thirty young men each year. **Harold C. Stuart,** Tulsa lawyer, who was Assistant Secretary of the Air Force from 1949 to 1951, president of AFA in 1952, and AFA board chairman in 1953, will administer the trust, along with **Russell F. Hunt,** executive vice president of the Tulsa First National Bank and Trust. Inquiries should be directed to the **Gertrude Skelly Trust, Box 1349, Tulsa, Okla.**

The last new **Lockheed T-33** jet trainer was delivered to **Air Training Command** in August, number 5691 of an aircraft that was in production for almost twelve years, at a total **value of $570 million.** The T-Bird, originally adapted from the Lockheed F-80 Shooting Star as a transitional jet trainer, helped more than **27,000 Air Force pilots win their wings.** It is now in service with **twenty-six nations.**

**Names in the News: Charles S. Logsdon,** official timer and record keeper for the National Aeronautic Association for over twenty years, resigned in June to join the Aircraft Owners and Pilots Association as a consultant. . . . **Maj. Gen. John W. Sessums, Jr.,** who retired in June as vice commander of ARDC after thirty-three years of service, is the new chairman of the board of the Grand Central Rocket Co. . . . Chief of the new International Field Service Division of the Office of International Coordination of FAA is **Howard W. Helfert,** formerly with ICAO and CAA. . . . **James P. Falvey,** chairman of the board of the Electrolite Company, in Toledo, Ohio, is the new Deputy Assistant Secretary of Defense for Supply and Logistics, to aid Assistant Secretary **Perkins McGuire** in the areas of transportation, supply, communications, petroleum, procurement, production, planning and requirements, and small business. . . . **Richard S. Johnson** of Arlington, Tex., is the 1959 US National Soaring Champion. Flying a German-designed Weihe sailplane, he won the 26th National Soaring Competition at Harris Hill, Elmira, N.Y., in July. . . . **Captain Eddie Rickenbacker,** president and chief executive officer of Eastern Air Lines since he founded the airline over twenty years ago, resigned as of October 1. His job with Eastern was taken over by **Malcolm A. MacIntyre,** Air Force Under Secretary from May 1957 to July 1959. Rickenbacker, who raised the money to buy the Eastern Air Transport Division of General Motors to found Eastern Air Lines in 1938, will continue as chairman of the board and a key member of a new seven-man policy-making committee.

**STAFF CHANGES . . . Maj. Gen. Harold R. Maddux** has been reassigned from duty as Director, Manpower and Organization, DCS/Operations, Hq. USAF, Wash., D.C., to become Commander, 10th AF, CONAC, Selfridge AFB, Mich. His former deputy, **Brig. Gen. Thomas J. Gent, Jr.,** was promoted to replace General Maddux. The former 10th AF Commander, **Maj. Gen. Robert E. L. Eaton,** was assigned to the Office of the Chief of Staff, Hq. USAF, Wash., D.C., as Assistant Chief of Staff for Reserve Forces, replacing **Maj. Gen. Richard A. Grussen-**

*(Continued on following page)*



SAC reconnaissance jet bomber, Martin RB-57D, flies ahead of the black B-57, TAC bomber, for first official photo. RB-57D, now operational, is based at Laughlin AFB, Tex.

Cessna Model 210, new high-wing, retractable landing gear craft, has top speed of 199 mph, gross weight of 2,900 pounds, cruises at 190 mph at 7,000 feet. Price $22,450.

dorf, who became Director, Secretary of the Air Force Personnel Council, also at USAF Headquarters.

**Brig. Gen. Robert F. Burnham** has been relieved of duty as Executive to the Under Secretary of the Air Force to become The Provost Marshal in the Office of The Inspector General, Hq. USAF, Wash., D.C. . . . **Maj. Gen. Edward H. Underhill,** who was Commander of Eastern North American Air Defense (Continental Air Defense) Region, was named Senior AF Member, Military Studies and Liaison Division, Weapons Systems Evaluation Group, OSD, replacing **Maj. Gen. Millard Lewis,** who is the new Commander, USAFSS, Kelly AFB, Tex. General Lewis replaced **Maj. Gen. Gordon A. Blake,** who is now Vice CinC and Chief of Staff, PACAF, APO 953, San Francisco, Calif.

**Brig. Gen. Edwin S. Chickering,** former Assistant Chief of Staff, Operations, PACAF, has become Commander, 6486th Air Base Wing, PACAF, and Commander, 326th Air Division, Hawaiian Air Defense Division, APO 953, San Francisco, Calif. General Chickering replaced **Brig. Gen. Paul T. Preuss** who is the new Deputy Director of Research and Development in DCS/Development, Hq. USAF. . . . **Brig. Gen. Neil D. Van Sickle,** who was Chief of Staff, US Taiwan Defense Command/MAAG, replaced General Chickering at PACAF.

The former Vice Commander in Chief, PACAF, **Lt. Gen. Emery S. Wetzel,** is now with the UN Command, US-Korea Joint Activities, APO 925, San Francisco, Calif. . . . **Brig. Gen. Richard T. King,** who was Vice Commander, Air Proving Ground Center, ARDC, Eglin AFB, Fla., is the new Chief of the Air Section, Joint Brazil US Military Commission, and Chief, Air Section, MAAG, Brazil. . . . **Brig. Gen. William G. Lee, Jr.,** has been reassigned from Vice Commander, 13th AF, to duty with Air Task Force 13, Provisional, APO 63, San Francisco, Calif.

**Lt. Gen. Mark E. Bradley, Jr.,** was promoted from Assistant DCS/Materiel, Hq. USAF, to become DCS/M. . . . **Brig. Gen. Elliott Vandevanter,** former Chief of Plans Branch, Plans and Policy Division, SHAPE, is now Director, European Region, Office of the Assistant Secretary of Defense, Wash., D.C. . . . **Brig. Gen. Henry C. Newcomer,** who was Commander, 50th Tactical Fighter Wing, USAFE, is Commander, Turkey-US Logistic Group, APO 254, New York.

Former Commander, CADF and Central North American Air Defense Region, **Maj. Gen. John D. Stevenson,** was reassigned as Commander, WADF and Western North American Air Defense Region, ADC, Hamilton AFB, Calif. . . . General Stevenson will be replaced by **Maj. Gen. Wendell W. Bowman,** who was his Vice Commander.

**Brig. Gen. Henry C. Huglin** has been relieved of duty as Chief of Staff to the US Representative to the Military Committee and Standing Group, NATO, to become Deputy US Representative in the same office. . . . **Lt. Gen. Truman H. Landon,** former Commander, CAirC, is the new DCS/Personnel, Hq. USAF.

**Brig. Gen. Joseph A. Cunningham,** who was Deputy Commander, Air Rescue Service, MATS, has moved up to Deputy Commander, ARS, Orlando AFB, Fla. . . . **Brig. Gen. Christian F. Dreyer,** former Deputy Director of Civil Engineering, AMC, Wright-Patterson AFB, Ohio, was made civil engineer, AMC, replacing **Brig. Gen. Francis C. Gideon,** who became Director of Transportation, AMC, in turn replacing **Brig. Gen. Emmett B. Cassady,** who replaced **Brig. Gen. Donald L. Hardy** as Director of Personnel and Support Operations, AMC. General Hardy is the new Director of Plans and Programming, AMC.

**Maj. Gen. Thomas C. Musgrave, Jr.,** former Director of Manpower Requirements, Office of the Assistant Secretary of Defense, replaced **Maj. Gen. William P. Fisher** as Director of Legislative Liaison, OSAF, Hq. USAF. General Fisher is now Commander, EASTAF, MATS, at McGuire AFB, N. J. . . . **Brig. Gen. John K. Hester,** who was Chief of Staff, 2d AF, SAC, is the new Deputy Director for Operational Forces, DCS/Operations, Hq. USAF. . . . **Brig. Gen. John S. Samuel** has been relieved from duty as Commander, 816th Air Division, SAC, to be Commander, 825th Air Division, SAC, Little Rock AFB, Ark. . . . **Brig. Gen. Paul S. Emrick,** former Deputy Director of Plans, SAC, was reassigned as Deputy Director, Net Evaluation Subcommittee, National Security Council, Wash., D.C.

**Brig. Gen. John E. Dougherty,** former Commander, 38th Air Division, SAC, is now Assistant to the Commander, ARDC, Andrews AFB, Md. . . . **Maj. Gen. Sam Maddux, Jr.,** former Deputy Chief of Staff for Flying Training, ATC, is now Senior Member, UN Military Armistice Commission, APO 301, San Francisco, Calif. . . . **Brig. Gen. Norman L. Callish** has been relieved from duty as Commander, 3610th Navigation Training Wing, ATC, to become Commander, 3535th Navigation Training Wing, ATC, Mather AFB, Fla., replacing **Brig. Gen. Dwight O. Monteith,** who is now Chief of Staff, ATC, Randolph AFB, Tex. . . . Also at Randolph, **Brig. Gen. Clair Wood** was reassigned from Inspector General, ATC, to become Deputy Chief of Staff, Personnel, ATC.

**Brig. Gen. Theron Coulter,** former Commander, 20th Air Division, ADC, has replaced **Brig. Gen. George B. Greene** as Deputy for Personnel, ADC, Ent AFB, Colo. General Greene is now Chief of Staff, ADC.

—MICHAEL B. MILLER

**PLANNED COST REDUCTION:** Each Westinghouse defense division has closely controlled programs to reduce costs. Manufacturing, engineering and accounting representatives establish goals in advance and see that they are achieved. Here, for example, members of the *Electronics Division* group inspect an automatic assembly device designed to help the division reduce production costs $630,000 in 1959.

# Here's how Westinghouse manufacturing capabilities produce better defense systems faster, at lower cost

**MODERN INSTRUCTION METHODS** introduced by Westinghouse result in considerable savings in time and money. Video Instruction Technique (VIT), shown in use at *Air Arm Division*, eliminates costly, time-consuming training. Using this method, untrained personnel progress from one assembly to another without prior instruction.

**GROUPED FOR EFFICIENCY:** Baltimore divisions of Westinghouse are located near each other for quick interchange of information, personnel and equipment, to meet schedules and balance work loads. The *Air Arm* and *Electronics* divisions, shown below, are adjacent to Baltimore's Friendship International Airport.

CONTINUED

# Here's how Westinghouse manufacturing capabilities produce better defense systems faster, at lower cost

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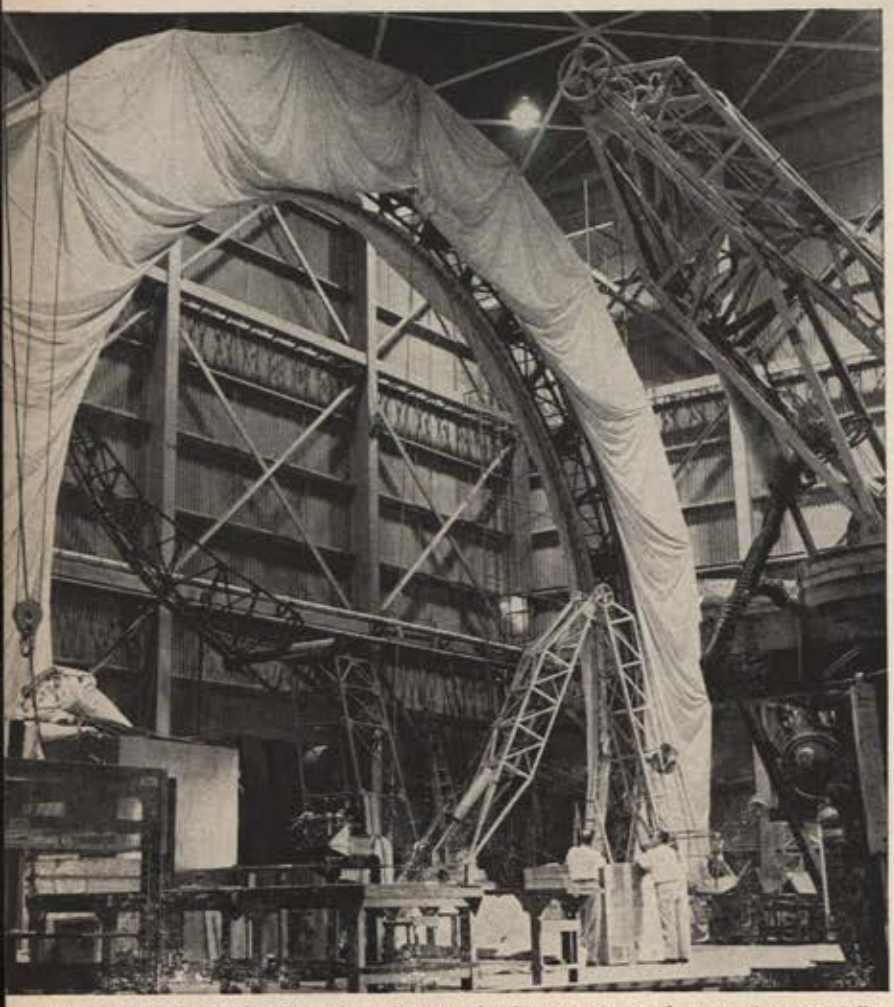
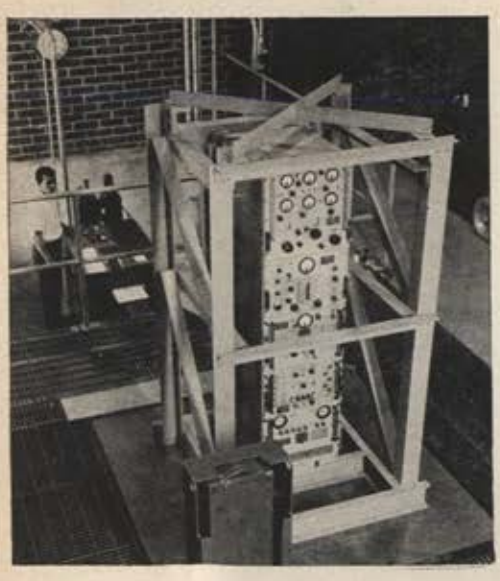


**SPECIAL FACILITIES:** Efficient production of military systems often requires specially designed facilities. Above, *Electronics Division* antenna "hangar", built for assembly and testing of the "PARABALLOON" air-inflated antenna.



**ENVIRONMENTAL TESTING:** Military equipment must function reliably under extreme operating conditions. To insure such performance, each Westinghouse defense division makes available the most modern environmental test equipment. Here , a Navy shipboard transmitter undergoes vibration test at *Electronics Division*.

**ADVANCED DEVELOPMENTS:** The world's first brushless generators, shown at right, are typical of Westinghouse advances. Built by the *Aircraft Equipment Department*, these revolutionary brushless generators have performed for thousands of dependable hours. They are used in advanced electrical systems provided by Westinghouse for today's military and commercial jet planes.

**AUTOMATIC TESTING:** Tape-controlled automatic equipment lowers test and inspection costs at Westinghouse defense plants. These controls are used in production as well as in environmental testing. Above, the Westinghouse-developed Self Programming Automatic Circuit Evaluator (SPACE) at the *Electronics Division* performs circuit tests 70 times faster than can be done manually.

**LOW COST TOOLING:** Westinghouse reduces manufacturing costs through extensive use of plastic tooling techniques. This flexible mold was fashioned at the *Air Arm Division* from one original machined part. It can be used to produce hundreds of duplicate plastic parts to exact dimensions in a fraction of the time required under previous methods. Cost reductions average five to one.

**MASS PRODUCTION CAPABILITY:** Aircraft engines come off the line at the 85-acre plant of the *Aviation Gas Turbine Division*. Facilities like these offer exceptional capacity for mass producing military items to rigid specifications.

**ADVANCED TECHNIQUES** reduce costs and manufacturing time while maintaining high quality standards. Above, a Westinghouse-modified punch press at the *Air Arm Division* operates automatically by tape or dial control. It reduces lead time, cuts costs 60 to 70 percent over use of templates.

**AUTOMATIC EQUIPMENT:** Use of automatic equipment like the welding machine above at the *Ordnance Department* gives time savings of 6 to 1 over manual methods. Automatic machinery also assures uniform high quality and low costs.

**PROGRAM VISIBILITY:** Efficient scheduling and shop loading are programmed at a glance by manufacturing planners keeping up-to-the-minute charts on individual equipments, manpower, machine loadings, material and assembly flow. Chart room below is at *Air Arm Division*.

**REDUCED PRE-PRODUCTION COSTS:** This new Westinghouse data communications system cuts up to 50 percent from time lapse between design and data availability for weapons production. Called MMI (Mechanized Manufacturing Information), the system is used by *Air Arm Division*

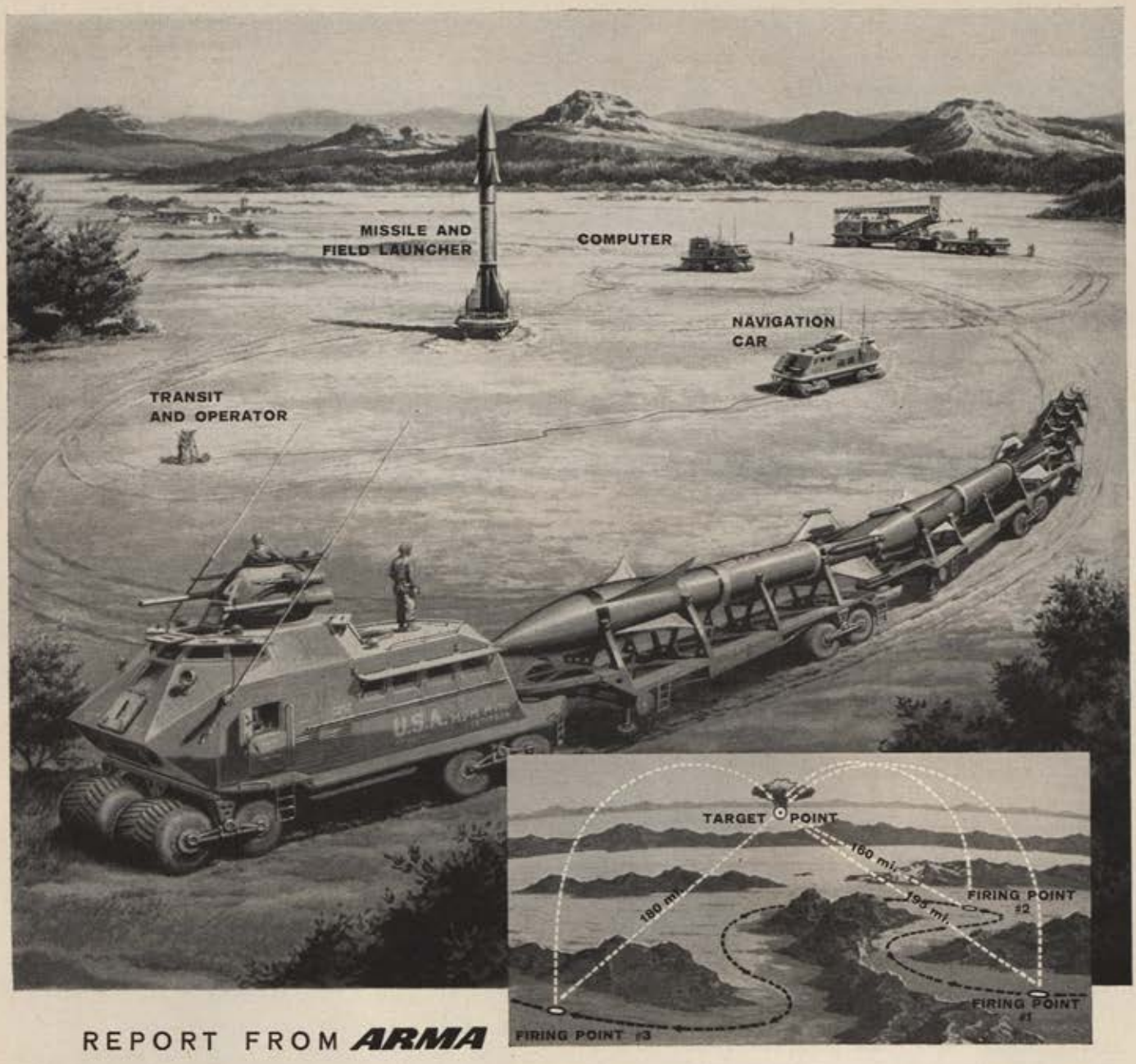
# Westinghouse

**DEFENSE PRODUCTS**

**1000 CONNECTICUT AVENUE, N.W., WASHINGTON 6, D.C.**

AIR ARM DIVISION
AVIATION GAS TURBINE DIVISION
ELECTRONICS DIVISION
AIRCRAFT EQUIPMENT DEPARTMENT
ORDNANCE DEPARTMENT
WASP

**YOU CAN BE SURE... IF IT'S Westinghouse**




REPORT FROM **ARMA**

# *The Missile Train—Mobile Sunday Punch*

In the foreground above is the missile train—a hit-and-run Sunday punch for our modern Army. In event of war, the train could fire a missile with nuclear warhead, move rapidly miles away, then fire other missiles . . . without becoming a vulnerable stationary target itself. The missile train would be an ever-present threat to the enemy's tactical units over a wide area.

For such imaginative projects as the missile train, which combines maximum mobility with maximum firepower, ARMA has developed an equally imaginative universal navigation system. Not only can ARMA systems rapidly locate and aim all types of Army missiles, but they are applicable to all types of land, sea and air operations. To the Army, ARMA offers precise vehicular navigation systems for use in artillery and missile survey, combat vehicles, tanks, and helicopters as well as remote control types for mine detection and atomic blast survey. Precision navigation systems are ARMA's business from ships to ICBM's and—beyond.

ARMA, Garden City, N. Y., a division of American Bosch Arma Corp. . . . the future is our business.

6886

**AMERICAN BOSCH ARMA CORPORATION**

AIR FORCE
OCTOBER 1959

# 'The Witness Is Directed...'

## A SPECIAL REPORT ON THE HEBERT SUBCOMMITTEE INVESTIGATION

Claude Witze
SENIOR EDITOR

DRAWINGS BY JOSEPH HARRILL

*For two long, hot months this past summer a subcommittee of the House Armed Services Committee has been looking into how this nation obtains the weapons it needs to preserve its existence. The inquiry had as its professed goal the study of the rules governing the employment of retired officers by firms holding defense contracts. Important as this subject is, it quickly became apparent that the real issue concerned the basic validity of the industry-government team approach to research, development, and procurement of weapon systems. The nature of modern war inevitably caused the subcommittee to focus its*

*attention on procurement of aircraft and missiles and therefore upon the Air Force and the industrial organizations associated with it. It is almost paradoxical that the American system, which seeks to take full advantage of a free society in meeting national security requirements, should be under such critical examination from within while it is devoting so much essential effort to the defense of the society from which it springs against threats from without. The issues raised in the Hébert subcommittee hearings have not, in the opinion of the Editors of* AIR FORCE/SPACE DIGEST, *been accorded either the amount or the kind of coverage they deserve. The battle of the headlines has tended to blur the real significance of these issues in many minds. It is our purpose, then, to present here an interpretative analysis of what went on in Room 313A of the Old House Office Building this summer.*—THE EDITORS

CONGRESSIONAL investigations have been praised and damned, depending on the point of view, for many decades.

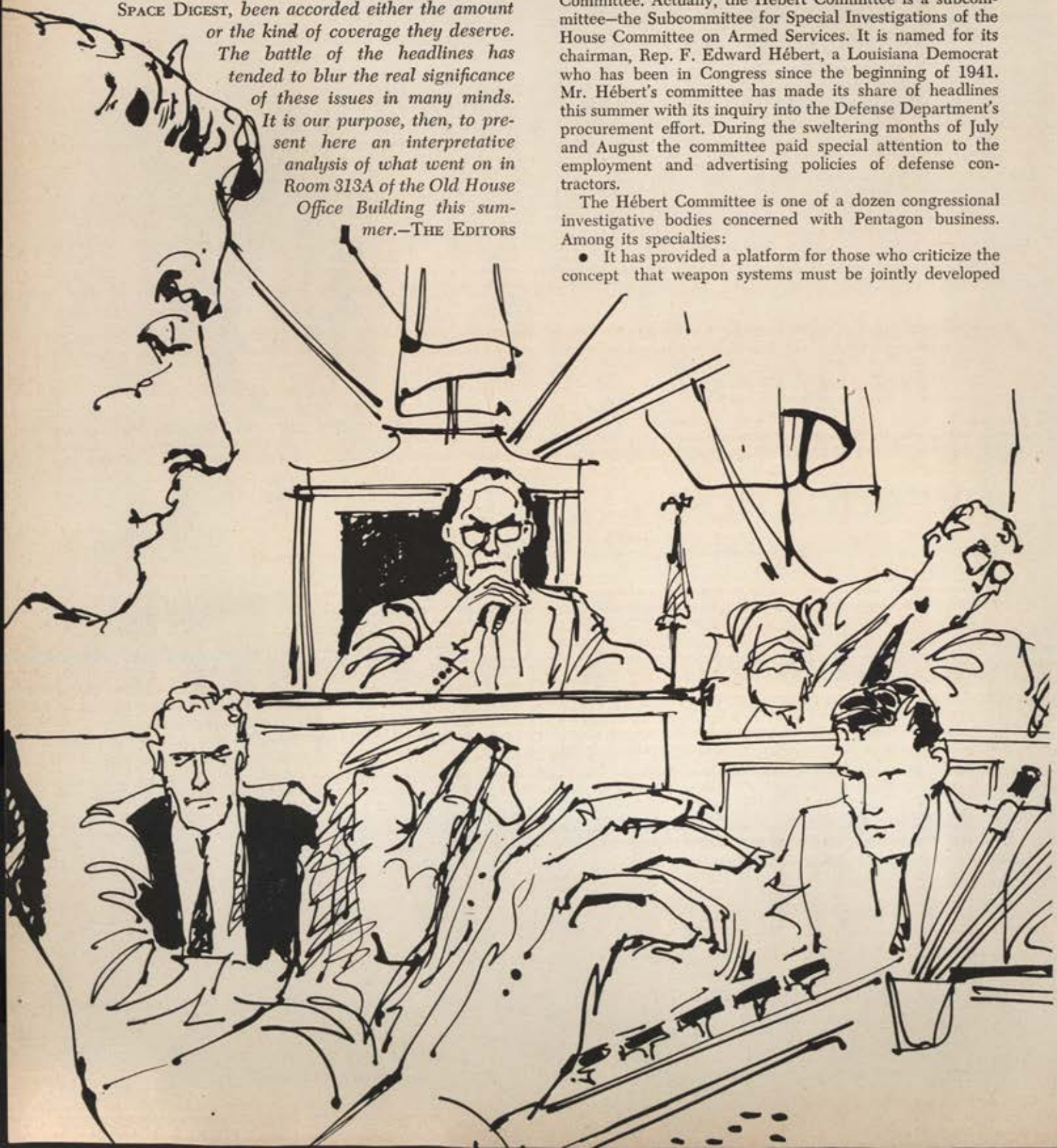
A prominent senator says the investigations provide the legislative branch with "eyes and ears and a thinking mechanism."

On the other hand, an experienced newsman recently told the American Political Science Association that "the ingenuity of man never has devised a means for obtaining information less effective than the procedure customarily employed by congressional probers."

Support for both sides of this argument can be found in the efforts of what headline readers know as the Hébert Committee. Actually, the Hébert Committee is a subcommittee—the Subcommittee for Special Investigations of the House Committee on Armed Services. It is named for its chairman, Rep. F. Edward Hébert, a Louisiana Democrat who has been in Congress since the beginning of 1941. Mr. Hébert's committee has made its share of headlines this summer with its inquiry into the Defense Department's procurement effort. During the sweltering months of July and August the committee paid special attention to the employment and advertising policies of defense contractors.

The Hébert Committee is one of a dozen congressional investigative bodies concerned with Pentagon business. Among its specialties:

- It has provided a platform for those who criticize the concept that weapon systems must be jointly developed



and produced by the Defense Department and American industry working as a team. These critics range all the way from crackpots who write anonymous letters to congressmen, to the General Accounting Office, which unearths genuine errors in military and industry bookkeeping. The *modus operandi* of the Hébert Committee has exposed the crackpots and corrected many of the errors. Reckless charges have been effectively refuted. The exposure of accounting errors has helped the military in monitoring contract details.

● The Hébert Committee likewise provides a platform for the persons and companies being criticized. Some take advantage of this opportunity. Too many do not. Too many fail in their obligation to put positive and outspoken statements in the record, sometimes through ignorance, more often through timidity. Indeed, the minority that does speak up is looked upon with awe, and some disfavor, by fellow witnesses. The latter take the viewpoint that a witness should only answer questions, never volunteer any information. But the record does not show that any witness was denied an opportunity to expand on his ideas or offer an observation not directly stimulated by a question. Failure to take advantage of this freedom is to forfeit one of the few privileges offered to the man on the stand.

● The Air Force and the aviation industry have borne the brunt of Hébert Committee scrutiny. This is logical in view of the fact that they consume the lion's share of the Defense Department budget. At the same time, they provide ninety percent of this country's deterrent power, and nobody has denied them the lion's share of the credit for keeping the peace. All of the weapon systems contributing to this power, with the single exception of the Jupiter intermediate-range ballistic missile, are products of the Air Force-industry team. This means that the Air Force and the airframe and related industries must be the most frequent targets of the critics, be they crackpots, irresponsible journalists, or GAO accountants.

● None of the subjects under the Hébert Committee microscope can be separated entirely from the others, and none is new to the committee. The inquiry is not devoted, per se, to retired officers, or industry advertising, or trade and service organizations, or Air Force management. It is a check on the system, on the performance of both the military and industry members of the team. The committee's interest in the role of retired military officers in defense industry, for example, goes back more than three years. It issued a warning on the subject in 1956, a sort of byproduct to an investigation which centered on aircraft production costs and profits. After examining the records of a dozen major companies the committee concluded that there had been, on the average, no excessive profits. Some committee members feel that the industry accepted the 1956 report as a verdict of not guilty, ignoring some of the collateral observations that were made.

Apart from the chairman, the key man at any Hébert Committee hearing is John J. Courtney, sixty-year-old counsel who has been serving the House Armed Services Committee since 1951. Mr. Courtney is a genial, loose-boned lawyer, who looks more like a New Englander than a native of Illinois, where he was born at Rock Island in 1899. He was educated at the Georgetown Law School in Washington, D. C., and first admitted to the bar in Minnesota in 1922. He is a member of the bar in the District of Columbia and the State of Maryland. His career includes service as a special assistant to the US Attorney General from 1933 to 1945. In 1945 the Secretary of the Navy gave him the Distinguished Civilian Service Award following a wartime assignment in the Navy Department.

Mr. Courtney directs a staff of five men but is reluctant to talk about their assignments and activities. None of them, he says, has had experience in defense industry, and he indicated that he would not favor this kind of experience for his staff. Some of his staff members, however, have helpful backgrounds in military procurement. Two temporary employees were put on the staff this summer, both from Mr. Hébert's home state of Louisiana. Mr. Courtney says that his staff investigators take field trips but that these trips are not frequent. For this summer's sessions almost all the information was gathered from questionnaires circulated by mail.

Counsel Courtney takes pride in the steady nonpartisanship of the Hébert Committee, pointing out that there are no important differences of opinion and no minority reports. In conversation, as well as in the hearing room, Mr. Courtney gives evidence of wide familiarity with defense contracting, much of it obviously going back to his service with the Attorney General during the war. He is intimately familiar with such controversial legislation as the Renegotiation Act and incentive-type contracts.

"This committee," Mr. Courtney says, "serves all shades of opinion, and it must take great care to see that all of them are recognized. We have only one business and that is to get the facts that will lead to good legislation. Our purpose is not exposure of evil but a high standard of legislative responsibility. It is not our job to find out whether someone broke the law. It is our job to determine whether the laws are adequate."

Chairman Hébert shares with Mr. Courtney the conviction that his committee is not trying to embarrass anyone, although there are times when his words and tone indicate otherwise. He is vigorous in declaring that there is no assumption of guilt by the committee, a statement that is reassuring except when offset by a remark that history fails to support the integrity of defense contractors. It is

*(Continued on following page)*

also evident that some of the more unfair headlines have originated with Mr. Hébert, whether by his inspiration or through misinterpretation of his statements is not clear.

The chairman is fifty-eight years old and a shrewd politician. He combined this shrewdness, along with a basically fair approach to the problem, when he was faced this summer by a stubborn witness. The man on the stand was Vice Adm. Hyman Rickover. Admiral Rickover had told another hearing, before the House Committee on Government Operations, of certain "pressures" put on him by individuals. Mr. Hébert asked the Admiral, in open hearing, for a list of the persons who applied "pressure." Admiral Rickover was humbler than usual but adamant.

He explained that influence is a subtle thing, and it is difficult to distinguish between pressure and presentation of a point of view. To disclose publicly the names of persons who tried to influence his decisions, the Admiral said, might result in grave injustices. He agreed to compile a private list for the committee; and Mr. Hébert, who clearly had expected the names to hit the headlines, agreed to take responsibility for protecting the innocent. Later, Mr. Hébert said the Admiral did the proper thing "because we do not believe in throwing names out in the open where somebody can be hurt unduly." This did not explain why it was the Admiral and not the chairman who opposed public disclosure at the outset. The list, incidentally, put no grist in the committee's mill. Mr. Hébert allowed that he was "very happy" with the outcome. Said he, in a revealing statement: "I held Admiral Rickover to one touchdown before the committee and he usually scores seven or eight. . . . I personally think he either should have said he had these people's names and was very ready and willing to give them . . . or else he should have said he was in error and had made a mistake."

There is evidence that the chairman has altered, or at least modified, some of his views as the hearings have progressed, proving that the educational efforts of some witnesses are effective. One area in which this appears to be true is the one known to those who regularly attend the hearings as the "myth of the taxpayer's dollar."

At the outset of this summer's sessions, Mr. Hébert announced that every citizen has a right to know the use of every dollar paid in taxes. He held that this is true of retirement pay of the military and all income derived from government contracts. It later became clear that he considered the "taxpayer's dollar" still the business of the taxpayer even after it had been put in the pocket of a retired officer or had become part of the legitimate profits of a defense contractor.

This concept was torpedoed by two of the more aggressive witnesses. One, Rep. Paul J. Kilday, Texas Democrat, a fellow member of the parent Armed Services Committee, made it clear that the government pay given to retired officers is considered earned income. These post-service payments, Mr. Kilday said, are taken into consideration when military salaries are set, and the money, once the check is cashed, belongs to the retired officer.

Another witness, Wellwood E. Beall, Senior Vice President of Boeing Airplane Company, made an identical point about his firm's profits. In one exchange Rep. Leon H. Gavin, Pennsylvania Republican, waved a Boeing advertisement and demanded: "Was this paid for with the taxpayer's dollar?" Here is what followed:

MR. BEALL: "You get paid by the taxpayers and after you get your money and pay your income tax, what is left you feel is yours and not the taxpayer's money, I am sure.

"Well, this is exactly what happens in our company. We get paid by the taxpayers for goods delivered. . . . We do make some profit because profit is the American way.

"All right. After we have paid the taxes due on that, the profit is ours, and we can do what we want with it. We paid for that ad out of our profit, and the government and the taxpayers did not pay one cent of it."

From this point on there was a noticeable lack of em-

**F. EDWARD HEBERT,** Democrat from Louisiana, Chairman. His name is properly pronounced "A-Bear." He is fifty-eight years old and has been in the House continuously since 1941. He was a newspaperman—city editor of the New Orleans *States*—and says he ran for Congress in the first place to build up some contacts that would help him as a reporter. A political editor himself and a columnist for many years, Mr. Hébert is popular with the press corps.

F. Edward Hebert (D.-La.)

William A. Winstead (D.-Miss.)

**WILLIAM ARTHUR WINSTEAD,** Democrat from Mississippi, describes himself as a farmer and educator. He is fifty-five years old, a graduate of Mississippi Southern College. He was twice elected Superintendent of Schools in Neshoba County before he was chosen to go to Congress in 1942. Among the committee Democrats, he is next to Mr. Hébert in seniority, but he has not taken an active part in recent hearings or put any opinions into the record.

**MELVIN PRICE,** Democrat from Illinois, serves on both the Armed Services Committee and the Joint Committee on Atomic Energy. He has taken a major interest in the nuclear airplane program, on which he is something of an expert, and displays a good grasp of the problems in other weapon system areas. He is fifty-four years old and was in an Army uniform when first elected to Congress in 1944. Like Mr. Hébert, he once was a newspaperman.

Melvin Price (D.-Ill.)

O. Clark Fisher (D.-Tex.)

**O. CLARK FISHER,** Democrat from Texas, was born on a ranch and still operates one on which he raises sheep and goats. His two-line biography in the *Congressional Directory* sets a record for brevity, but it is known that he has a law degree from Baylor University and once was District Attorney of Tom Green County. He probably is the most quiet member of the committee. He has introduced a bill calling for a substantial cut in US taxes.

phasis on the final disposal of the taxpayer's dollar.

Mr. Gavin, who dominates the Republican side of the committee in steady attendance and steady questioning, is a large man, heavy jowled and bald, loud of voice. He is an expert in sarcasm. An Army sergeant in World War I, he betrays sympathy for the Army viewpoint. He has been in Congress continuously since first elected in 1942. Inclined to be sharply critical of the aircraft industry, he is equally alert to Air Force testimony and pounces quickly on any suggestion from the General Accounting Office that USAF has been lax in any detail. On hot summer week ends he is a frequent visitor to the swimming pool at Bolling Air Force Base, near Washington.

One viewpoint that illustrates Mr. Gavin's understanding of defense is his conviction that the Air Force should not have operational control of surface-to-surface missiles, including the ICBM and IRBM now assigned to the Strategic Air Command. "That," Mr. Gavin says, "is a ground force operation."

Mr. Gavin's persistence in tangential matters sometimes irritates Chairman Hébert to the point where he acts to change the subject. Mr. Hébert also does not hesitate to correct the record if he senses his Republican colleague is overlooking an essential fact.

In somewhat striking contrast to Mr. Gavin is the other most active Republican on the committee, Rep. William E. Hess, from Ohio. An attorney and a man of long experience in government, Mr. Hess is soft spoken, precise, and fair. He is an important balance wheel, for his attendance record is good and, aside from the chairman, he is the one man who shows evidence of doing his homework.

Mr. Hess appears armed, from time to time, with choice bits of information that make a substantial contribution to the record at the proper time and place. A good example of this was the day the witness stand was occupied by Drew Pearson and Jack Anderson, the newspaper columnists. Mr. Pearson made a string of charges, later shown to be false, against Dr. Richard W. Porter of the General Electric Company. They involved the final selection of a GE engine for first-stage propulsion of the Vanguard satellite, of which Pearson said flatly that the engine "never did function properly."

Congressman Hess came back a few minutes later with the information that he had asked some questions about this engine himself and that it had a perfect record. Drew Pearson said he is almost certain that this is not true. A week later there was entered in the record a letter from Dr. John P. Hagen, head of Project Vanguard, certifying that Mr. Hess was right and Drew Pearson was wrong.

The other Republican on the Hébert Committee is Walter Norblad of Oregon, who served in the Air Force in World War II. His attendance record during the summer sessions was not as good as that of Mr. Hess and Mr. Gavin, and there was no noticeable pattern to his questioning in cross-examination.

Aside from Chairman Hébert, the most active Democrat on the committee is Porter Hardy of Virginia, described by newsman Jerry Greene as an expert at "gumming up a witness." In the corridors outside the hearing room one of the most common remarks is that "Hardy is a hard man. He's smart. And mean." The Hardy technique is to keep burrowing for the most obscure facts, in the constant hope that one of them may be the exception to prove that the witness has not told the *whole* truth. Usually this is done by restating the question several times, with slightly different language and emphasis. In at least one case, this resulted in having the witness use a word—"pressure"—that was not of his own choosing and with which he was later highly embarrassed.

Mr. Hardy's district includes Norfolk, home of an important Navy installation. This has sharpened his knowledge of naval affairs and makes him alert to Navy interests. Although he is the junior Democrat in point of service—

*(Continued on following page)*

**PORTER HARDY, JR.** Democrat from Virginia, says he is a businessman-farmer and confesses that he once was a salesman of refrigerators. He is fifty-six years old, is a graduate of Randolph-Macon College, and has studied at the Harvard Graduate School of Business. Possibly the most persistent questioner on the committee, he displays tenacity in making sure nothing is overlooked. He represents the Norfolk area, where Navy interests are important.

Porter Hardy, Jr. (D.-Va.)

William E. Hess (R.-Ohio)

**WILLIAM E. HESS** Republican from Ohio, is his party's senior representative on the committee. A veteran of World War I, he still holds rank as a lieutenant commander in the US Navy Reserve. He is sixty-one years old, a lawyer, and been in the House almost steadily since 1929, missing only two Congresses since that time. He is a cool and conservative balance wheel and clearly has won high respect from Chairman Hébert.

**LEON H. GAVIN,** Republican from Pennsylvania, was Secretary of the Chamber of Commerce in Oil City, Pa., before he went to Congress in 1943. He was an Army sergeant in World War I and still has the kind of vocal cords usually attributed to that profession. A strong Army partisan, he has earned a reputation for having an open mind, always ready to hear another point of view. He is sixty-six years old, a native of Buffalo, and has little formal education.

Leon H. Gavin (R.-Pa.)

Walter Norblad (R.-Ore.)

**WALTER NORBLAD,** Republican from Oregon, is the lone Air Force veteran on the Hébert Committee. He served as a combat intelligence officer in the Eighth Air Force in World War II. He is fifty-one years old and was educated as a lawyer at the University of Oregon and Harvard Law School. He served four years in the Oregon legislature before his military career and first was sent to Congress in a special election held in 1946.

## 'THE WITNESS IS DIRECTED . . .'

**Porter Hardy, Democratic congressman from Virginia, is a persistent cross-examiner and one of the most active on the committee. Sometimes his persistence brings results.**

he has been in Congress since 1947—he is easily the most active, and, apart from Mr. Hébert himself, the most provocative.

Only two years senior to Mr. Hardy is Democrat Melvin Price of Illinois, believed by many to be the best informed member of the Hébert Committee on the basic issues facing it—issues concerned with the weapon system concept and how it operates.

The remaining two members, both Democrats, are Arthur Winstead of Mississippi and O. Clark Fisher of Texas. In this summer's sessions, they played minor roles.

One notable fact about the committee is that none of its members is from California, where most of the nation's aircraft industry is centered. This may contribute to some of the group's propensity to view the weapon system concept as a major mystery. It is no secret on Capitol Hill that some of the other states, including those with defense plants and government arsenal facilities, exude at least a touch of jealousy over the gravitation of defense dollars to the West Coast. There is no way of evaluating how important this is in the Hébert Committee deliberations, but it is difficult to believe it is not a factor.

Room 313A of the Old House Office Building, where the committee meets, is the regular home of the Armed Services Committee. It is high-ceilinged, adorned by huge crystal chandeliers. The main entrance is at the side of the room, shielded by a screen made of heavy carved panels taken from famous American battleships.

At the head of the room there is a regal entrance from the adjoining headquarters of the Armed Services Committee. This is shrouded by a massive red curtain, through which committee members can enter and leave quietly during the proceedings. The committee sits behind a high curved bench, with Mr. Hébert in the center flanked on

## 'CAPITAL CIRCUS' . . . A NEWSPAPER COMMENTARY

*In many respects, the Hébert Subcommittee hearing is a running sideshow in Washington that wins, at the best, spotty coverage from the press. As a rule the more sensational charges made by witnesses get in the headlines, and when they are disproven two or three days or a week later the rebuttal is no longer news. In between, there are routine sessions at which bored Washington reporters listen, facing an almost hopeless task of getting anything into the paper. Once in a while one of them will come up with an incisive commentary. Here is an example by Jerry Greene, which appeared in the New York* Daily News *on August 8, 1959.*

UNFORTUNATE indeed is the fact that the lack of space and perhaps radio-TV time precludes a closer examination of the endless sideshows on Capitol Hill where the nation's legislation is born—and sometimes buried—in committee hearings, open and closed.

Only now and then, in such instances as the labor racketeering hearings, the nomination of Lewis Strauss for Secretary of Commerce and the battle between the late Sen. Joe McCarthy and the Army do these affairs erupt with violence into the main tent and draw the full attention of the press and the airways.

### All Hams Are Not In Butcher Shops

But the small-fry, routine acts go right along like perpetual motion. Daily some perform before packed houses, despite the fact that what is done is of limited worth. Reporters pass them by for bigger things.

Here, however, the public has a chance to see the legislators in action, and a bigger bunch of hams never trod the boards. They strive mightily to entertain, to irritate, to grab for headlines, and to make much of an effort to learn something that publicly they have known for many years.

The performers, who quickly mold themselves into types, offer the customers the gamut of characters. There is the snarling prosecutor, the fast-on-the-draw wisecracker, the thundering Puritan, the indignant lard-head who pretends to understand nothing while he hides a club behind his bellow and the high-minded intellectual. All these and a dozen more—name it and we've got them.

A fair example can be found in the House Armed Services investigating subcommittee run by Rep. F. Edward Hébert (D.-La.), a big guy with a deep voice, a fast mind, and insistent manner. An old New Orleans newspaperman, Hébert ran for Congress to gain lifetime access to the House floor, found his new job paid better and offered more fun. He's been here since 1941 and hopes to stay.

Right now he's looking into influence peddling, if any, by retired generals and admirals. In addition to qualifying himself he has a pair of prize characters working for him. There is Rep. Leon Gavin (R.-Pa.), nice as pie personally but often a tough man in committee.

Gavin is a member of the Armed Services Committee—an old infantry sergeant from World War I, he acts it.

Rep. Porter Hardy (D.-Va.), is a methodical inquisitor who has no peer at gumming up a witness.

his left by Republicans and on his right by Democrats. The most common lineup, with some members absent for all or part of the session, runs from left to right: Hardy, Fisher, Price, Hébert, Hess, Gavin, and Norblad.

Overlooking the scene are two large oil portraits on the corridor side of the room. At the rear, nearest the spectators, hangs a likeness of Carl Vinson, once Chairman of the Naval Affairs Committee and for many years in his current job as Chairman of Armed Services. At the front end, nearer the committee, is Mr. Vinson's Republican counterpart, Dewey Short, who chaired the Armed Services Committee during the Eighty-third (Republican) Congress and who is now an Assistant Secretary of the Army.

There is a stinging irony in these two portraits, or at least in their position overlooking the Hébert Committee proceedings. The portraits were paid for by the defense industry, meaning chiefly the aircraft industry, which was solicited for funds by the Armed Services Committee. Donors were assured that their contributions were deductible for income tax purposes, and there never has been a threat to expose the gifts as misused taxpayer's dollars. There are a few cynical industry representatives who always have viewed the solicitation as "pressure" of a type quite easily understood in Washington.

## Manpower Needs of Modern Technology

Implicit throughout the hearings was the clash between tradition and the requirements imposed by modern technology. Time and again questioners discussed the military requirement in terms mindful of World Wars I and II—as a hallowed mystery originating in the Pentagon and not

*(Continued on following page)*

**Drew Pearson, the newspaper columnist, was put on stage. He charged wielding of influence in the Pentagon by many retired officers, but later witnesses proved he was wrong.**

### Witnesses Give as Well as Take

The committee victims are merely nervous, or frightened, or bored, helpful or contemptuous.

One of them yesterday set Gavin back on his heels, a hard and unusual thing to do. Boeing Aircraft was on the griddle, accused of buying advertising to influence Congress about funds for the Bomarc missile.

Gavin was sore about it. Even if the ads were paid for from company profits, he insisted, profits came from defense contracts and hence from taxpayers' pockets and the taxpayer was put in a position of lobbying against himself.

"Mr. Gavin," said Wellwood Beall, Vice President of Boeing, "you are paid by the government with tax money. But when you put it in your pocket, don't you consider it yours to spend as you please?"

"Well, yes," Gavin grunted.

"So do we," Beall said quietly. Gavin changed the subject.

### Advertising a Matter of Who's Doing It

Hébert had a fast one for the witnesses: "Ah," he snapped at one point, "when your competitor advertises, it is misleading propaganda. When you do it, it is spreading accurate information."

Some of the more choice morsels are to be found in the published hearings of the House Appropriations military subcommittee where the Pentagon and congressional brass often stand flatfooted, swinging from the heels. . . .

Dapper Rep. Daniel Flood (D.-Pa.), is a member of this subcommittee. Some of his questions run several hundred words in length. . . .

Recently, he was quizzing Gen. Maxwell Taylor, retired former Army chief, and brought out the fact the Army is a few billions short for normal replacement of weapons and tools and modernization.

### Flood Sees It All as Matter of Votes

Flood's question then was this lecture:

"You know, I know what happens to you in the Joint Chiefs of Staff. You just ain't got enough votes, and we understand that kind of business. . . . You don't have to be around here 100 years to figure that out.

"There may be no animosity between the services, there may be no jealousies going on, Mr. Secretary [he was addressing Army Secretary Wilber Brucker] but your pal lacks a couple of votes, and I will give you three guesses why. That is one thing congressmen can understand when you put it that way."

No matter how trivial the hearing, government witnesses, particularly from the Pentagon, are carefully coached and usually well rehearsed for a public hearing.

The Air Force has diligently sought but has had lackluster success in impressing on its fledgling witnesses the advice given by its former Chief of Staff, Gen. Carl Spaatz, to Gen. Emmett (Rosy) O'Donnell a long time ago. Spaatz told O'Donnell: "Answer yes or no wherever possible. Don't lie in any circumstances. But for God's sake don't blab the truth."—END

susceptible to criticism on the part of anyone from without.

In reality, the industry input into establishing a requirement is substantial. There are cases, cited by witnesses, where industry developed the weapon even before the military fixed its sights on the requirement. A more common case involves military and industry experts working together to establish the requirement, as well as to meet it.

Thus, the employment of retired officers by defense contractors is vital to the nation's security. After all, the industry is itself in a constant state of transition. It was pointed out to the committee by several witnesses that without guidance from men with military experience in strategy, tactics, and field operations much effort can be wasted. "They can keep us from going down blind alleys," was the most common virtue attributed to ex-officers with this kind of industry responsibility.

The integrity and contributions of the retired officer are under fire, as the Air Force Association maintained and protested in its presentation to the Hébert Committee, but this is only one of the tests faced in the challenge to the entire military-industry team concept.

If the industry and its military customer fail in these tests, and there are many such tests, it would be possible for Congress—not the Hébert Committee alone—to create an atmosphere that would wreck the system and jeopardize national security.

This is no alarmist reaction. On the third day of last June it almost happened. Rep. Alfred E. Santangelo, a New York Democrat from the heart of Manhattan, offered a sixty-word amendment to the 1960 Defense Department Appropriation Bill. It would have forbidden payment of funds to any defense contractor who had a retired general officer on his payroll who had been out of the service less than five years. A few minutes after it was offered, the amendment was defeated by the narrowest possible margin —ayes 130, noes 131.

Rep. George H. Mahon, Democrat from Texas, of the House Appropriations Committee, is credited with killing the proposed amendment. He said he feared serious damage to the defense effort if the Santangelo proposal were adopted, and he urged the House to wait for recommendations from the Hébert Committee.

It stands to the credit of this committee that Mr. Santangelo was given an early opportunity to explain his case. It turned out that the New Yorker, whose district contains about as much defense industry as Monaco, only "sensed" a situation that "smells to high heavens." Courteous questioning by Mr. Courtney indicated that Mr. Santangelo's sense of smell had been excited by an anonymous letter, a book by Drew Pearson, and a list of retired officers now with defense contractors, which had been published by Senator Paul H. Douglas, Illinois Democrat.

One of the sessions featured an appearance by retired Lt. Gen. Clarence S. "Bill" Irvine, former USAF Deputy Chief of Staff, Materiel, and a couple of his colleagues from the AVCO Manufacturing Co. General Irvine moved last spring from the Pentagon to a $55,000-a-year post as Director of Planning for AVCO.

Under Mr. Hébert's probing, the general said that at one time or another in the past twenty years, most of the nation's airplane companies had asked him when he would retire. All job offers were referred to his attorney. General Irvine then gave the committee a lecture on how USAF makes decisions in the procurement area, citing the fact that they are made by teams and that it is impossible for one man to "influence" so many minds. His testimony went a long way toward dissipating the committee's early conception that a bomber is sold the same way as a refrigerator.

General Irvine, like other witnesses in similar positions, made it clear that he does not sell and that he does not discuss his company's products with top Pentagon brass or the men who used to work for him.

## The Right to Advertise

While the title "Employment of Retired Military Personnel by Defense Industries" was retained on the circu-

lated transcript of the hearings, the committee found it easy to make the transition to other aspects of the military-industry team concept. This transition was helped to a substantial degree by the White House, where President Eisenhower said "something besides the strict military needs of this country" is influencing decisions.

With this for a kickoff, the Hébert Committee soon was bluntly challenging the right of defense contractors to advertise, even when it was shown that the cost came out of company profits. It also challenged the right of individuals, banded together in service organizations that are controlled by civilians, to hold and voice opinions about weapons, military concepts, or roles and missions.

Despite Mr. Hébert's protestations that he does not want to shut off information to the public—"God knows that is the last thing I want to do"—he also holds that "subtle arguments" about weapon systems should not be discussed in the open because "you get the American people confused."

At one point the chairman was grilling Thomas G. Lanphier, Jr., a Vice President of Convair, about his public dissertations on the capabilities of the Atlas ICBM, made by his company, and the number of them that will enter the SAC arsenal. Mr. Hébert asked Mr. Lanphier whether he thought "it is in the national interest to aggravate and agitate positions of defense to the general public, where those are military decisions?"

Mr. Lanphier allowed that "aggravate and agitate" were not his words but that he felt it is within his province to try to persuade people to support the weapons he believes in. In a fast exchange with the chairman the witness then made it clear that he assumes the general public is a pertinent and a proper audience.

Mr. Hébert's evident surprise at finding there are Americans who think public discussion of these matters is a healthy and normal thing seems to have been stimulated about a week earlier by the Air Force Association. On the stand were Peter J. Schenk, AFA President, and James H. Straubel, the Executive Director. Their prepared statement showed that AFA, primarily in this magazine, had supported the Thor IRBM over the Jupiter and the Bomarc antiaircraft missile over the Nike. In both cases, the statement made clear, the motivating interest was economy and military effectiveness.

It was difficult for the committee to detach these arguments from the fact that in both cases AFA favored the Air Force way of doing things, and the witnesses immediately faced the accusation that they "try to influence military decisions," a thinly veiled reference back to the President's apprehensions. It was here that Mr. Hébert started to talk about "great confusion in the public mind" and expressed a determination to find out "to what extent do these associations go in trying to sell a bill of goods . . . which confuses the public."

The chairman made the statement that the public is confused because associations, and not AFA alone, try to influence public opinion and, through the public, members of Congress. When the committee had the Navy League on the stand, it was shown that its magazine urged its readers to make everybody, "including their congressmen," aware that big carriers are a vital necessity to the fleet. And the Association of the US Army denied that it has tried to influence public opinion, although there was no mention of the group's recent pamphlet on security problems, which laments the lack of greater limited war capability and suggests that more should be provided, even at the expense of SAC.

The issue probably was drawn most accurately by J. V. Naish, President of Convair, who was on the stand when Mr. Gavin challenged AFA's advocacy of any particular weapon system. Mr. Naish volunteered the opinion that AFA, as an alumni organization in which industry and active military people have no vote, was entirely within its rights.

In any event, the Hébert Committee quite properly has looked into the subject, found that there is rivalry among the services and that the service organizations,

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sensing wide public interest in the issues, print and disseminate their opinions. If the committee believes these opinions carry more weight than merit in the choice of weapon systems, it will have a duty to say so in its report. If it holds the organizations have no *right* to print and disseminate opinions, it will have a new argument on its hands.

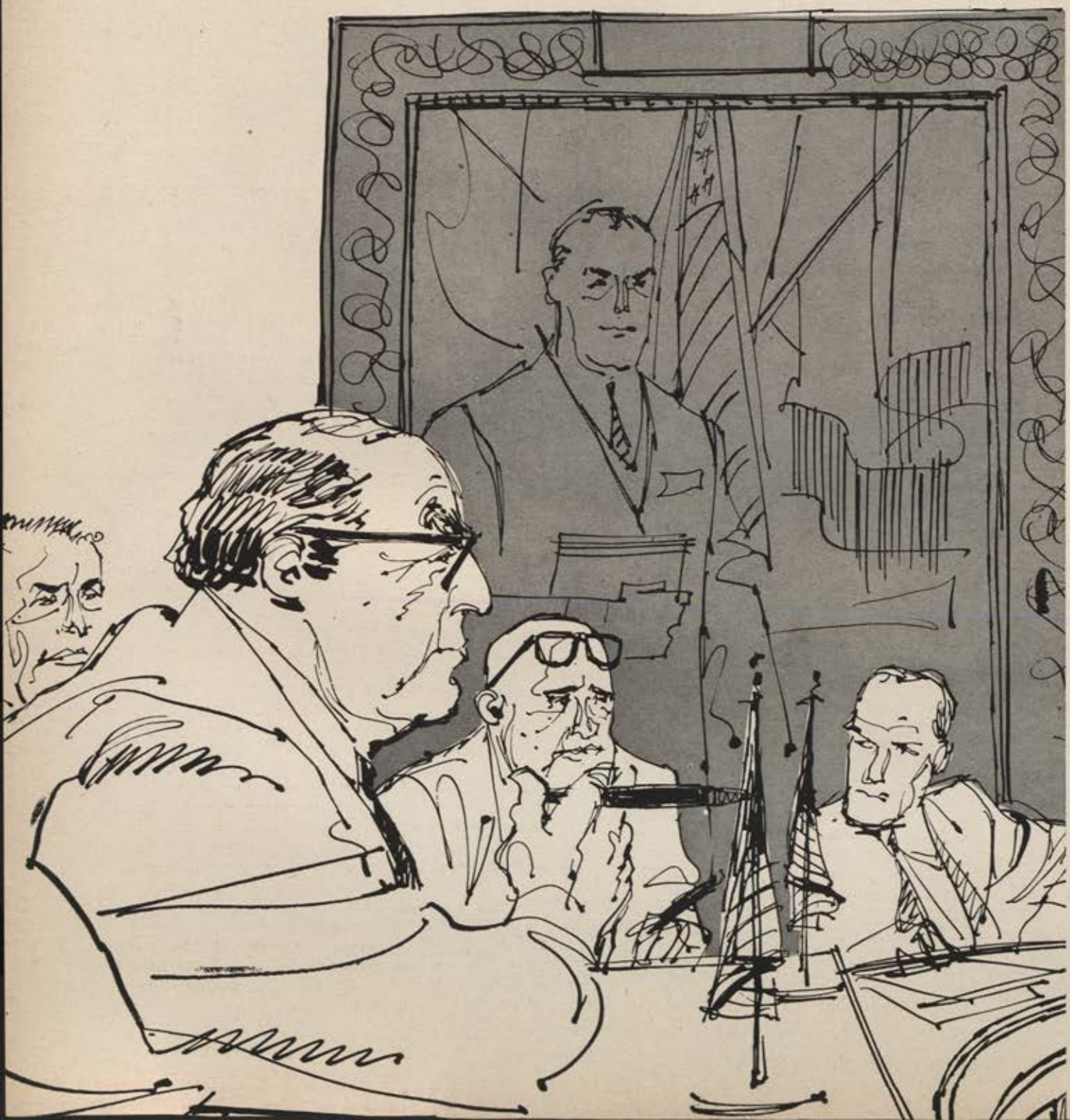
## Validity of the Weapon System Concept

This entire discussion can best be evaluated against what we already have defined as the real issue before the Hébert Committee for the past few years: the validity of the USAF-industry team concept for development and procurement of weapon systems. The Air Force Association, most outspoken group of its kind, told the committee it favors "strengthening the partnership."

Said AFA President Schenk:

"We have seen the arsenal concept become as outmoded as trench warfare. In this age of fast-moving technology, government cannot, in this country, produce the items necessary for the common defense.

"Further, the day is past when the military requirement for a major weapon system is set up by the military and passed on to industry to build the hardware. Today it is more likely that the military requirement is the result of



joint participation of military and industrial personnel, and it is not unusual for industry's contribution to be a key factor.

"Indeed, there are highly placed military men who sincerely feel that industry currently is setting the pace in the research and development of new weapon systems."

Speculation on the results of this summer's work by the Hébert Committee is a common pastime amid military and industry circles in Washington. It is commonly presumed that the committee will recommend more uniform laws to govern what can be done by retired military officers but will not do it on the basis of any substantiated evil. The only flaw uncovered, to all appearances, is that the rules are not the same for the Army, Navy, and Air Force. There also is strong sentiment in favor of getting rid of the law that prevents many topflight officers from shedding their uniforms and staying in federal service as civilians. Dual compensation restrictions now prevent a man drawing retirement pay from accepting a substantial government job.

## Concern over Activities of AIA

Also indicated from the intensity of committee questioning on the subject is an effort to force some kind of a realignment of the activities of the Aerospace Industries Association. Mr. Hébert and other members of the committee showed continuing concern over the fact that AIA carries out some lobbying activity, however small, and that the fees paid by members are tax deductible and, in at least some cases, chargeable as costs on government contracts. Industry witnesses in a few cases put up a stern argument that they consider AIA a fully legitimate operation and the costs an equally necessary part of the burden of doing business.

Whatever the outcome in the form of committee suggestions and resultant legislation, there probably will be some unhappiness and disruption in the military-industry team now responsible for weapon system development and production. It is hard to avoid the conclusion that this result could have been improved by some of the witnesses themselves.

Up in Room 313A of the Old House Office Building spectators have seen competent and esteemed leaders of the nation's defense industries, a few of them retired military officers at the end of distinguished careers, squirming in the seat. Highly competent witnesses were more the exception than the rule. Too many witnesses, chosen by the committee or staff for some substantial reason, failed in the obligation to do a good job.

There was the company executive facing a challenge over why he wanted to hire a retired officer of certain rank, experience, and capability. He failed utterly to capitalize on the opportunity to show the committee how his choice would contribute to the nation's defense stature and why the man was necessary for his company. There was the board chairman of another major contractor who came unprepared to answer many questions that had become routine, providing evidence that either he had not done his homework or he was being evasive. Another man, once a high-ranking general, was disturbed when questioned about entertainment paid for by his organization, when there was no doubt of its legitimacy and no suggestion that it was evil to throw a cocktail party.

These notes emphasize the responsibility for members of the military-industry team to capitalize on the opportunity provided by congressional hearings to get their positive story across. There has been no sign that Mr. Hébert and his colleagues, however stubborn they may appear to the witness from time to time, will close their ears if the man they are facing wants to put something in the record. In fact, Counsel Courtney puts great stress on what *is* in that record; to him, almost nothing is important that is *not* in the record. Certainly the printed transcript makes history of a kind and is referred to for many years by writers, researchers, lawmakers, and future inquisitors.

Sometimes it was hard to avoid the impression, as witness after witness took the stand during July and August, that the Hébert Committee was working on another planet, apart from Washington, the Pentagon, and other congressional investigations. In both houses of Congress, Appropriations Committees have been looking into how the Defense Department spends money. One group of senators was probing the nation's organization to meet the challenge of space. Another House group has been delving into the organization and management of missile programs. In all of these and other cases the basic questions have involved, at least to some extent, the same concepts under study by the Hébert Committee. Into the same pot must go a lot of material out of the Executive Department and the Department of Defense, including the arguments over unification and the separation of military and civilian space programs.

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*A topic somewhat alien to the interests of the Hébert Committee was touched upon lightly during the recent hearings. It was the subject of unification of the armed forces, introduced by AFA witnesses who put it into the record that they favor a single service, a single promotion list, and a single secretariat. AFA has been on record since 1956 with endorsement of "one program for utilizing national resources in the national defense."*

*As members of the parent Armed Services Committee, the Hébert group displayed interest and a bit of incredulity. The chairman said he did not disagree with AFA's right to hold this position, "but I hope the day will never come when we put into the hands of one military institution the future of this country."*

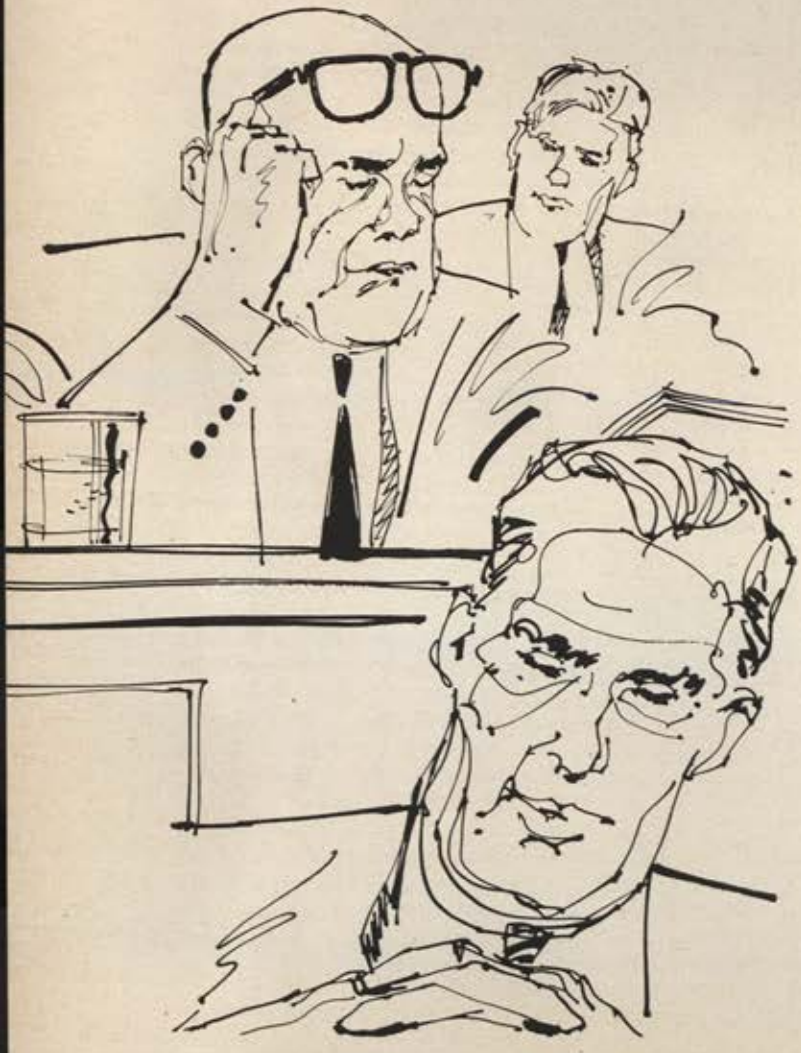
*Later, a Navy League witness was asked if he could subscribe to the AFA proposal. He said he could not because he agreed with Congressman Gavin that it was inconsistent with the divorce of USAF from the Army in 1947.*

*A representative of the Association of the US Army, faced with the same query, said his organization is against a single service and a single uniform. He added that if the program were shown to have merit, he did not believe it would be possible to shift to a single service concept quickly. The change, he argued, would have to be set up as a future objective and personnel trained to bring it about smoothly.*

*The import of this discussion to the Hébert Committee's problems was pointed up about a month later when another House group issued a report endorsing a remarriage of the Army and Air Force. This recommendation followed a study of the organization and management of missile programs, in which it was discovered that military decisions are being made by nonmilitary people, including the civilian secretariat in the Pentagon and Congress itself.*

The defense industry, saddled as it is with tremendous responsibility in these areas, should recognize that the national dilemma is due in large degree to a lack of understanding of the revolution that has taken place. It is a revolution in the determination of weapon system requirements and the procedure for developing and producing the weapons. It is clear that the White House, the Pentagon, and Congress each has its share of ignorance and confusion on this subject. On top of this, there is the inevitable clash of tradition with the dictates of modern technology. Some observers sense a revolt against the new approaches to building an adequate national defense—a desire to turn back the clock. This desire, which may reflect the opinions of a great many Americans, is reflected in some of the attitudes shown by members of the Hébert Committee. One of them suggested that the Defense Department should lend active-duty officers to defense industries if military background is important to planning and development. Another indicated that he disagrees with even the small degree of unification that has been achieved to date.

The best illustration of this is found in the Hébert Committee hearings of last spring that were devoted to an examination of management under the weapon system concept. In that case industry witnesses, some of them called again in the probe of ex-officers, gave Mr. Hébert and his colleagues a broad education on how they operated in their relations with the Air Force. USAF also was on the stand, in that matter, and gave elaborate presentations on how control is maintained over the conduct of contractors.



Yet when it was all over Mr. Hébert, sincerely, said he did not understand the "weapons management system" and expressed skepticism that there is a "system." Here it appears that the chairman is caught in a web of semantics, the same one that has plagued the USAF-industry team. Turning "weapon systems management" into "weapons management system" is an accomplishment, obviously, of gremlins. There is no evidence that Mr. Hébert doubts there is management, although he may well have reservations about its efficiency. Nobody, to this reporter's knowledge, ever said there was a "management system." Indeed, much of the USAF-industry effort has been devoted to showing that the management of weapon systems is in a constant state of flux. The technology has moved so fast that no firm management system would be possible, standing inviolate and firmly keeping the Minuteman missile on the same road followed by the Boeing B-52 Stratofortress bomber on its rough trip from concept to delivery.

There were moments in July and August when it did not appear that the committee itself realized it was studying the USAF-industry team approach, not the role of the retired officer or the influence of advertising or defense contractor lobbying activities. It is the validity of this concept that is under fire and both USAF and the industry are obligated, by the nature of the setup, to make it work as well as possible.

## Responsibilities of Defense Contractors

The committee's effort was recognized, for example, at the AFA Convention in Miami Beach, where industry was told that the "climate" of USAF procurement today is a "matter of urgent concern." Lt. Gen. William F. McKee, vice commander of the Air Materiel Command, said he recognizes his mission today "is the object of exceptional public interest and concern" and that this concern is rightly reflected by Congress. He said, in effect, that USAF's efforts at corrective action in some cases studied by the GAO had been helped by the Hébert Committee's spotlight.

At the same time it is true that the specific charges under investigation this summer did not stand up under that same spotlight. But the fact that they were made and that a lot of people believed them—including the 130 congressmen who voted aye on the Santangelo amendment—is disconcerting. Ignorance, general confusion, and possibly some kind of complaint or pressure from those who oppose the system appear to form a reservoir of misconceptions. Out of this reservoir there poured a stream of vindictive allegations cited by Mr. Santangelo and put in print by journalists Pearson and Anderson.

This matter is not one to be taken lightly by defense contractors. Their responsibility to the nation's defense structure, laid out cold in the terms of every contract with the Air Force, Army, or Navy, is in part a responsibility to the chosen American system. The team effort, we all hope, is this country's most effective answer to the menace of communism in terms of both its economic philosophy and its highly perfected weapons. The men who run this effort, on the stand on Capitol Hill, face an opportunity, not an inevitable persecution.

The witness should, in all cases, be directed to make a positive contribution to public and congressional understanding. This direction will not come from the committee. It must come from the conscience.—END

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# HOW THE SOVIET AIR FORCE LIVES

Boris Kuban

THE PATTERN of daily life in the Soviet Air Force varies very greatly. It depends on the service and unit concerned. Numerically, the largest part of the air force are the flying units, therefore their daily routine is the most characteristic and also the most interesting.

Air force units scattered throughout the Soviet Union are usually strictly isolated. The air units are very often stationed together with those of other branches of the services in "little military towns" (*voennui gorodok*), which are usually situated in a suburb or right outside a town, sometimes in barracks formerly used by the Tsarist army. During the second world war many of these barracks were destroyed or damaged, but after the war, in spite of the severe shortage of housing and the slowness of civilian rebuilding, a special military building organization was set up and given top priority, and a labor force of slave laborers and German prisoners of war was made available to it, so that by now these military quarters are restored and rebuilt in their original form.

As a typical example of quarters used by an air garrison those in Voronezh could be described. The air garrison in this town is one of the oldest established in Russia. In the postwar years a bomber division was stationed here. The main part of the quarters consisted of several four-storied buildings; one of them, with a striking high tower, is an officers' club and restaurant. In this group of buildings the divisional headquarters and two regiments are located. Across the nearby airfield there are two more buildings in the prerevolutionary Tsarist style, housing the third regiment of the division. In neighboring buildings, bordering on the territory of infantry units of the Voronezh garrison, there is an air-technical regiment attached to this air division. An air-technical regiment is part of the usual structure pattern of the air force, in which each regiment has an air-technical battalion attached to it, each division a regiment, each corps a division, and each army a corps. These technical units carry out various servicing and supply duties such as the maintenance of airfields, catering, medical service, fueling, munitioning, signals, transport, and repair work of various kinds.

The day usually begins at six a.m. in summer and seven a.m. in winter in peacetime. A bugle is sounded, and the duty officer, with the bugler, walks through the quarters. The aircrews hurry from their quarters. The nature of their day's duties has been laid down on the previous evening, so they are dressed accordingly and they know exactly where to go. Most of the crews are officers with a few non-commissioned officers on voluntary extended service which brings them various privileges and raises their position almost to the level of the officers.

Almost all of the crews live in the divisional quarters, though they are not obliged to; the practice of living outside is not encouraged by their superiors. In any case the exigencies of Soviet life solve this problem more or less automatically, since in Voronezh, as in many other Russian towns almost entirely destroyed during the war, finding decent living accommodations is practically impossible.

The officers and men usually begin their day in Russian fashion with a cup of tea taken at home. After the bugle has sounded, each unit has a short period for exercises, and then the working day starts, usually with a spell of indoor

*(Continued on page 45)*

# Pay and Allowances in the Soviet Air Force

The pay of officer personnel of the Soviet Air Force and naval air arm, based solely on *rank*, is the same as that for other armed forces of the Soviet Union.

The figures in the table below are misleadingly low. Other factors are duty assignment, longevity (computed on a scaled percentage of base and assignment pay), and flight pay. Personnel are paid according to their assignments as rated (flying or aircrew) or nonrated personnel (engineering, technical, and other specializations). Pilots are the most favored; then the navigator-bombardiers; next the graduate engineers on flight status. Next come graduate engineers responsible for maintenance of aircraft and related equipment; next the technical officers whose education is of a secondary level but who have taken specialized courses in communications, electronics, airframes, engines, etc.

For example, a lieutenant colonel in the Soviet Air Force may annually receive 13,200 rubles in base pay, plus 31,200 rubles annually for his assignment as commanding officer of a fighter squadron. He would probably have been in career service for fifteen to twenty years and would therefore receive longevity pay amounting to twenty percent of his rank and assignment pay, or 8,880 rubles. Inasmuch as he could be assumed to be a Class I pilot, he would receive an additional 200 rubles per month, or 2,400 annually.

He may also receive flight bonus pay if he has flown more than the annual norm, based on scales of pay for night flying, instrument time, and formation flying. Extra pay is also given for parachute jumps beyond the annual requirement. Deductions for the purchase of state bonds are made from his pay, the amount varying according to whether the officer is stationed within the USSR or in an occupied area.

Salaries may also be subject to personal taxation, similar to income tax. Without regard to allowances for hardship post differential, free food ration, and housing, this Soviet lieutenant colonel would get around 77,200 rubles yearly. At ten rubles to the dollar, this alone amounts to US $7,720, plus bonus pay and the other exceptions mentioned above.

Fringe benefits, such as food, clothing, rental allowance, and substantial discounts on consumer goods, amount to as much as or more than the cash he receives. By comparison a lieutenant colonel with comparable qualifications and assignments in the USAF receives about $9,600 annually for base and flight pay. He receives no assignment pay but does receive housing and subsistence pay.

The Soviet officer corps as a whole enjoys pay and fringe benefits far in excess of the career NCO or conscript. With the promotion to the rank of lieutenant colonel or higher, the tendency is for career officers as such to level off on a more equal basis.

Taking aircrew personnel as a group, including the radio operator/gunner who is usually a sergeant or master sergeant, and contrasting this group with all categories of ground force and naval personnel, whether officer, career, NCO, or conscripts, the comparison is still weighted in favor of aircrew personnel. The radio operator/gunner, the only enlisted man with flight status, gets slightly more pay and a little better rations than other men of comparable time in service and the same grade. His quarters, clothing ration, and other welfare factors are the same as those of other career NCOs in the air or ground forces, and his leave allowance is comparable.

Ground crews and other less favored air personnel are paid, billeted, and fed according to their value to their organization. There is a definite tendency to attract career NCOs in the more important service jobs by offering advanced technical training and bonuses for exceptional work. Also, in combat, extra rations and decorations are liberally awarded.

The base pay of conscripts and NCOs in the air force is believed to be the same as that for ground forces (*see table*).

In addition, there are numerous incentive privileges and awards available to conscripts and NCOs. Monetary premiums are awarded for successfully accomplishing their assigned missions. If over a certain period of time an engine or radio equipment does not develop any serious trouble, the mechanic responsible gets a cash premium.

Conscripted sergeants, corporals, and privates, who have proved to be competent both professionally and politically, may be accepted for extra-term active duty of not less than two years and are eligible for promotion to the next highest rank.

Sergeants may be given officer ranks, both if they continue in service, or if they transfer to the inactive reserves. They must, however, pass established examinations to become junior lieutenants or pass the examinations of a full course of the officer-candidate school to become a lieutenant.

Extra-term servicemen receive leaves of absence and have the right to pensions and financial assistance according to rules applying to all officers. Extra-term family servicemen can quarter in separate premises of the barracks or outside the barracks with permission of their unit commanders. They may wear civilian clothing when not on duty. Servicemen of the USSR enjoy all rights of Soviet citizens: Unlimited participation in the country's political life, the right to vote, the right to be elected to the supreme and local organs of the government, and the right to belong to the Party, *Komsomol*, and to various social organizations.—END

## MONTHLY RATES OF PAY FOR OFFICER PERSONNEL

| RANK | MONTHLY PAY | DOLLAR VALUE* |
|---|---|---|
| Marshal of Aviation | 3,000 rubles | $300 |
| Colonel General | 2,200 rubles | 220 |
| Lieutenant General | 1,900 rubles | 190 |
| Major General | 1,600 rubles | 160 |
| Colonel | 1,300 rubles | 130 |
| Lieutenant Colonel | 1,100 rubles | 110 |
| Major | 900 rubles | 90 |
| Captain | 700 rubles | 70 |
| Senior Lieutenant | 600 rubles | 60 |
| Lieutenant | 500 rubles | 50 |
| Junior Lieutenant | 400 rubles | 40 |

*Computed at the rate of 10 rubles to the dollar.*

## MONTHLY RATES OF PAY FOR AIRMEN AND NCOs

*Conscripts:*

| RANK | FIRST TWO YEARS | | SUBSEQUENT YEARS | |
|---|---|---|---|---|
| | Rubles | Dollars | Rubles | Dollars |
| Private | 30 | $3.00 | 50 | $ 5.00 |
| Corporal | 40 | 4.00 | 70 | 7.00 |
| Junior Sergeant | 60 | 6.00 | 120 | 12.00 |
| Sergeant | 75 | 7.50 | 150 | 15.00 |

*Extra-term Service Volunteers:*

| RANK | PAY OF RANK OR APPOINTMENT | | BONUS FOR EXTENDED VOLUNTARY SERVICE | |
|---|---|---|---|---|
| | Rubles | Dollars | Rubles | Dollars |
| Private | 30 | $ 3.00 | 300 | $30.00 |
| Corporal | 40 | 4.00 | 300 | 30.00 |
| Junior Sergeant | 90 | 9.00 | 400 | 40.00 |
| Sergeant | 120 | 12.00 | 500 | 50.00 |
| Senior Sergeant | 200 | 20.00 | 600 | 60.00 |
| Master Sergeant | 300 | 30.00 | 700 | 70.00 |


# RCA Electronics creates the "501" to streamline the paper work of business—it reads, writes, figures and remembers on tape

Much of today's traffic jam in paper work is being eliminated by electronic data processing. But to build a system that would be practical and economical for even medium-sized organizations was a job for electronic specialists.

To solve the problem, RCA drew on its broad experience in building computers for military applications and combed its many laboratories for the latest electronic advances that could help. The result was the RCA "501" high-speed electronic data processing system—the most compact, flexible, and economical ever built. It is a pioneer system with all-transistor construction for business use.

The "501" cuts out paper work bottlenecks for many government agencies and businesses, from stock brokerage firms to public utilities, banks, insurance companies, and steel mills.

It "remembers" millions of letters, numbers, and symbols that are "read" onto its magnetic tapes by such things as punch cards and paper tapes. In a fraction of a second, it can do thousands of calculating, sorting, and comparing operations—and checks each step. Finally, it writes such things as bills, reports, payrolls in plain English at 72,000 characters per minute.

This economical and practical answer to an acute business problem is another way RCA Electronics is helping to simplify the growing complexity of business.

RCA RADIO CORPORATION OF AMERICA

work, starting regularly with half an hour of political information, read by the political officer of the unit.

After that, there may be training in subjects like map reading, or a study of the internal regulations and orders of the air force. Breakfast starts at eight a.m. Flying personnel have their own dining room, one for each regiment. If the man is married, his family is entitled to army rations, though not of the same kind as his. Officers are obliged to contribute to their food out of their pay, but the amount is modest.

All flying personnel receive food ration number five. This is the best food ration of the Soviet armed forces and can be compared only with that given to submarine crews.

This ration includes a pound (400 grammes) of meat per day and roughly three ounces of butter, besides other fats. Bread is a staple food in Russia, and this ration gives unlimited quantities of white and rye bread.

Though this ration is meant only for the flying personnel, it is often enjoyed by senior political officers and personnel of counterintelligence attached to air units.

Nonflying personnel of air regiments are entitled to food ration number six, known as the "technical" one. This ration is not much different from number five, except for a smaller quantity of meat and butter. There are other food rations in the air force: number nine, in training schools, which includes extra fruit and vegetables; number eleven, for hospitals; and number twelve for air force sanitoriums and rest homes. These last two include extra quantities of milk products and eggs.

Air-technical units have the number two food ration, like the other Soviet military ground services. The food in this ration is coarser, and contains more bread and cereals, and the meat ration is only 120 grammes a day.

Breakfast for flying personnel usually consists of one hot dish, meat with potatoes, rice or vegetables, tea or coffee, and bread and butter. After breakfast, the main work of the day begins. Crews engage in various kinds of drill and training, with the main emphasis on actual flying. Squadrons usually carry out their own flying training separately. Squadrons are divided into the smallest unit of the Soviet Air Force, the *zveno* of three planes. There are days arranged on which flying exercises are carried out on a regimental or even divisional scale. Flights go on until dinnertime at one or two o'clock. Dinner is the main meal of the day. It consists of three courses for the flying personnel, a thick soup or borscht, meat with vegetables or rice, and fruit or pie. Two hours are set aside for dinner and a rest period.

Then training and studies are resumed, mostly of a technical character, such as the study of new forms of equipment, detailed analysis of previous flights, work on the aircraft armory and also the personal small arms (for officers). With this the regular working day concludes, but official activities are by no means at an end; various lectures, Party and *Komsomol* meetings, and the "Circles for Political Study" begin. It is unusual for the personnel of an air regiment, on a normal working day, to have time for themselves before eight or nine o'clock in the evening, even though they may have been officially off duty since six.

Supper usually takes place between eight and nine, and resembles breakfast: one hot dish, tea or coffee, and plenty of bread and butter.

Certain days every week are set aside for "Officers' Seminars" and officers' pistol practice on the range. Attendance is compulsory. Officers' seminars are conducted by high-ranking officers, usually a general, and are devoted to a thorough analysis and study of the latest developments in the Soviet Air Force of a strategical and tactical character.

Pistol practice, too, is regarded as very important. The experience of the war and the postwar period showed that most officers neglected their personal arms completely. In some cases they hardly knew how to use them and seemed to think of them merely as an adornment. For this reason the regular weekly practice is always carried out in the presence of the commanding officer of the regiment or one of his deputies. Strict inspections are also carried out, and the arms must be maintained in perfect condition.

The daily routine of nonflying personnel is kept to roughly the same hours as that of the aircrews. Technical units have a daily routine similar to that of the infantry, with maintenance of airfields, technical work, and mounting guard taking the place of ordinary infantry drill and exercises.

Normal air force routine is often interrupted by inspections and large-scale tactical training. Inspections are usually carried out by representatives of the Defense Ministry or of the High Command of the air force. Commanding officers are usually warned beforehand of the coming inspection. Preparations are made for several days before the inspection, and on the actual day normal routine is suspended, and training and practice are carried on under the direction of the inspecting officer.

***Aviation Day is the principal curse of the officers and men of the Soviet Air Force because of the abnormal precision and split-second timing introduced by Stalin for aircraft to appear over Red Square . . .***

Air force units take part in spring and autumn maneuvers. It is not uncommon during these maneuvers for large air units to be moved a thousand or more miles from their base. Normal routine is suspended and replaced by as near as possible wartime conditions.

However, officers and men of the air force regard the great annual parades on May 1 and November 7 and Aviation Day (usually about June 29) as their principal curse. Units selected to take part in the display over the Red Square are considered the most unfortunate of all because of the abnormal precision introduced into these parades by Stalin and still carried on. The selected units may be stationed at any distance from Moscow. Several weeks before the parade they are transferred to what is known as the meeting base, a hundred or two hundred miles from Moscow. On the day of the parade the various units have to rendezvous in the air with split-second timing, and they have to arrive over the Red Square exactly simultaneously with the arrival of the first tank of the ground forces into the square. Deviations of even half a second are frowned on. This highly dramatic moment of the parade was a source of great pleasure to Stalin, who never failed to draw the attention of foreign observers to the fine effect produced by the neck-and-neck arrival of the first tank on the ground and the first aircraft in the air, but it was no pleasure to the air force generals in attendance, who spent the minutes beforehand looking frantically at their watches and those afterward almost hysterical with relief.

In normal circumstances personnel are on duty five and a half days a week, since they are free from midday on

*(Continued on following page)*

Saturday. In their free time officers are permitted to wear civilian clothes, but they seldom do so, for three good reasons: a suit at 2,500-3,000 rubles is rather too expensive even for the comparatively well paid officer; the air force officer is one of the aristocrats of Soviet society, and he is conscious of his standing and likes others to know about it (this is especially true of young, unmarried officers, for they know that they rate particularly high with the girls); and the uniform is smart and of very good quality.

Several different outfits are issued to air force personnel. Everyday or working dress consists of dark blue breeches or long trousers, with a narrow sky blue stripe, a khaki or dark blue tunic, steel gray or light khaki shirt, and a black tie. For evening a white shirt is worn. The parade uniform includes a tunic with round collar with gold embroidery, white gloves, and white belt. The caps, somewhat

***Political considerations are often a factor in the promotion scheme of the Soviet Air Force. An unwritten rule prevents any officer who is not a Party member from reaching senior rank . . .***

on the German pattern, do not bear "scrambled eggs" as in Britain, but "cabbage."

It is not uncommon for young officers to introduce extras. Among these are extraordinarily baggy breeches, soft leather boots put on in the so-called harmonica fashion, with many wrinkles, cap very much on the side of the head, and pistol, instead of on the right side, worn right at the back. The Soviet military police are engaged in a constant hopeless struggle against these innovations.

The air force is well equipped with special dress for flying duties or ground technical work. There is an adequate range of winter clothing, from short leather jackets with imitation fur linings to long lined overcoats, dark blue or steel gray, and hats with ear flaps of imitation caracul, real caracul for ranks from colonel upward.

The officer pays for his everyday uniform, not for special dress. In relation to ordinary prices, what he pays is ludicrously little and would hardly buy him a shirt in a civilian shop.

In all garrisons there are special shops maintained by *Voentorg* (military trade), under the Ministry of Defense. Here there are clothing, food, and many other goods on sale, including even toys for children, at reduced prices, and often including articles that are unobtainable outside. Families of air force officers and men are permitted to shop here.

There are very definite distinctions between ranks, though these distinctions are not very noticeable among junior officers up to the rank of major, including noncommissioned officers on flying-officers' duties. The scale of pay rises slowly, by 200 to 400 rubles a month with each rank. But the lieutenant colonel receives not only a substantial increase in pay but also many other privileges, not so much because of his rank but because of his position, since he is likely to be at least deputy to the commanding officer of the regiment. He will have large and comfortable quarters, unrestricted use of a car, and, unofficially, all the best that the unit can provide: the best food at the canteen and the shop, and the best and most difficult to come by goods at the shop, for him and his family. His driver and batman will be personal servants to his family.

The general will have more extensive privileges. A general commanding a division or corps will automatically share in the comforts enjoyed by local Party and government officials in the area. He will be able to make use of the shops for high officials, which are completely closed to the rest of the population, where everything, including foreign-made goods, can be bought at greatly reduced prices. Besides the car or two provided by the service, he might well have his own, and might also provide one for his children. He and his family would have one of the best homes in the town, not necessarily at the base. Marshals of Aviation lead the life of the highest Party officials, the most favored authors and scientists, ballerinas, and film stars.

This includes villas by the Black Sea, small fleets of cars, country houses, hunting lodges, large staffs of indoor and outdoor servants, and diamond-decked wives and mistresses. Their actual pay is not so fantastically high, the highest is from 10,000 to 12,000 rubles a month, but they have so many other privileges, such as buying at very greatly reduced prices in the special shops, servants' wages and maintenance of cars provided by the state, and food from special farms exclusively for the use of the privileged. The building and maintenance of their houses and villas cost them nothing, for they are done by the military building administration free of charge. Obviously the differences between their lives and that of the average air force officer with 900 to 1,200 rubles a month (not to mention the private in the army with eight to twelve rubles a month) put them in another world.

Promotions tend not to follow the official scheme. According to this scheme, an officer should be promoted every three to six years, the interval increasing as he rises in rank. All officers graduate from the air force schools with the rank of lieutenant (the wartime shortened course produced junior lieutenants). It is not uncommon that, of two lieutenants who enter the air force at the same time, one is in four years' time a senior lieutenant and the other a major. The main factors in promotion are personal qualities and initiative. Any officer who has shown himself to be exceptionally able will find the road open to the highest rank, but this healthy and sound practice is sadly marred by political considerations. The case of Stalin's son was not unique, though it was indeed the worst of them. In the normal course of events Vassily Stalin might have reached the rank of major; he was in fact a lieutenant general.

But perhaps even worse than open nepotism is the standing unwritten rule that an officer who is not a Party member has no chance whatsoever of reaching senior rank. Officers, therefore, have no choice but to join the Party and thus artificially swell its ranks. It could not happen that an officer would not be permitted to join the Party, because if he was politically suspect to such an extent he would not have been allowed to enter officers' school as he would be "socially unsuitable," as the Soviet phrase has it.

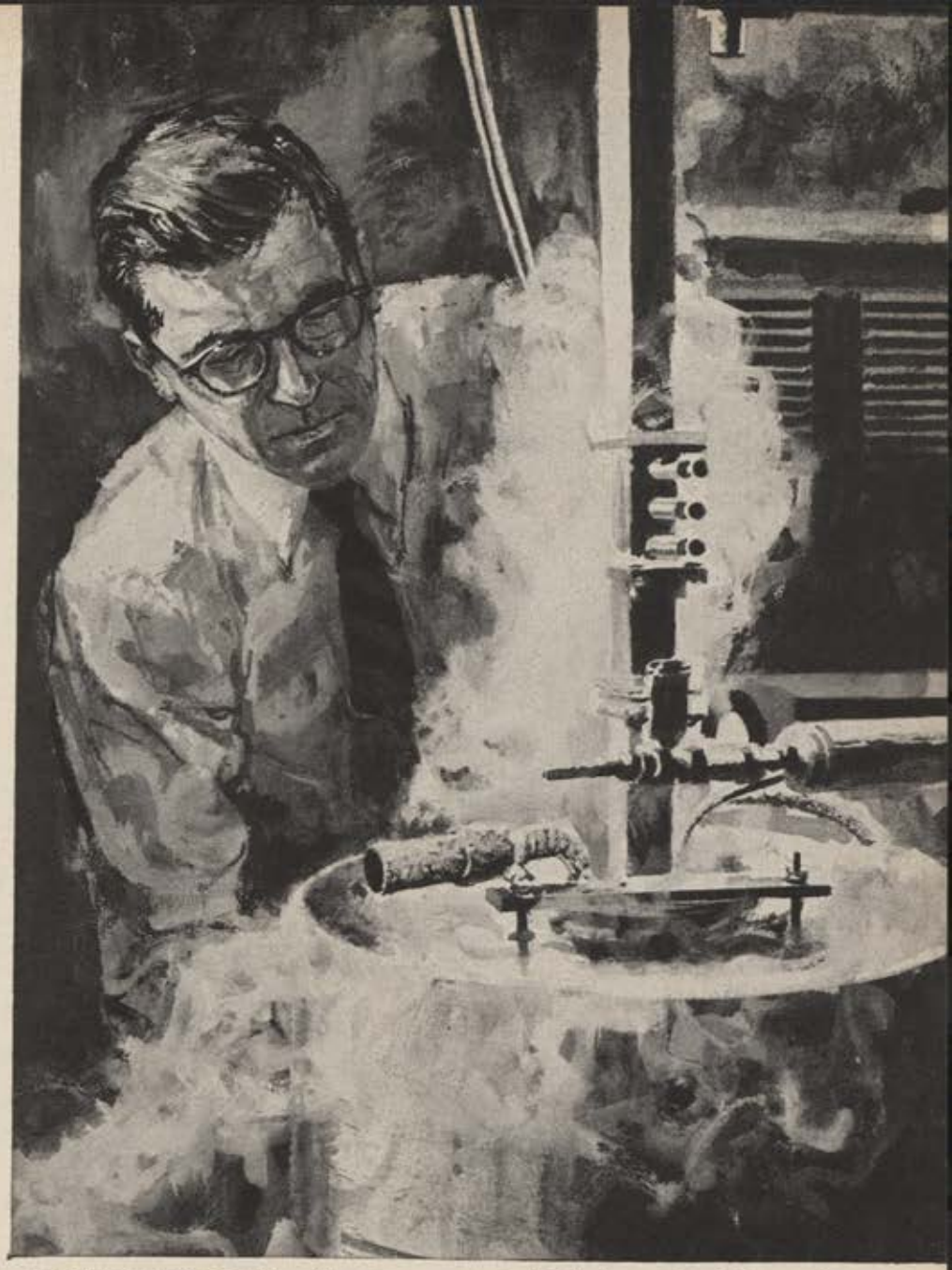
At the first meetings between the Soviet forces and their Western Allies, Soviet officers were always surprised by the age of their Western counterparts, who always seemed to them rather old, especially in the air force. In the Soviet Union it is not at all uncommon to find a Colonel General of Aviation (equivalent to a British Air Marshal) who is still in his thirties, and it is not impossible to find a Marshal of Aviation who is under forty. On the whole these men have all been promoted on their merits. General Smoosh-

*(Continued on page 49)*

**SAC's BOEING B-52's** will have Sperry Countermeasures System to confuse enemy radar and also throw missiles off course. System is designed to assure the effectiveness of our strategic bombers by preventing detection on their missions.

**ENEMY EARLY WARNING RADAR,** similar to our own shown here, would provide first obstacle for SAC bombers to "deceive" in event of hostilities...

**STRATEGIC TARGETS,** like the one shown below, are protected by area defense radars, antiaircraft missiles and fighter interceptors. Countering all these weapons is a critical role of Sperry-designed countermeasures equipment.



**AT 455° BELOW ZERO,** Fahrenheit, components are tested by Sperry scientist for use in advanced countermeasures system. Super-cold temperature obtained by liquid helium within cryostat makes some materials super-conductors, allowing electric current to flow forever without adding power. Such experiments assure even more effective jamming of enemy radars and missiles.

# Spreading Confusion

## Out of a growing bag of electronic tricks, Sperry engineers are creating new and better ways to mislead potential enemies.

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**THE STORY BEHIND THE STORY**
of Sperry Countermeasures Division

While every effort is being made to make America's radar defense *more* effective—equal effort is being made by a group of Sperry engineers to make radar defenses *less* effective—if the defenses are those of a possible enemy.

In World War II foil called "chaff" dropped from Allied planes cluttered enemy radarscopes—made it difficult to see the attackers. Then came "carpet"—a means of creating noise which again concealed the approach of planes. Since then the task of spreading confusion has become increasingly difficult with the development of sophisticated radars, fighter interceptors and missile defense.

The Sperry Countermeasures System designed for use aboard USAF's Boeing B-52's represents a revolutionary advance in deliberate confusion of the enemy, which greatly enhances the success of the strategic bombing mission and assures protection for plane and crew. In addition to its work with the B-52 program, the Sperry division is also devoted to finding ways of countering every new advance in *offensive* weapons with even more effective *defensive* confusion systems. Countermeasures Division, Sperry Gyroscope Company, Division of Sperry Rand Corporation, Great Neck, New York.

SPERRY


## Why Philco has been selected to modernize the world's largest communications system

AIRCOM is the vast, global network of electronic communications that links every base, outpost and aircraft of the U. S. Air Force. It is the world's most extensive integrated communications system.

Recently awarded the contract to modernize and expand AIRCOM, Philco was selected by the Air Force for its proven ability in systems management and its extensive experience in global communications.

The modernized AIRCOM System will utilize advanced techniques in both point-to-point and air-to-ground communications. It will provide greater traffic capacity, maximum reliability and complete compatibility of all USAF communications equipment.

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kevich and General Proskurov, who were both about thirty-five years old, were executed in the great purge of the 1930s, when the former was Commander in Chief of the Air Force and the latter CinC, Fighter Command.

The Soviet Air Force is certainly the most decorated service in the world. Air Force "Heroes of the Soviet Union," the highest Soviet award, increased to an unnatural number during the war. Further decoration of those who had already become Heroes became a problem, and it was decreed that they could become Heroes twice, thrice, or even four times. The first men who received the third golden star of the Hero were both fighter pilots; the twenty-five-year-old Maj. Ivan Kozhedub, and thirty-two-year-old Col. Alexander Pokruishkin. The only four-times Hero is in fact Army Marshal Zhukov, who received his fourth star just before dismissal.

Almost all commanders of air armies and corps have once or twice become Heroes of the Soviet Union, but the decorations have fallen thickest on ordinary air force officers, especially those in fighters. Before the war it had been extremely unusual to see a junior officer wearing the Order of the Red Banner, not to mention the Order of Lenin; it is now not uncommon to see six of these orders on the breast of a young captain.

Before the war each decoration was accompanied by a small grant of money. After the war this practice was abolished, because, as the current witticism had it, "the Soviet bank would have been emptied" if all the grants had been paid.

Decorations, particularly in the air force, had lost their meaning, except for that of the Hero of the Soviet Union or the Order of Lenin, and possibly the Red Banner. The end of the war checked this flood of medals. Orders such as those of Kutusov or Suvorov cannot be given in peacetime, and in wartime only to officers in charge of strategic units. This also applies to the Order of Alexander Nevsky and the Patriotic War, except that they had a wider range of recipients.

In peacetime there is a standing regulation on decorations, according to which any member of the forces, regardless of his rank, who has completed twenty-five years of service, receives the Order of Lenin, after twenty years, the Red Banner, after fifteen years, the Red Star, and other medals for shorter terms of service.

Many decorations are given to those who have seen no active service except in staffs and political administrations. Members of political counterespionage attached to air force units also received many high decorations for no obvious reason.

Air force personnel are recruited from the yearly intake of conscripts. The main requirement is health. There are usually more men anxious to join than there are places for them, but when they have been sifted the position is reversed.

Most personnel, especially officers, are very reluctant to retire. The main reason for retirement, apart from age, is health. The reluctance is easily explained: On retirement the standard of living drops sharply, especially in the case of high-ranking officers. It is not only that pensions tend to be insufficient, but the high-ranking officer will find himself stripped of all his luxuries and privileges.

Before the war, retirement meant complete severance of all ties with the service, but after the war the government made certain concessions on this point. Officers are permitted to wear their uniforms (with a special stripe on the epaulet). They are known as "Colonel or General So-and-so, in retirement." They may enter officers' clubs and restaurants, and are entitled to salutes.

Promotion in the air force is easy and quick; so is demotion. Any general or marshal of the air force could lose his rank and all that went with it without much warning. If he were lucky he could merely be relieved of his rank and sent to some insignificant post as happened, for example, to General Musienko, Deputy to the Commanding Officer of the 2d Air Army, who suddenly found himself chairman of a large state agricultural undertaking (*Sovkhoz*) in the Ukraine, to which he was sent on the order of the Central Committee of the Party. If the worst happens, and he falls into political disgrace, the question of rank will hardly arise, since he will be lucky to escape with his life.

In wartime ordinary officers could be demoted in large numbers for such offenses as abandoning their equipment or for suffering too many casualties among their men. Many air force officers had a very anxious time trying to convince counterintelligence that they had been obliged to parachute and abandon their aircraft. Ultimately pilots became terrified of surviving themselves without their aircraft, since the punishment for what was judged to be the very serious offense of abandoning equipment without sufficient reason was demotion to the ranks, loss of all decorations, and service of from three to eight months in a punishment battalion. The actual term to be served in such a battalion mattered little, since it was very unlikely that anyone would survive for more than a few days.

In peacetime, too, strict disciplinary courts are maintained. The worst offenses are treason and defection to the West. Sentence for these offenses is death, or at the very least fifteen years of slave labor, in the latter case, of course, passed in absentia.

All offenses are strictly divided into political and nonpolitical. Anything that the Secret Police and the political authorities choose to regard as an anti-Soviet activity would automatically mean the ruin of a man's entire career, expulsion from the service, and almost certainly a long term of imprisonment. There is no limit to the imagination of the authorities as far as anti-Soviet activities are concerned, and they may range from the plotting of a revolution to the relation of funny stories about the Soviet leaders.

Nonpolitical offenses are mostly of two kinds: theft of government property and offenses against morals. The first is again of very wide range: The supply officer of an air division or corps may make a few million rubles by manipulating the property and funds in his charge; or a technician may take away a few pints of a spirit designed for technical purposes and drink it with his friends. This last is a traditional offense in the air force.

Punishment in the first case depends on the political standing and the political contacts of the officer. In 1947 Major Lozovsky, in charge of supply in an air army, took home to Russia from occupied Austria two railway carriages full of valuable goods and several million rubles in cash. An investigation was carried out, and a considerable scandal was caused; a few months later Major Lozovsky was observed walking peacefully down a street in Moscow, wearing civilian clothes, and it was discovered that he was a high executive in the Moscow Restaurant Trust. He was the nephew of the Deputy Foreign Minister Lozovsky; otherwise, he might well have got up to ten years' imprisonment.

Lesser offenses of a nonpolitical kind may be punished by demotion and imprisonment of up to five years. But there is always a chance that even without political standing and contacts an offender may be let off scot-free, for the Secret Police tend to turn a blind eye to nonpolitical offenses.

Offenses against morals include rape, exceptionally stormy

*(Continued on following page)*

married lives which disturb the peace of the garrison, and venereal diseases. Rape is taken very seriously as a rule. In one instance an Engineer General of the Technical Air Service, who raped a girl of thirteen, was relieved of his rank and decoration and demoted to a building technician on an airfield. The second offense is usually dealt with by the local political authorities without calling in the military tribunal, and the man may lose his seniority and might even be demoted one or two ranks. Venereal disease became an offense, particularly serious in the air force, toward the end of the war. At first victims of venereal disease were regarded with sympathy and understanding by their superiors, and to get syphilis was affectionately known as "to become a general" and gonorrhea as "to become a colonel."

Later, when the number of cases in the air force had increased catastrophically in the units stationed in the occupied countries, contraction of the disease became an offense, and an officer or man would be sent home with a black mark in his dossier; for an officer this meant the ruin of his career.

An officer or man contracting a normal illness while serving receives first-class treatment in special air force hospitals. There is a central air force hospital in Moscow, with the latest modern equipment and research laboratories. Each air army also has its own similar hospital on a smaller scale; corps and divisions have medical battalions that also have a certain number of beds available. Regiments have medical companies that can give first aid and clinical treatment but have no beds. All air force hospitals are under the control of a special medical administration under the air force high command. This administration also maintains rest homes for air force personnel, including some in the most beautiful parts of Russia, the Crimea and the Caucasus.

The high command is very reluctant to invalid personnel out of the air force, and very prolonged treatment is often given to restore a man to health rather than lose him from the service.

Since the war the system of annual leaves has been restored. The length of the leave depends on various circumstances: the personal record of the man concerned, his distance from his home (this is a big factor in Russia). According to these circumstances, his leave may be from two to five weeks. In peacetime there are also one-day and week end leaves. Leave on a working day is usually granted only under special circumstances. On the week end all personnel off duty are entitled to go where they please, providing their behavior in the past week has been satisfactory. There is always a certain number confined to barracks.

On the whole the facilities for sport are not good. There are some excellent football teams, such as the ZDSA, the Central House of the Soviet Army, in which air force officers are included, or *Kruilya Sovetov* (Wings of the Soviets), but the players in these teams could hardly be described as regular air force officers, because they are really professional sportsmen and their air force commissions are merely formalities.

Air garrisons usually have sports grounds with various facilities, but attendance, unless compulsory, is very poor. Air force personnel have very little free time, and what they do have they want to spend on their own pursuits.

Every air garrison has its own officers' club, besides the officers' clubs for all services, in which are restaurants and bars where drinks can be bought. But serious drinking is usually done outside these establishments, away from superior officers. Of the Soviet services, the air force is the most hard drinking, since they are the best paid and have the highest proportion of young unmarried officers. The usual drinks are various kinds of vodka and the traditional drink, "technical spirit," which is highly thought of as being stronger than ordinary liquor, pure, and above all costing nothing, apart from the slight risk of being caught stealing it. People say it is: "Clear as the tears of the Mother of God, and strong as Soviet power."

Slang in the Soviet forces is usually too indecent to be repeated; there are one or two sayings, however, such as "where discipline ends, the air force begins."

Air Force songs are also extremely indecent, on the whole, and very popular. There are also songs written by Soviet composers glorifying the air force, and one of these has been declared to be virtually the anthem of the air force.

> We are born to turn myth into reality
> To overcome distance and height
> Intellect has given us steel hands—wings,
> And instead of a heart, a burning engine.

Each air regiment has its own brass band. Regimental clubs have musical instruments, the most popular of which are accordions.

Women played a fairly important part in the air force during the war. There were whole regiments of women. The most famous was that of Col. Valentina Grizodubova, which fought successfully on the south Caucasian front. Many women became Heroes of the Soviet Union and received other decorations. After the war, these units were disbanded, and there are very few women in the air force. Most of the ones who remain are employed in the medical service. Clubs, canteens, and laundries also employ women, but they do not belong to the regular serving personnel. These girls usually have boy friends among the officers but their popularity tends to depend on the position of the garrison and the number of girls in the surrounding district.

It is often possible to locate an air garrison in town by the number of girls patroling outside. The military police often have to chase them off. "There is no prostitution in the Soviet Union."

Much of this may not seem very different from other air forces; it is in the realm of political indoctrination and control that the differences become remarkable.—END

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*The author, Boris Kuban, is a native of Russia, where he was born thirty-six years ago. He spent two years in an aircraft training college studying aircraft design before war broke out between Germany and the USSR in June 1941.*

*At that time he was a member of the* Komsomol *(Young Communist League) and was sent to a military school for artillery training. His war service, however, was with the infantry, in which he commanded divisional reconnaissance troops and later was a company commander and, temporarily, a battalion commander.*

*After being wounded twice, he was given specialized training for the military diplomatic service. On completion of the course Mr. Kuban was attached to the Northern Group of Soviet Armies in the capacity of "special duties officer" to the air forces in that group. He later was transferred to the Ministry of Foreign Affairs where he was on the staff of the political adviser to the Commander in Chief of the Northern Group of Soviet Armies.*

*Mr. Kuban has been working as a journalist for the past few years, since he decided to come over to the West.*

*"How the Soviet Air Force Lives" is one chapter from a new book. The chapter is reprinted with permission from* The Soviet Air and Rocket Forces, *edited by Asher Lee, published by Frederick A. Praeger, Inc., N. Y., 1959, $7.50.*

October • 1959

# SPACE DIGEST

*THE SPACE AGE IN PERSPECTIVE*

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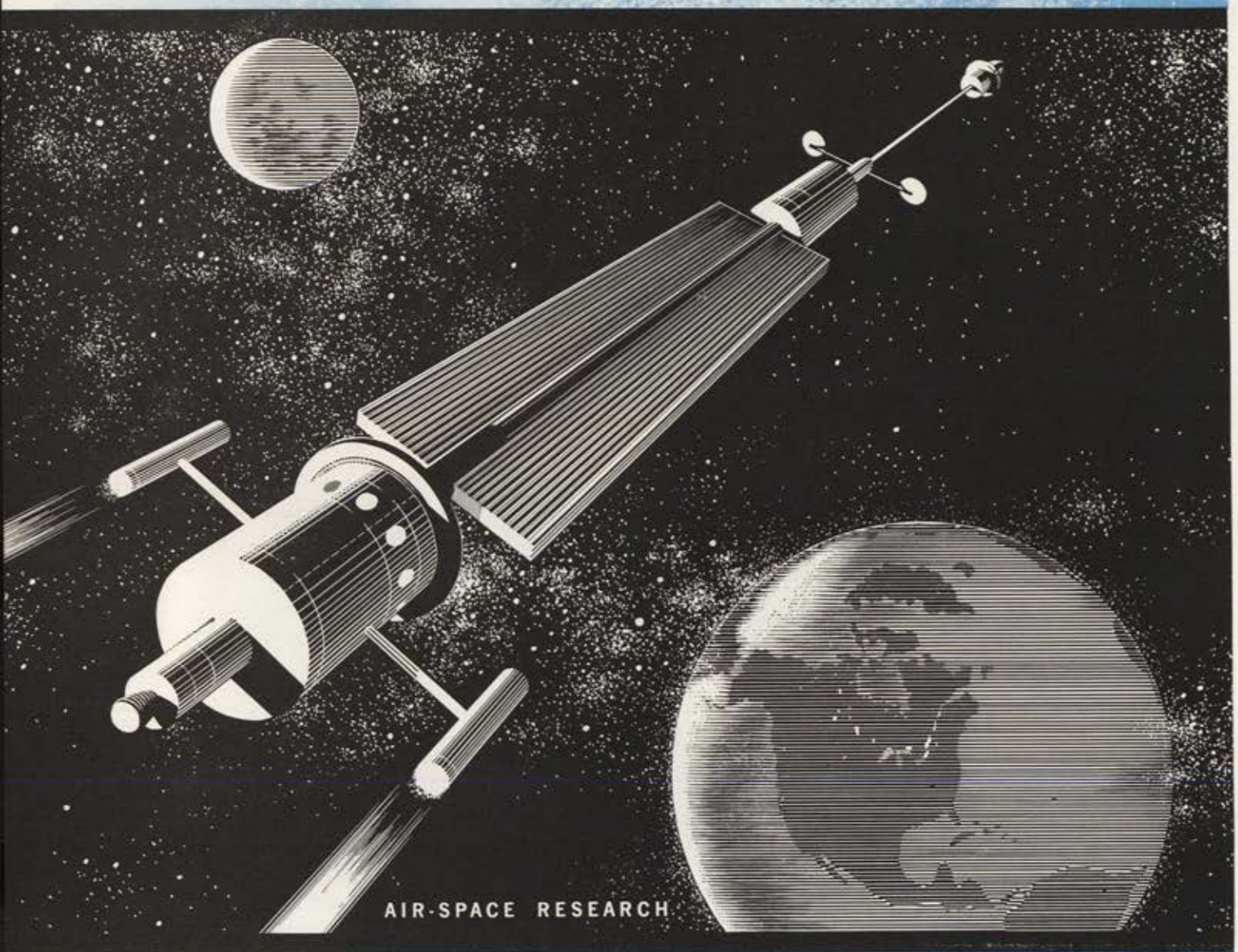


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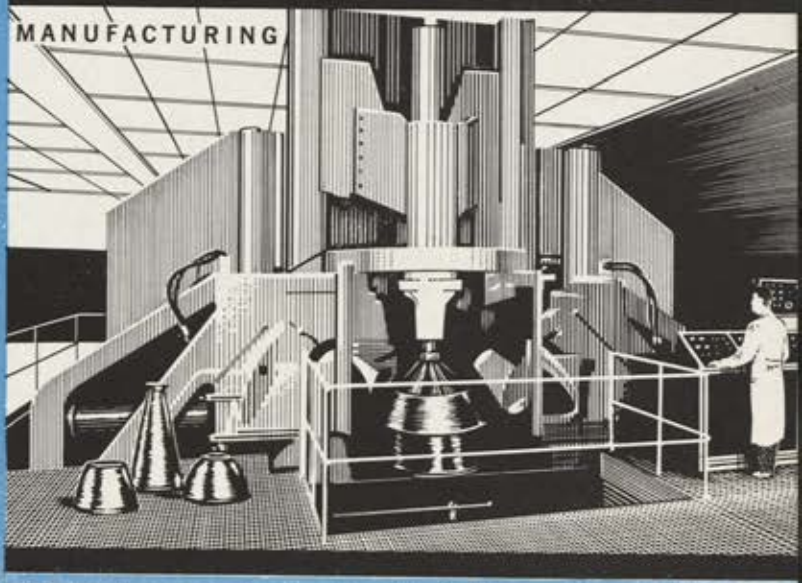


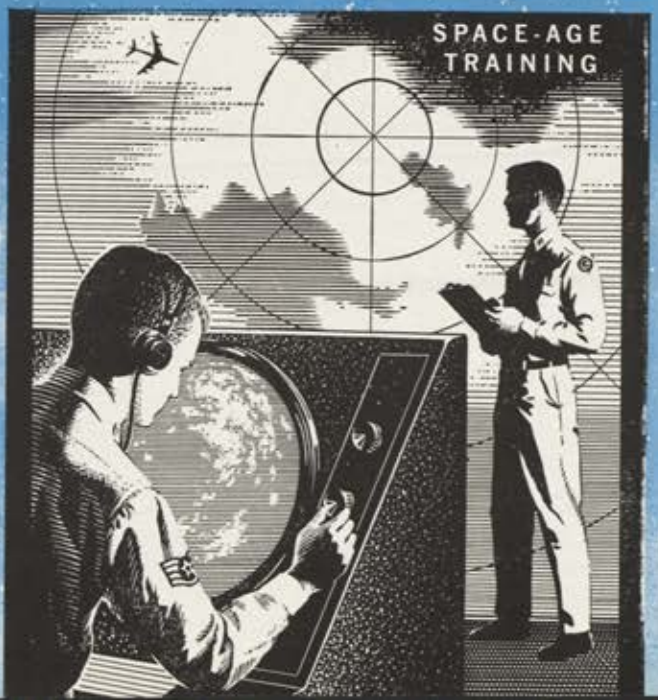


Engineers and scientists capable of making contributions in these and related areas are invited to write The Marquardt Corporation, Corporate Offices, 16555 Saticoy Street, Van Nuys, California; or

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VOLUME 2, NUMBER 10 • OCTOBER 1959

# SPACE DIGEST

• CONTENTS



## *From the Editors...*

ON PAGES 60 and 61 of this month's SPACE DIGEST we report the solemn personal reactions of five distinguished Americans to the landing of the Soviet projectile on the moon. We solicited these views out of a feeling that too great a number of the American people have not fully accepted the significance of the Russian achievement.

Along these same lines, the Milwaukee *Journal,* in its editorial of September 18, a few days after the Red moon shot, asked some blunt questions, which we believe warrant repetition:

"Why is the United States, acknowledged leader of the free world, second? What has happened to the most generally advanced of nations? How has a system, only forty years old, built on a peasant economy, come to surpass us in techniques and sciences in which we have excelled? . . .

"Is the trouble . . . the attitude of the American people? There was . . . an insistent demand for action after . . . Sputnik I . . . but the clamor soon quieted. Are we too much concerned with . . . pleasure? . . .

"Or is the fault with our present political leadership, both in the White House and Congress? . . . Have we been fed only smug, reassuring statements?"

The *Journal* then adds:

"The American people have every right to be gravely alarmed. . . . They have a responsibility to themselves and their descendants to insist that leadership bestir itself to meet the challenge Khrushchev throws in its face."

The *Journal* asks:

"In this contest for survival, is second place good enough? Is second place what the American people want?"

# New Ground Rules for the

*WILLIAM LEAVITT*
*Associate Editor*

THE military space mission, a Pentagon football since the dreary days that followed Sputnik I, is now much closer to being officially established where logic has always dictated it belongs—with USAF.

On September 23, Pentagon newsmen were summoned to a significant press conference in the radio-TV studio that so often serves as the locale for multi-million dollar announcements of military plans and policies. There they were handed a terse, one-page news release which in the months to come should help clear the confused picture of who's to do what in military space technology. In addition to spelling out the Air Force's primary role in military astronautics, the announcement and ensuing statements by the principals at the press conference—Dr. Herbert F. York, Director of Research and Engineering in the Department of Defense, and Roy W. Johnson, Director of DoD's Advanced Research Projects Agency—took military space projects out of the "upstream" area and established them as ongoing businesses which ought to be handled by the users. ARPA, established in the first post-Sputnik days to allay public and legislative uproar, had gotten cognizance over military space projects, handled funding, and made decisions while the military services and their contracting ageneies had done most of the work. This had led to heavy criticism of ARPA as a superfluous layer between initiation of space projects and completion. Now, said Dr. York and Mr. Johnson, ARPA would be going back to its original charter—"far-out" research studies, such as materials, propellants, and missile defense theory. ARPA, at this writing, apparently can look forward to continued life, independently or as part of Dr. York's Research and Engineeering shop.

Because of its unusual significance, the full text of the September 23 announcement is reprinted as follows:

"A plan for the progressive and orderly transfer of space projects from the Advanced Research Projects Agency to the military departments was announced today by the Department of Defense. This is being done to prepare for the shift from the development to use of space systems, and to simplify administrative procedures.

"ARPA will continue to be responsible for advanced research in fields such as advanced missile defense, solid-propellant research, materials, and such other projects as the Secretary of Defense may decide.

"Basically, the plan provides for the eventual assignment to the Air Force of responsibility for the development, production, and launching of military space boosters; and for the separate assignment of the development responsibilities for payloads and specialized ground-support equipment for space and satellite systems to the military departments on the basis of primary interest or special competence.

"The following specific assignments for development of payloads have been approved:

"1. MIDAS, the satellite for early warning against ballistic missiles, to the Air Force.

"2. SAMOS, a reconnaissance satellite system, to the Air Force.

"3. TRANSIT, the satellite-borne navigation system, to the Navy.

"4. NOTUS, the interim satellite-borne communications system, to the Army.

"The dates of actual transfer of specific projects from ARPA to the military services will be set by the Secretary of Defense, on recommendation of the Director of Defense Research and Engineering."

* * *

In essence, the foregoing means that the long-standing argument of the Air Force that air and space are indivisible segments of the same continuum is much closer to acceptance than before by the powers in the Department of Defense.

Basically, the Air Force has argued that the

# Space Mission

movement of men or weapons through what it calls aerospace is an obvious Air Force responsibility.

The third paragraph of the announcement is the most significant. It assigns to the Air Force responsibility for the *"development, production, and launching* of military space boosters." Thus, it would seem logical to assume that although the other military services will contribute payloads or special ground-support equipment, the Air Force will be calling the shots, so to speak, in terms of payload contents and weight. And of course the Air Force will, in addition to its development, production and launch charter, be preparing its own payloads for specific projects.

The reporters present at the press conference were quick to fire a series of clarifying questions at Dr. York and Mr. Johnson.

Would the money now held by ARPA for military space projects be transferred along with direct cognizance over the projects? they wanted to know.

Dr. York's answer was yes.

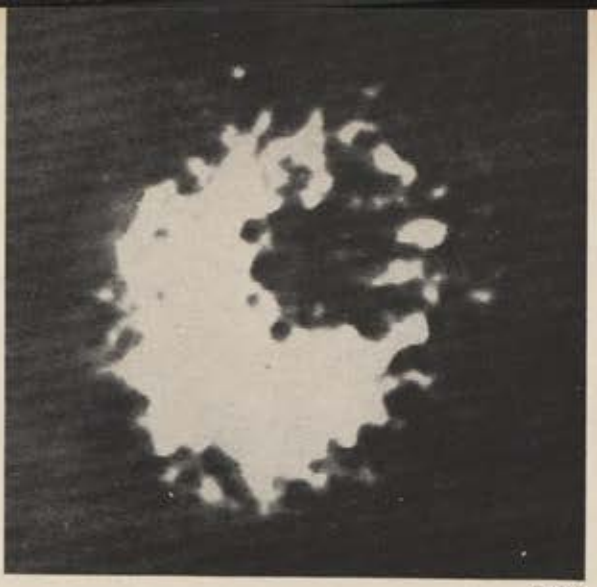
Did this mean that ARPA was going out of business?

Mr. Johnson's answer to that question was that he had been assured a week before the press conference by Secretary of Defense Neil H. McElroy that ARPA would remain a permanent part of the Department.

The natural question about the Army Ballistic Missile Agency's activities at Huntsville, Ala., was asked, specifically in terms of what would be happening to Project Saturn, the ABMA program originally set up by ARPA, to develop a million-and-a-half-pound-thrust engine cluster.

Dr. York's initial answer to that question was that Saturn was not to be understood as an Army project per se, rather as a project its missile agency was contributing to the national booster program.

Pressed further, later in the conference, however, he said that Saturn, as a booster project,

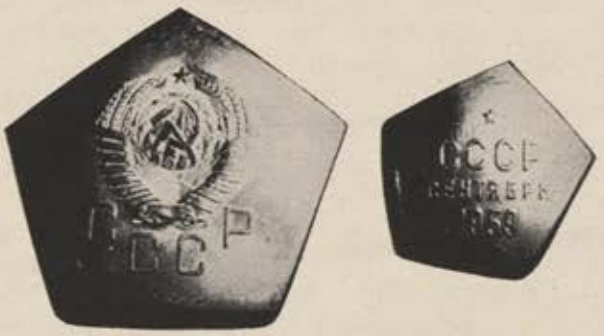


Sovfoto

*Above, glowing sodium cloud released by Russia's Lunik II while enroute to rendezvous with moon.*

Sovfoto

*Soviet space scientists revealed details of the moon shot, showed pictures at Moscow gathering.*



Sovfoto

*Russian rocket deposited these two metal emblems on moon. Larger one bears Soviet coat of arms and "CCCP," which translates as USSR. Smaller one carries inscription, "USSR, September 1959."*

would eventually come under the aegis of the Air Force.

Other natural questions were asked. One reporter wanted to know what the effect of assigning military booster responsibility to the Air Force would be on NASA.

Dr. York restated the division (as hard as ever to understand) between military and civilian space projects. The "National Booster Program," the series of superthrust engine combinations in research stages now for later deep space scientific missions, continues to be under control of NASA, Dr. York said. But it should be noted here that, since most of the exotic list of future engine combinations now under study involve doublings, triplings, quadruplings and more of already existing military missiles, the Air Force can be expected to work quite closely and directly with

*Portions of silos that will house Minuteman ICBM, now in test stage, shown at Boeing Company plant.*

NASA, in much the same way that it worked with the predecessor to NASA, the old National Advisory Committee for Astronautics.

There was, of course, a lengthy prelude to the significant Pentagon announcement, and its history was a matter of interest to the press.

ARPA's Mr. Johnson reported that as far back as May he had asked the Joint Chiefs of Staff for their recommendations on the problem of assigning missions and projects. And Dr. York said that the decision to assign primary responsibility to the Air Force had been made by the Secretary of Defense on the advice of the Joint Chiefs of Staff. There is little question that the impact of Lunik II on the moon hastened the disclosure of the new ground rules.

Although much of the air is cleared by the announcement, there are still many questions that remain to fuzz the picture. The careful reader of the announcement quoted above will note a semicolon in the sentence that reads:

"Basically the plan provides for the eventual assignment to the Air Force of responsibility for the development, production, and launching of military space boosters; and for the separate assignment of the development responsibilities for payloads and specialized ground-support equipment for space and satellite systems to the military departments on the basis of primary interest or special competence."

The semicolon in that important sentence marks the limits of the Air Force's clear-cut space charter. There is still room for scrambling on who builds what payloads.

Dr. York shed a little light on that question with his suggestion that, since there are certain amounts of money available in the over-all budget for advanced space projects on the military side, the services will be required to present their cases

*Progress for US. Below, left, first operational Atlas ICBM blasts off launch pad at Vandenberg AFB on September 9. Combat-ready USAF missilemen fired it. Right, below, Discoverer VI satellite heads for orbit in August 19 Vandenberg firing. Vanguard III satellite since has entered heavy space traffic.*

for the projects as they come up. With defense budgets tighter than ever, the Air Force will be faced with some very difficult decisions on space projects vs. the needs of the force in being. In the final analysis, Dr. York may be making the principal recommendations on the worth of future research projects, which his job calls for him to do.

There are other problems, too.

As matters stand right now, there is the possibility of a housekeeping dispute between the Air Force and Navy at the Pacific Missile Range. Such a dispute could revolve around the meanings of the words "launch" and "specialized ground support." Air Force Atlases (such as the recent first SAC-crew fired Atlas) are fired from Vandenberg AFB, which in some naval quarters is considered just part of the over-all Missile Range,

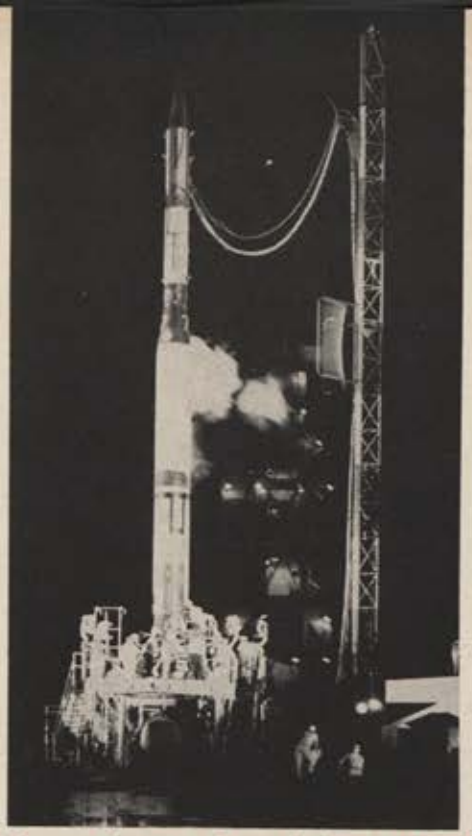
*Battery packs, tubes, tracking transmitter, other innards of Vanguard III clustered around its shell.*

for which the Navy has been designated manager, as USAF is at Cape Canaveral and the Army is at White Sands. Will the post-launch responsibility be Navy or Air Force?

This is the sort of academic question which can get very real. It should also be noted that a decision cannot long be delayed by the Joint Chiefs and the Secretary of Defense on the resuscitated Navy plan for a tri-service space command.

But it remains true that a basic policy decision has been made. The US Air Force has been moved a long step toward its logical destiny as the force responsible for the space mission.

Special exceptions exist. Polaris remains with the Navy; the Army keeps its Pershing missile, but the astronautic mission is now officially mostly the Air Force's.



*Vanguard, seen above before successful launch, was the last in Vanguard satellite program.*

Although no one can deny the fantastic achievement of the Soviets in landing their Lunik II on the moon on September 13, US missilemen haven't been lying down on the job during the past several weeks.

Since our last issue, the Atlas ICBM has been successfully fired for the first time by a SAC crew; a full-scale test model of the Minuteman solid-propellant ICBM has been captive-test-fired successfully; the X-15 has, with North American Aviation test pilot Scott Crossfield at the controls, successfully made a powered flight and glide home.

In addition, the last of the ill-starred Vanguard satellite series has been successfully placed in orbit and is sending home information. Also, a capsule much like the one that will take the first US Astronaut into orbit, probably in 1961, was carried aloft and returned safely by an Atlas. That success brought joy to the NASA personnel charting the man-in-space program.

There were some failures to report, too. In early September, just after the arrival of Mr. Khrushchev in the wake of his Lunik II glory, the first Project Transit navigational satellite fired from Cape Canaveral failed to attain orbit. A few days before that a Jupiter IRBM laden with fourteen pregnant mice blew up over the pad at the Cape. And the Atlas combination that was to have attempted a lunar orbit blew up on the pad during a static test.

It was a busy summer for astronautics.—END

# LUNIK II—FIVE

BECAUSE even the most sensational news—if there's enough of it—can become routine and seemingly lose its significance, the editors of AIR FORCE Magazine and SPACE DIGEST queried a group of distinguished Americans on their personal reactions to the landing of the Soviet space projectile on the moon in mid-September. Their comments, telegraphed to us, follow:

*Erwin D. Canham, editor of the respected* Christian Science Monitor, *who is also president of the US Chamber of Commerce, replied:*

1. "A few minutes after the Soviet moon rocket landed on September 13 I broadcast the following on a national network:

" 'Thus Premier Khrushchev comes to Washington with a new feather in his cap. Renewed proof of skillful Soviet rocketry means that the Soviet Union has at least military parity and perhaps military superiority over the United States in some of the weapons which can reach across continents and oceans and deposit incredibly devastating bombs upon the heartland of any nation in the world.

" 'It may be that the United States' Strategic Air Command, or its shorter-range missiles, are more than enough to redress the balance. But these are rash assumptions. The safest assumption is that both the United States and the USSR possess the physical power to devastate most of human civilization.

" 'Whether either possesses the power to prevent its opponent from devastating the soil of an aggressor in retaliation is open to doubt. The likeliest calculation, as it has been for some years, is that in massive war both sides—and many innocent bystanders—would suffer more than any whole nation has ever suffered in war before.

" 'The Soviet moon shot is more than a magnificent scientific achievement. It is a rattling of the global sabre. It is a warning. And in some respects, it is an odd preliminary to a visit which is for the announced purpose of reducing tensions in the world. And yet perhaps it is just as well that American public opinion should understand the dimensions of Soviet power as Premier Khrushchev arrives in the United States. . . .

" 'The lot of most Americans is paradisal indeed compared to the lot of most Soviet citizens. But the Soviet peoples are improving their lot. In their own view, they are making great progress. Many of them know, as Premier Khrushchev knows, that they cannot hope to make really great and significant progress as long as a great percentage of their national product must go for the machines of war. This is too heavy and dangerous a load to carry if a society also expects to improve its standard of living steadily and safely. Missiles and rockets come high. The price of today's Lunik in terms of shoes and schools and sandwiches for the Soviet peoples is a very costly price. . . .

" 'For us, the armament burden is also grievously heavy. More of our national income should be going into more constructive goals: better schools and colleges, roads, rebuilt cities, and the spiritual enrichments of a way of life unthreatened by world destruction. A large part of the world is crying out for cooperation in achieving even a tolerable standard of living—enough to eat, a decent place to live, and opportunity to learn to read and write and enrich the mind.'

"I would add the following" (*wired Mr. Canham*):

"Americans must certainly be awakened to the dimensions of the Soviet technological menace. Again and again we must remind ourselves of the seriousness, dedication, and sacrifice with which we must improve our technological standards, our educational base, and the application of our national economy to the most essential goals. Conspicuous consumption and luxury must take second place to the protection of civilization from aggression and the proof that free society can do more to meet people's real needs than totalitarianism. It is a hard lesson which we have not yet learned."

*Mr. Canham's solemn view was underscored by the reply received from Dr. Clifford C. Furnas, himself a veteran of the budget wars in Washington (as former Assistant Secretary of Defense for Research and Engineering). Dr. Furnas, now the Chancellor of the University of Buffalo, has spoken out repeatedly on the need for a stepped-up US research and development effort.*

*Dr. Furnas minced no words either:*

# INTERPRETATIONS

2. "The Russian moon shot is a very significant advance in space technology. It re-emphasized the necessity of continued and earnest top-level effort on America's part if we are to maintain our world stature in military affairs and in the advance of science and technology.

"Every citizen should realize that we are engaged in a global competition of the utmost importance whether it is friendly or otherwise. The Western nations look to us for leadership. We must demonstrate continuously that a free society is the most effective framework for scientific, industrial, and political as well as military accomplishment. If we do not, our days as a great nation are surely numbered."

*On the pure science side, Dr. Gerald Kuiper, the noted astronomer and lunar specialist who heads the famed Yerkes Observatory of the University of Chicago, had some pointed comments:*

3. "The average American already knows about Russian progress. The scientific and technical balance with Russia can change in our favor only by intelligent action at the top universities where pure science is developed and new scientists are trained. [Scientists] must be permitted through adequate funding by government to do their job properly. At present scientists have to spend too much time raising small sums of money and writing reports for projects. No long-range scientific planning is possible under the circumstances, and much time of key personnel is wasted."

*The editors of this magazine have not always agreed with the statements of Lt. Gen. James M. Gavin, USA (Ret.), now associated with Arthur D. Little in Cambridge, Mass. But with his message that follows we could not agree more heartily:*

4. "If there were a way to make dramatically clear to the American people the present leadership of the Soviet technology in the race for space, impacting with predicted accuracy upon the moon would be it. The Soviet achievement was extraordinary in just about every respect. Obviously their propulsion systems and guidance systems are superior to ours, and they are clearly in the lead in the race for the mastery of space.

"Despite Khrushchev's soothing words, this is not a 'friendly competition.' This is a battle of ideologies and a battle for survival. There is no such thing as second place. In the final analysis, a deeper understanding of the nature of this competition must begin with a frank recognition of the nature of the competition by those responsible for our programs in Washington.

"Then leadership that would inspire our people, fully supported by our entire nation's resources, could restore to us the leadership in the race for space to which we now aspire."

*When most people thought of astronautics as literary fun at best and madness at worst, Prof. John Cobb Cooper was already thinking of man's flight into space as a problem of international law, a problem that would some day become a real issue of importance to every citizen of every country. In Professor Cooper's view, that day is here, earlier than we thought. The distinguished lawyer and Professor Emeritus at McGill University wired:*

5. "In July the Ad Hoc Committee on the Peaceful Uses of Outer Space, created by resolution of the United Nations General Assembly, completed its report. The USSR, though named to the Committee, took no part in its work. The report dealt with both scientific and legal questions. It noted that 'serious problems could arise if states claimed on one ground or another exclusive rights over all or parts of a celestial body.'

"It concluded nevertheless that 'human settlements and extensive exploitation of resources were not likely in the near future' and therefore 'problems relating to the settlement and exploitation of celestial bodies did not require priority treatment.'

"Less than two months after this report was completed, the USSR has landed an instrument-equipped rocket on the moon. Whether any exclusive rights may be claimed hereafter as a result is not known.

"Obviously, the United Nations must promptly review the situation and determine without equivocation that the moon is not subject to direct or indirect appropriation to the national sovereignty of any single state. This problem has long been foreseen. It requires vigorous consideration."—END

# Role of the Budget Bureau in Charting Our Space Organization

*WILLIAM F. FINAN*

*Assistant Director, Management and Organization, Bureau of the Budget*

TWO years ago the USSR placed in orbit the first earth satellite to be launched by man. About a month later Dr. James Killian of the Massachusetts Institute of Technology was appointed the President's Special Assistant for Science and Technology. Having also been designated Chairman of the President's Science Advisory Committee, Dr. Killian and the Space Science Panel of the Committee immediately began to develop plans for the recapture of technological leadership.

As soon as the outlines of an expanded and accelerated space program emerged from the deliberations of the Space Science Panel, questions about how the program should be organized and administered began to come to the fore. Toward the end of 1957 Dr. Killian approached Maurice H. Stans, Director of the Bureau of the Budget, with the request that the Bureau take the leadership for the organizational and administrative planning of the space program. The Budget Director agreed with Dr. Killian's proposal and assigned responsibility for the work to the Bureau's Office of Management and Organization.

The scientists had some difficulty in communicating with the management planners. The latter had read too much, or perhaps too little, science fiction in the past and were also bemused by what they were then reading in the press, hearing on the radio, and seeing on television. It required the application of special mental discipline to be sure that they were planning for the organization and administration of the program being officially conceived and not for the even more fantastic projects being speculated about in public.

Ultimately the management planners comprehended that they should plan for a program which would be civil in character; would be aimed principally at the extension of man's knowledge of the earth, the solar system, and the universe; would involve the launching of many types of earth satellites and later would include explorations of the moon, Mars, Venus, and other planets; would probably produce its first tangible benefits in the fields of radio and television transmission and meteorology; would for some time require the use of propulsion, guidance, tracking and communications systems developed by the military services but later would probably need to acquire its own capabilities in those fields; and, finally, would supplant those general purpose space research projects already initiated by the military services but would leave the Department of Defense fully responsible for any military applications of space technology.

By January of 1958 widespread interest had been aroused in the choice of the agency to administer space programs, and a number of alternative arrangements had been publicly advocated. Numerous bills were introduced in the Congress to assign the program to existing agencies (for example, the Atomic Energy Commission) or to create new agencies for the purpose (for example, a Department of Science and Technology). Late in the month the National Advisory Committee for Aeronautics released a report proposing a national program of research in space science and space exploration and calling for an expanded NACA to provide the principal leadership in space technology.

The principal organizational alternatives examined by the Budget Bureau were:

• *Utilization of the Department of Defense.* The Department of Defense was doing most of the then current work on missiles and satellites; was employing the bulk of the scientists and engineers in those fields either directly or through its contractors; and was experienced in working with and utilizing the facilities of the NACA.

Utilization of that agency was not recommended, however, because such an arrangement would be interpreted as emphasizing military goals; the civil space program was expected to produce benefits largely unrelated to the central mission of the Defense Department; that Department's military functions were already taxing its executive and technical personnel to such an extent that additional assignments to the department should be made only when there was no other available alternative; cooperation with other nations in international space matters would be hampered; and adequate civil-military cooperation could be achieved without assigning the program to the Department.

• *Utilization of the Atomic Energy Commission.* The Atomic Energy Commission was considered because it was a civilian agency with great competence in directing scientific research and development projects; it was experienced in managing research contracts and in working with the military agencies; and it was then developing a nuclear rocket engine which might eventually be used to propel space vehicles.

Utilization of the AEC was not recommended, however, because it was concerned chiefly with the use of a single form of energy (it was expected that chemical propellants, not atomic energy, would be the chief power source for space vehicles for many years); the Commission had had no experience in most aspects of the design, construction, and testing of space vehicles; and it was believed that the space agency should be headed by a single executive, whereas the Commission was headed by a five-man board.

• *Creation of a Department of Science and Technology.* A Department of Science and Technology would have provided a civilian setting for the civil space program, and it would have given that program and any others assigned to the Department the prestige and accessibility to the President associated with departmental status.

The arrangement was rejected principally because it was believed that science and technology, of themselves, did not provide a sound basis for organizing an executive department. Another important reason was a concern that, if it could be done at all, it would take so long to establish and organize such a wholly new department that the civil space program would be delayed interminably.

• *Utilization of the National Advisory Committee for Aeronautics.* NACA was a going federal research agency, with a large scientific and engineering staff; it was in position to expand its program and increase its emphasis on space science with a minimum of delay. NACA had a long history of close and effective cooperation with the military services. NACA was a civilian agency and widely recognized as such. NACA's aeronautical research had been progressively involving it in technical programs associated with spaceflight, and the construction program it then had under way was designed to be useful in space research. It had done research in rocket engines; it had developed materials and designs to withstand the thermal effects of high speeds on entering the earth's atmosphere; it conducted multistage rocket launchings; and in the X-15 project it had taken the leadership (in cooperation with the military services) in developing a manned vehicle capable of flights beyond the earth's atmosphere. It seemed unlikely that it would be possible to define practicable boundaries between the missile and high-performance aircraft research of NACA and space vehicle projects. Moreover, it appeared likely that, left to aircraft and missile projects, NACA's mission would suffer.

The recommended solution to the problem of selecting an agency to administer the civil space program was to use the NACA. That recommendation, as everyone knows, was accepted by the President and the Congress. But it should be emphasized that there is no such thing as a perfect solution to a major problem of government organization. The recommendation was *not* that the civil space program simply be assigned to a renamed NACA in addition to its other functions. Rather, it was that a drastically different and much more powerful agency, to be called the "National Aeronautics and Space Agency," be erected upon the foundation provided by the NACA. Such an approach was believed to be necessary because the NACA was a multiheaded agency, literally headed by a large committee; was experienced in managing a program much smaller and simpler than the contemplated civil space program; had limited contracting authority and inadequate experience in administering large-

scale developmental contracts; in the direct employment of civilian personnel had no special flexibility which would enable it to attract additional personnel in the necessary numbers and qualifications; had been involved chiefly in research involving air-breathing aircraft and missiles and lacked staff experienced in some fields related to spaceflight such as electronics and space medicine; and was without experience in administering a politically supercharged program such as the projected civil space program.

Having arrived at a decision to use the NACA in order to erect the civil space agency, administrative problems were foreseen and plans were laid to cope with them by either executive action or legislative proposals. These problems included:

- As had already been noted, most of the scientists who had done the most work on rocket engines and space vehicles were employed by Defense Department agencies and contractors. A means was sought to utilize those experienced personnel which would not unduly impair the capacity of the Defense Department to continue the defense-related aspects of missile and space activity. Several provisions of the bill developed by the Budget Bureau staff were aimed at that problem: that part of section 6(a)(6) which authorized the civil space agency to use the services, equipment, personnel, and services of other agencies; section 6(a)(10) which authorized the employment of retired military personnel; section 6(a)(11) which authorized the detail to the agency of members of the armed services; and section 8 which authorized the space agency, with the concurrence of the head of the other agency concerned and with the approval of the President, to transfer to itself any function relating primarily to the functions of the space agency.
- The NACA was not in a position to push ahead with the immediate demonstration projects necessary to protect the nation's world prestige. By Presidential direction the Department of Defense undertook to conduct such projects.
- Some key scientists were known to be unwilling to work under the limitations imposed on civil service agencies, particularly those involving compensation, and to be advocating that the civil space agency be required to use one or more contractors to carry out the civil space program. While it was believed that the agency should have ample authority to contract for so much of its work as might be desirable and appropriate, it was contemplated that it would be in the public interest to conduct certain research, as well as other work, in government-employee staffed installations. Section 6(b)(2) of the executive branch bill was intended to equip the agency to deal with its compensation problems by authorizing the agency to fix and adjust the salaries of its employees at rates reasonably comparable with prevailing rates paid to nonfederal employees for similar work. Section 6(b)(5) was designed, in conjuction with other applicable laws, to give the agency the necessary contracting authority.
- Difficult and complicated relationships with the Department of Defense seemed to be inevitable for a considerable period of time. Avoidance of overlapping between the civil space program and the work of Defense on military projects was considered especially important. It was thought that the problem could be minimized if Defense, in a manner analogous to the practice followed with the NACA in developing aircraft and missiles, made use of the civil space agency for supporting research and development on military space vehicles.

The National Aeronautics and Space Act of 1958 was signed by the President on July 29, 1958. In enacting the legislation the Congress accepted the principal features of the proposals of the Executive branch, which were contained in the President's special message of April 2, 1958, and identical bills which were introduced as H.R. 11881 and S. 3609, 85th Congress. The Congress selected different methods than those proposed by the Executive branch to permit functions to be transferred from the Department of Defense to the space agency and to enable the agency to compete for scarce managerial and scientific talent. The Congress also made a number of other changes in the legislation, perhaps the most important of which was the creation of the National Aeronautics and Space Council. But it is fair to say that the main organizational and administrative arrangements under which the civil space program is being administered are those which were originally projected by the management planners of the Budget Bureau.—END

*A native of Memphis, Tenn., Mr. Finan has held important posts in the Bureau of the Budget since 1946, and was named an Assistant Director in 1950. Material above is condensed from an address to the 1959 meeting of the American Political Science Association in Washington, D.C.*

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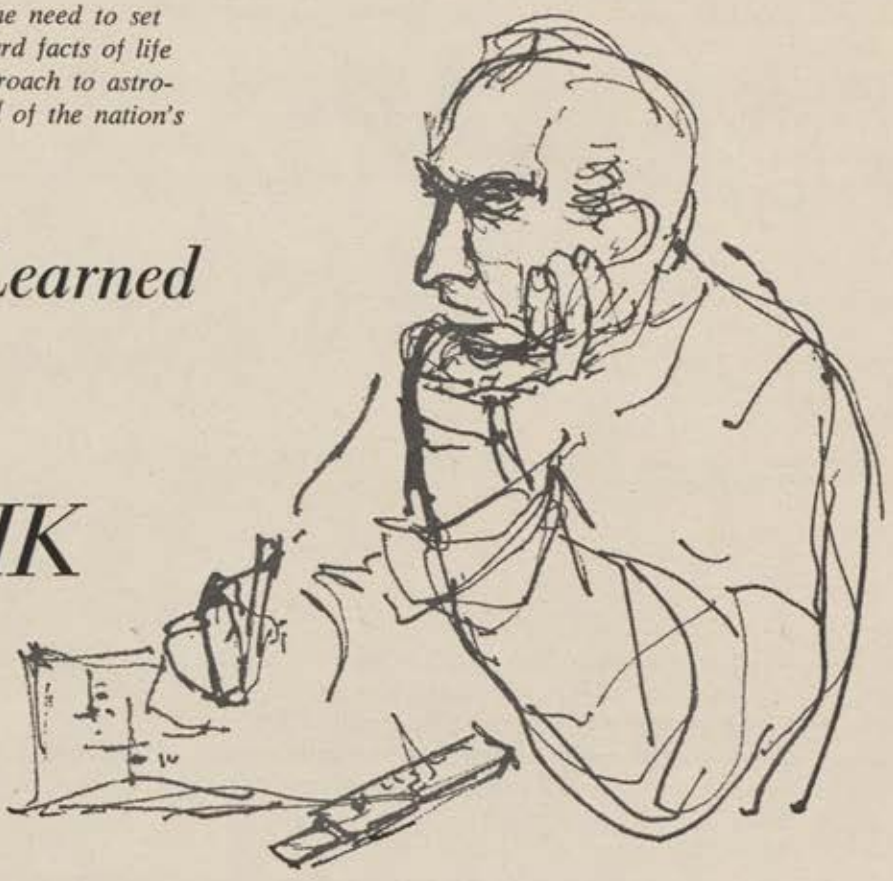
*Bitter failures, increasing costs, the need to set firm objectives are some of the hard facts of life in the space age. A romantic approach to astronautics won't do, reports the head of the nation's civil space agency . . .*

# *What We've Learned SINCE SPUTNIK*



*T. KEITH GLENNAN*
*Administrator,*
*National Aeronautics and*
*Space Administration*

WHAT have we learned from our successes and failures of the past year? And what are we planning for the future as a result of our experiences—both good and bad?

In the first place, we have learned that we are not nearly so far advanced in space technology as we had thought or hoped. Our experiences in the space vehicle field have been less than completely satisfactory. The ratio of successful launches to what has been termed by some as "successful failures" has not improved very much in the past year. And as soon as we began to plan for second-generation experiments we found that we were facing some hard facts of life in the propulsion and guidance fields. Even today, every shot we make —either by the military or by ourselves in NASA —is a shot in which there is little or no margin for even a slight deviation from planned performance parameters. In thrust capability, in guidance-injection, midcourse and terminal—in thrust control —in all of these areas there is much that must be learned and applied before we undertake the difficult missions we all talk about so glibly.

Secondly, it is becoming clear that we cannot and should not attempt to undertake all of the hundreds of projects that are being recommended to advance our understanding of the space environment. We haven't the manpower, the facilities, or the funds. More important than any of these, however, is the fact that it seems to me that we will make progress faster if we move at a rate that will enable us to understand a bit more about the things we have already done and the information we have already acquired from successful experiments that are behind us.

Probably more than any other single matter, the question that plagues all of us is one of reliability. When will we be able to count on being successful in launching and placing into orbit or on the desired trajectory in deep space as many as three out of four of our intended experiments? We should admit, quite frankly, that with distressingly few exceptions we have not achieved complete success in any mission to date—success in the sense that the payload has been injected into orbit or into a deep space trajectory within reasonable limits of the planned flight objectives and in the sense that the payload has performed its mission satisfactorily.

Let me hasten to say that our competitors in the USSR have reported only their successful flights to date. We know they had failures. We don't know, in any instance, whether even their an-

nounced successes have really come any closer to the intended objectives than have ours.

We are the one nation in this world which has developed its position of leadership through the application of science and technology to the alleviation of man's back-breaking burdens while continuing to protect the rights of the individual citizen. For us to play second fiddle in this space business is to admit that we have lost a part of our genius for experiment—for taking a competitive risk—for searching out new facts about nature that ultimately will improve the well-being of mankind everywhere. No, we cannot and I am sure we will not fail to demonstrate once again that free men—when challenged—can rise to the heights and overcome the lead of those who build on the basis of the subjugation of the rights of the individual as they dictate to him the path he must take in response to the demands of the state.

That may seem to be a bit of histrionics . . . but it is the creed by which we must guide our actions in the days ahead. And we are not going to achieve our goals by wishful thinking about difficult technical problems.

Having told you very, very briefly about the more important bits of realism that have been impressed upon us during the past year, let me now tell you of our thinking about the future.

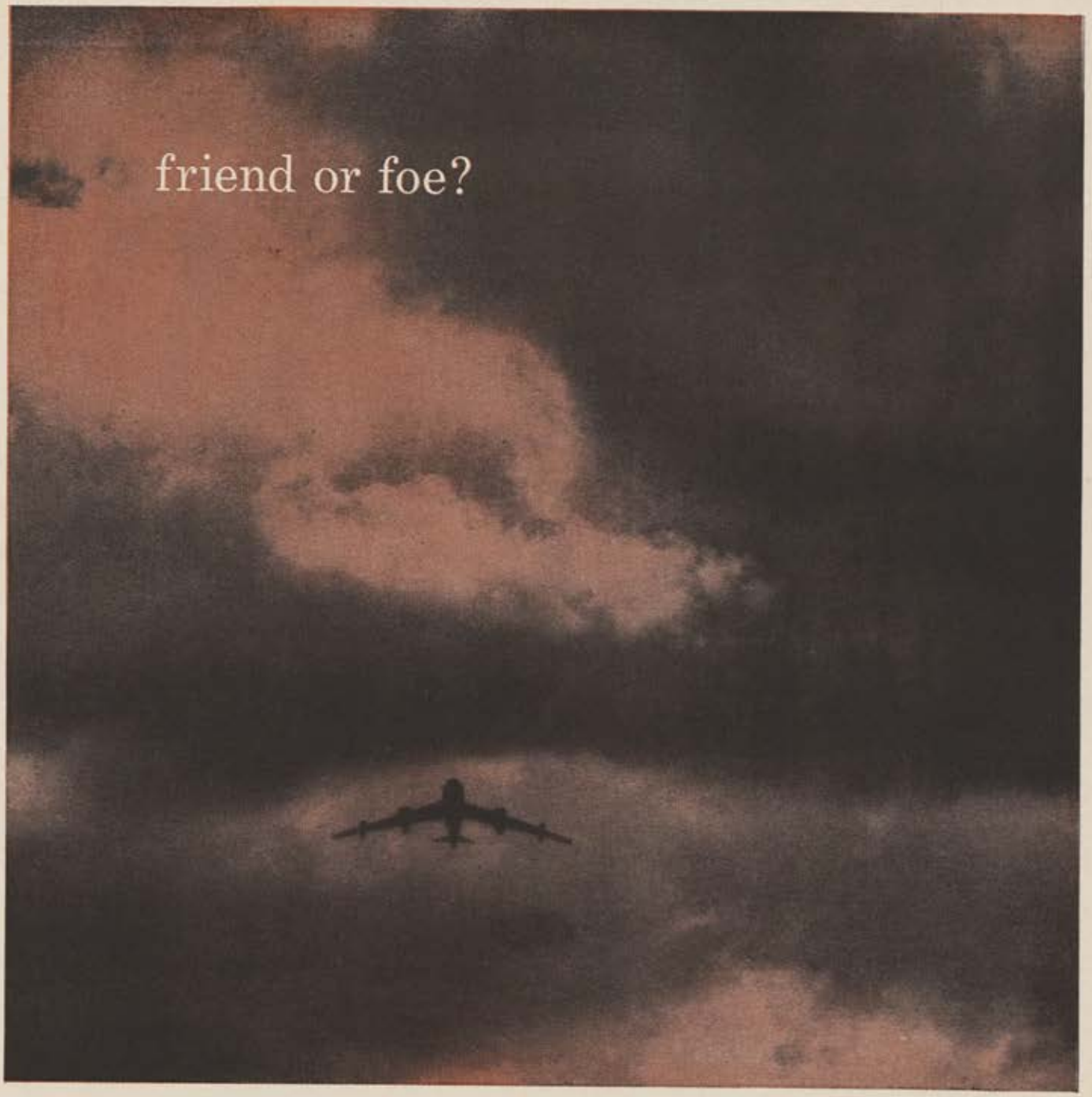
First, as to program—we have had to face up to the fact that we simply cannot do everything that is proposed either by members of the scientific community, other agencies, or by our own people. Some of the firing schedules we developed nine months ago lacked the realism that now characterizes our planning.

Within the next year, I think you will be able to note an orderliness about the attack our people will be making in the space sciences area. Thus far we have been engaged in completing experiments planned for the IGY. In fields such as astronomy, meteorology, and the physical sciences, we are developing a determined and well planned program. Lead times for most of these experiments will be long and will call for continuing high levels of effort and support. Unless we can achieve this goal, we will lack, ultimately, the underpinning for the entire space program and may miss the really important discoveries that now lie hidden from our view.

We plan to concentrate our initial efforts in deep space on lunar missions—near miss, orbiting and hard and soft landings of payloads. In this program we will develop the techniques necessary to accomplish missions into deeper space and will use them for such missions as their reliability and the opportunity permit.

Second—as to basic research and advanced technology—we expect to support greater effort in the universities, other nonprofit institutions, and in industry in both basic research and in advanced development of system components. In the development of better methods and devices in the fields of guidance, control, telemetry, auxiliary power units and sensors of all types—in all of these areas, we see the need for greater concentration of effort. Through such actions we hope to improve the reliability of the systems which will employ these components.

Third—as to booster systems—it is becoming increasingly apparent that greater efforts must be placed on simplification and reliability. As a corollary, it seems quite clear that continued attention must be given to reduction in the number and varieties of rockets and rocket-booster systems for use in the space business. It is unlikely that

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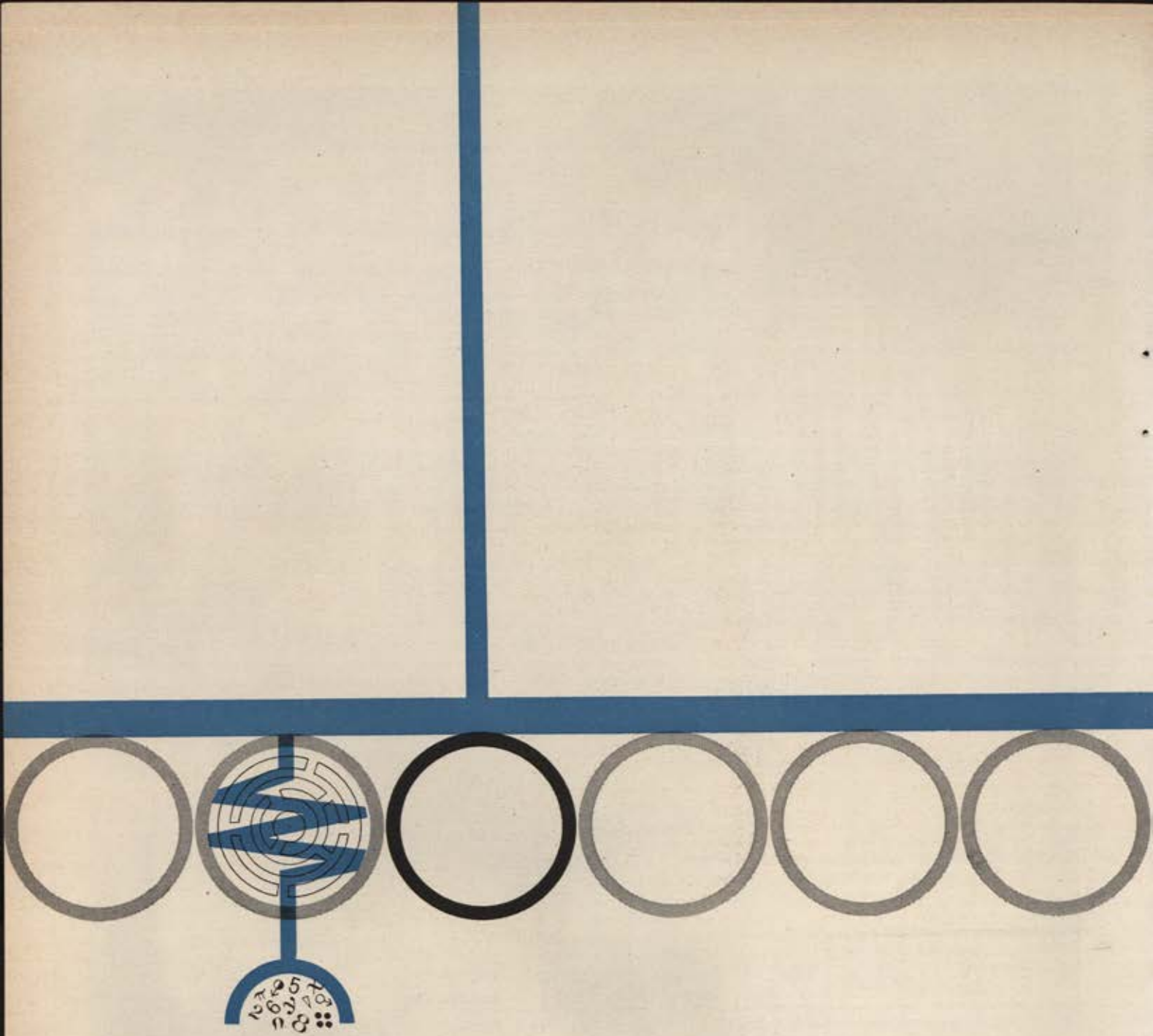

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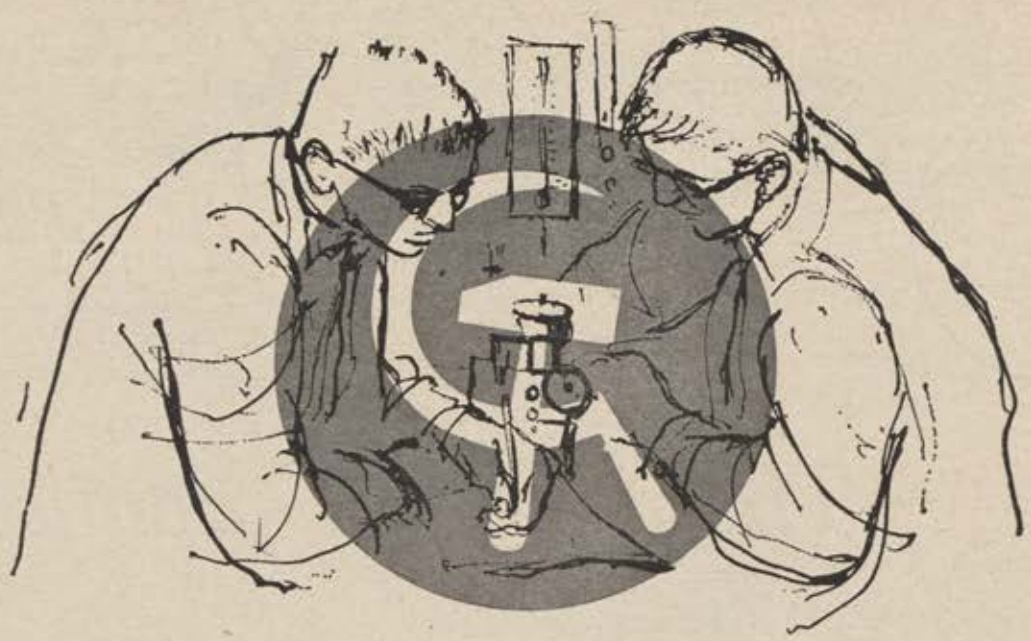


these systems will become off-the-shelf production items in the foreseeable future. With limited numbers of firings in prospect, reliability can be expected only if the variety of systems is kept at a minimum. It will be cheaper to waste payload space in using an oversize booster that becomes reliable through continued use than to tailor boosters for each specific mission with the attendant lowered reliability that surely will result from infrequent use.

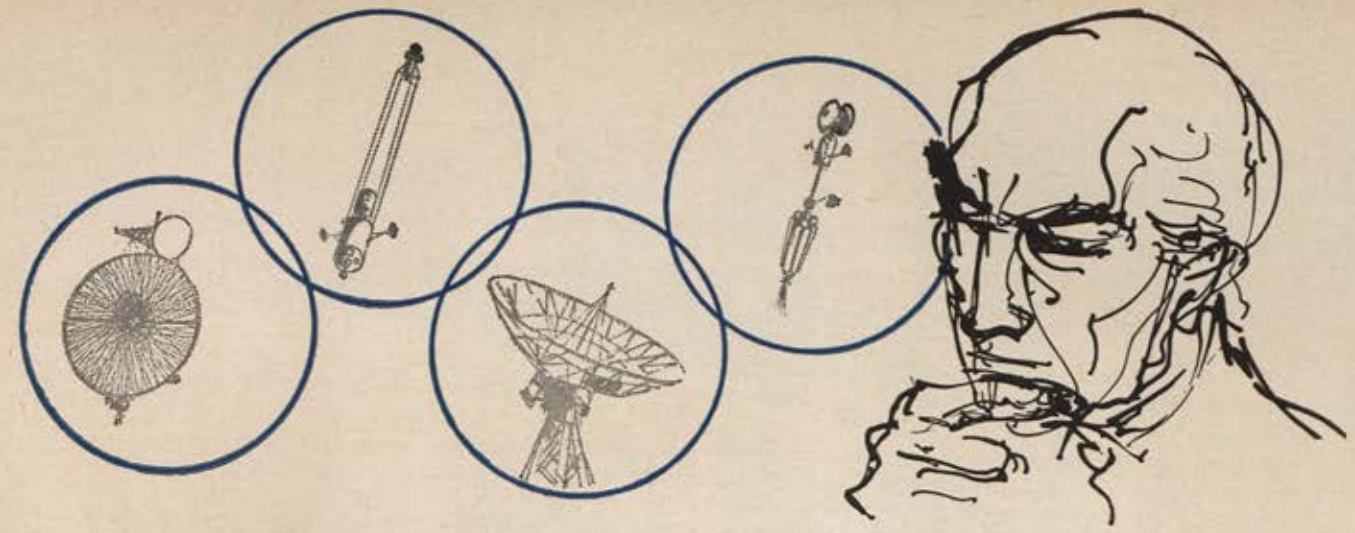
As we move ahead in our program, using newly developed vehicles of larger size and with more stages, the problems of achieving successful flights will increase. Recognizing the statistical success thus far achieved with the single- and two-stage missiles and the number of firings required in their development period, we must ask the question as to the probable success of a seven-stage vehicle required to land a man on the moon and return him to earth. Clearly, major advances in research and development techniques leading to greater vehicle reliability must be accomplished. Both the cost and development time will be prohibitive if vehicle development depends, as it does now, so heavily on "trial by fire." As a part of our program we are currently studying methods for development that might lead to earlier success of our flight vehicles, and the progress we make here may well determine how long it will take to do the advance missions.

Finally—as in most other advanced technologies—a vast new area of materials research is being opened up by our space exploration requirements. As you well know, many materials exhibit different properties when used in radiation fields and in the vacuum of space. These materials must be improved or other materials found or developed to replace them.

My point is simply this: we have used up much of our missile technology. We have drawn heavily on our capital—the knowledge and experience accumulated by the military services, by industry, and by the National Advisory Committee for Aeronautics and others over the past ten years or so. We must replenish that capital with new knowledge. From here on out, space research is going to be a matter of the same determined plugging away that has characterized aeronautics research—and, indeed, all scientific endeavor.

As for Russian space achievements, we have learned that while they use their successes effectively for propaganda—and are able to hide their failures—their public claims have been, to the best of our knowledge, factual. Their scientists, however, are not the giants they would have us believe—they simply started working in this particular field six or seven years before we did. It would be tragic if we had to admit they were working harder today than we. But they have set for us some targets by the success of their efforts thus far announced.—END

*Mr. Glennan, as the first Administrator of NASA, has responsibility for the civilian phase of the national space effort. The material above is condensed from a speech given at the August 24 Missiles and Space Technology Symposium sponsored by the USAF Ballistic Missile Division.*



# The pain and promise of

*DR. HOWARD A. WILCOX*

*Deputy Director, Research and Engineering, Department of Defense*

TECHNOLOGY releases or triggers social change because it opens up new ways for people to satisfy age-old human desires. As human control over our environment increases, human desires and urges and schemes find new modes of expression. Our social customs and ethical systems have been evolved to protect us to some extent from certain human activities and their destructive effects. But ancient customs are perhaps inadequately, or even inversely, effective in protecting us from some of the new possibilities for human action, and their unforeseen and undesirable consequences. It is an open question, then, whether new ethical principles can be created at sufficient speed, with sufficient effectiveness, to give us the desired social protection. This is perhaps the greatest challenge of our time.

Let us now ask: What are some of the present and future technological possibilities through which basic human motivations can find expression? I would list at least the following:

We now can have the means—the radioactive means—to kill every living thing on earth at a level of biological organization higher than that of the insects and plants.

We can breed the human family fast enough to refill the earth's surface once every thirty to 100 years. In most areas, we are in fact breeding this fast, percentagewise, now.

We will soon be able to send men to the ends of the solar system, and also to within some millions of miles of the surface of the sun itself.

Man has, and can soon have in more readily controllable and usable form, essentially unlimited energy—energy from the sun, and from the fission and fusion of atomic nuclei here on earth, for example. This, in turn, means that man can, in principle, solve his problem of material resources, for with essentially unlimited energy man can afford to process all manner of low-grade ores and mine the ocean bottom, and even the sea itself, to obtain now-scarce minerals. Likewise, fresh water can be had in essentially unlimited quantities, provided only that sufficient energy is available.

With energy more available, we shall find it possible to move men and freight to all earthly places at unprecedented speeds and quantities.

With energy more available, we can dig harbors and level mountain ranges, if we so desire.

With energy more available, I believe there can be plenty to eat for all the people that can be accommodated on the earth's surface. In this respect, oceanic agriculture could be most important.

By controlling the earth's reflectivity and emissivity during summer and winter, we can probably cause the polar icecaps to become larger or smaller, thus regulating the level of the oceans (within limits) to suit ourselves. It is entirely possible that potentially destructive storms can be dissipated before they become dangerous.

*Science offers fantastic possibilities in coming decades for almost unlimited evil or good. The nature of our future, says a leading defense scientist, depends on the ethical approaches we plan now to meet the technological realities of tomorrow . . .*

# *the future*

Certain chemicals are capable of modifying human behavior. It may be possible to cure certain forms of insanity with chemicals, for example.

It seems possible that improved techniques can be developed for teaching children, even to the point, perhaps, of keeping them enthusiastic for knowledge. Maybe we could train ourselves to exercise more independent and more careful thought and judgment.

Modern business machines can be applied to monitor the daily activities of most of the human beings in a country, if desired or permitted by its citizens. I believe we should stoutly resist such a possible use of technology.

Electrodes permanently implanted in the skulls of mice have been shown capable of profoundly modifying their behavior patterns, presumably through direct action on their cranial "pleasure centers." This points to a similar possibility for controlling the actions of human beings, if desired or permitted by the people.

It may be possible to develop a small pill which, taken orally, can both render a woman temporarily sterile and at the same time improve her general health. Profound changes in some of our social customs and beliefs could be expected to accompany the widespread availability of such a pill.

It seems clear that man could control his own biological evolution in many different ways, and into many different directions, if he so desires.

I venture to predict that a "science of values" will soon arise. I mean by this that we can put various kinds of human groups into isolated but controlled environments, and then see what ethical value systems evolve and how well fitted for survival the resulting communities are. The implications of such sociological studies and experiments would be far-reaching.

There are experiments which suggest that man might not need to die, biologically speaking.

It seems possible to develop atom bombs that will fit into a suitcase.

It seems clear that nearly all the world's nations have scientists who can eventually succeed in designing and making their own atom bombs.

The foregoing list of future possibilities is not exhaustive; it can be extended nearly indefinitely. A similar list describes those things that science today tells us we cannot do. Such a list could, I believe, include the following:

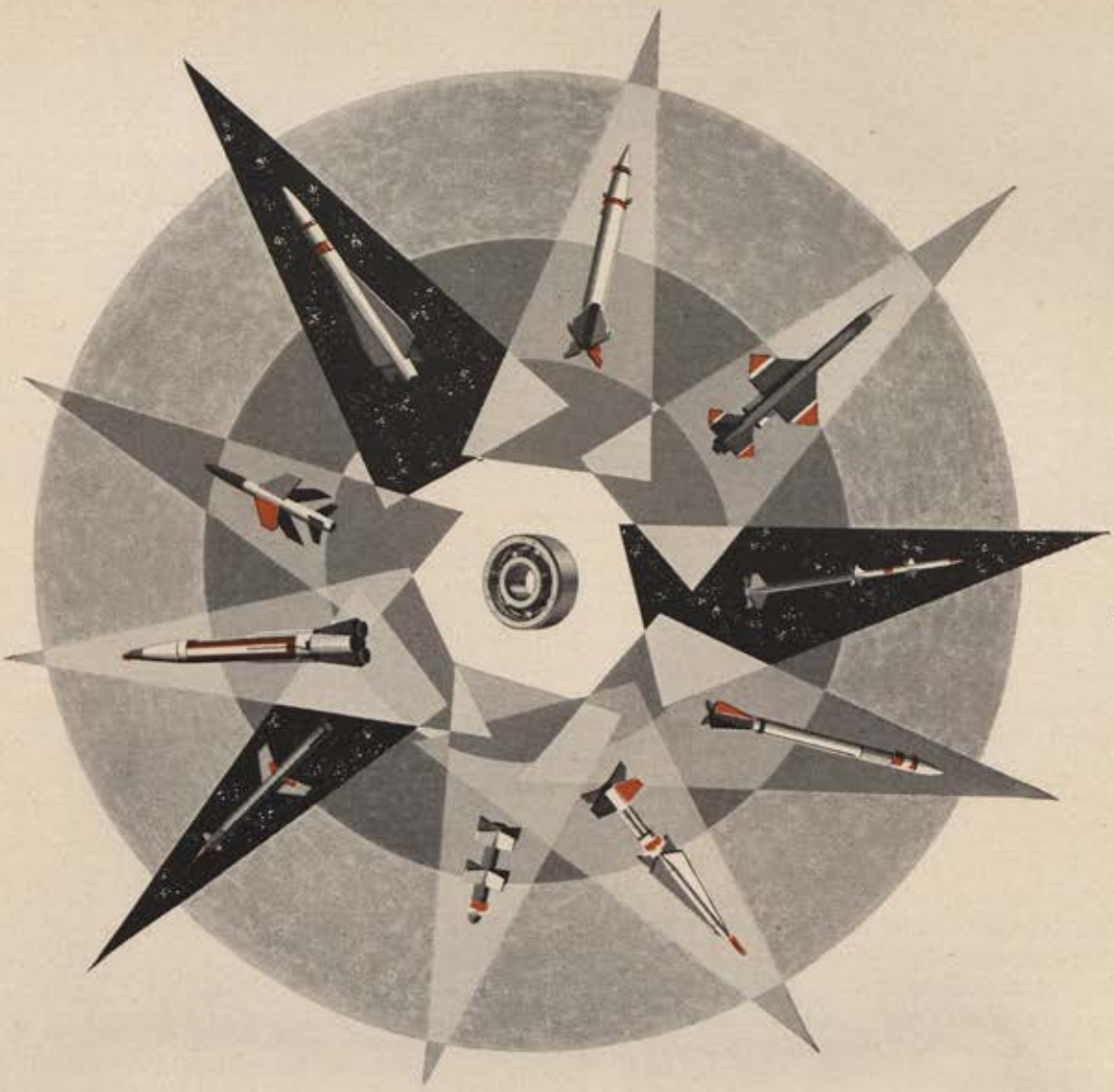
We do not think an "antigravity screen"—fabled in science fiction—is possible.

We do not think energy can be created except by the vanishing of proportionate quantities of mass. Most scientists believe that energy and mass, taken together in the proper ratio, represent a fixed and constant total in our locality of the galaxy.

We do not think it possible to get useful work from any large fraction of the vast quantity of heat energy in the oceans.

We do not believe the simultaneous measurement of the position and velocity of a particle of matter can be reduced in uncertainty below a definite, known numerical value.

We believe one can compress only a definite,



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We do not think it possible to perform an experiment which measures the "absolute speed" of our earth, say, relative to any postulated "absolute space."

We do not believe it possible to design an H. G. Wellsian "time-traveling" machine.

We do not believe it will ever be possible for any actual material body to remain structurally solid if its average temperature rises above a few thousands of degrees Fahrenheit.

To this list, I might add—out of my own experience as a weapons scientist—that I do not feel it is possible to provide 100 percent effective military defense of a large target, such as the US or the USSR, against all the various ways it can be attacked by a determined enemy armed with atom bombs.

What will our future societies be like? No one can answer this question, but some surmises and observations are possible.

First of all, I think an Orwellian "1984" world is possible, but it presupposes a degree of control over the individual that many of us would strongly resist, and it is therefore unlikely of full and long-term development. Tendencies toward such a society will always be present and visible to a greater or lesser degree. Therefore, continued and enlightened vigilance by each citizen in defense of our fundamental civil liberties is perhaps the first requirement to prevent such a development.

I suspect a world government will emerge as the major powers jostle uneasily in a variety of small conflicts. During this evolution, there will no doubt be many shiftings of alliances, and also much chest-thumping about the absolute rights of sovereign nations. Eventually, the atom bomb will probably be policed out of existence, along with the national stockpiles of long-range ballistic missiles, long-range bombers, and military submarines and warships, for example. This, if it comes, will signify, to my mind, that a world government has, in fact, begun to operate.

During this phase, we shall no doubt see further developments in worldwide travel and television, including perhaps automatic language-translation devices. World civilization will probably exhibit extreme turbulence and much international controversy as well as much actual violence, including some limited international wars.

A most urgent problem today is world overpopulation. Here, the contraceptive pill will probably play a decisive role. Social restraints will not by themselves work fast enough, in my opinion, to solve this crucial problem. If we fail to develop "the pill," we can look forward to a really catastrophic war, or else perhaps to a social existence much like that of India, China, and Japan in the early years of this century. Neither of these latter possibilities offers an inviting prospect. Colonization of other planets holds out no hope, in my opinion, of solving the population problem.

Death, in my opinion, will be found to be socially necessary, even if science can learn how to prevent it, for I ask how would we have room for children and new ideas and joys if we were to eliminate natural death.

When we succeed in learning how to control the sizes of the polar icecaps, we shall urgently require a world government to make possible the existence and enforcement of international agreements regarding the level of the sea. Likewise, control of the earth's average temperature is a matter of vital interest to every nation, great and small.

We may well ponder the impact on our present-day economy and value system of the existence of essentially unlimited energy under our control. It could mean that manual labor would become nearly worthless. A premium would therefore probably be placed on creative design, art, originality—in short, on the distinctively human and creative contributions.

A very great danger exists today for humanity —namely, that we are all the time, and inadverently, interfering with the biological evolution of our own species toward a more effective adaptation to our natural environment. This interference stems in large part from our recently acquired control over our environment. It also stems from our sensitivity to social suggestion—advertising, if you want to call it that—and to our social customs and taboos.

With these thoughts before us, let's now turn our attention to the character of future warfare and weapons. Right now, I think, we in the US badly need a strong and invulnerable deterrent weapon system in the oceans around the US. This system should be advertised to be, and should in fact be, of the noninstant reaction, invulnerable type, because in this way it will provide maximum deterrence against—and minimum attraction as an inviting target—to any "strike-first" gamble on the part of a potential enemy.

Civil defense is, of course, a most vital problem area. There are already strong forces in our civi-

lization tending to disperse big city populations. Actually, a rather rapid and profitable dispersal of America's population might be caused to occur if we could analyze, and work to diminish, those forces which are presently holding people together in the very large urban areas.

Today, we, as a nation, are rather vulnerable to a large-scale military attack accompanied by radioactive fallout. So is Russia, and so is every other nation and continent. I believe, however, that over a period of ten years or a little more enough could be accomplished through the design of population shelters, and in other ways, to greatly reduce our serious national vulnerability to radioactive fallout. This reduction in our vulnerability to a large-scale attack could be very important in reducing the probability of any such attack.

We will soon have adequate numbers of deterrent-type missiles in readiness. Starting now, therefore, we should begin to turn our attention once again to the operational requirements, and the weapons requirements, of limited warfare. The latter is a technologically more difficult, multifaceted, and open field, compared to that of "deterrent" warfare and weapons.

Every modern nation greatly fears a major nuclear war. And any so-called "small" war which clearly threatens the national life of any country possessing atom bombs will almost certainly become a major war. Hence, I think that no nation can really afford to "win" any war—certainly not in the old sense of crushing all military resistance and then imposing unconditional surrender.

Since every nation greatly fears any war, on the ground that it might become a major war, considerable self-discipline is now rather clearly being exercised independently by the nations of the world to prevent the occurrence of any war. This, I believe, foretells that "small" wars will gradually become less frequent and eventually cease.

With the coming of the "cold war," it has also gradually become clear that statements of national goals and national slogans can, in fact, be weapons of international struggle and conflict. In this grim game of words, we often seem at present to do less well than our opponents. No amount of technological advances will solve this crucial problem. Our leaders must say not only what we stand *against*, but also what we stand *for*.

We must adhere to, and clearly enunciate, national goals that attract to our cause the other peoples of the world—non-Christian peoples, non-English-speaking peoples, nonindustrialized peoples. We must work toward a world in which nearly every individual will have a good deal of hope, a fair degree of personal prosperity, and a large measure of personal freedom.

Democracy, science, technology show that such a world is possible. We must adapt our business methods to serve their natural aims—the distribution of the world's goods in a plentiful measure to everyone. We must stress, not a so-called "Christian ethic," but rather a fundamental "humanist ethic" in accord with humanitarian aspects of Christianity, Buddhism, Hinduism, Confucianism, Marxism, Judaism, and other great philosophies. At the same time, all people should be encouraged to keep their own customs and cultural values as far as possible.

The world of science is here. It cannot be denied; it cannot be forgotten. But it can be used for man's good or man's destruction in a thousand different ways. Science will look at all the possibilities. The scientist must tell what he has discovered and what the obvious implications are. But each of us must shoulder the responsibility for creating our future civilization, in some pattern or other, planned or unplanned, bad or good.—END

*Recently appointed Deputy Director, Research and Engineering, Department of Defense, Dr. Wilcox is a physicist formerly associated with the Navy. This article is condensed from* Astronautics, *magazine of the American Rocket Society, and reprinted with permission. Ideas herein represent Dr. Wilcox's personal views, and are not to be construed as official views.*

# GPL research

## *Nuclear Gyros*

GPL research is now studying for the U. S. Air Force, the feasibility of harnessing the most efficient gyro known to science—the nucleus of the atom. Development of such a gyro—tremendously accurate, perfectly balanced, friction and maintenance free—will revolutionize space reference, navigation and guidance techniques.

The nuclear gyro is just one of many programs now underway at GPL research. Others include:

Soft landings on the moon • Passive position fix taking • Maser amplifiers • Pulsed radar seekers • Electrically scanning radar antennas • Space velocity measuring systems • "Multi-Mode" airborne systems • Obstacle and terrain clearance radar • Advanced digital and data handling techniques

These, plus continuing research in radar, computer and data handling theory, reflect a part of the breadth of GPL's enlightened investment in the future.

Write for further information.

*GPL Avionic Division/airborne navigators/missile guidance/radar/airborne computers/data handling systems/communications equipment/infra-red/closed circuit TV.*

ENGINEERS — GPL achievements have opened a number of challenging research and development opportunities. To be considered for these career positions, send resume of previous experience to Personnel Director.

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# INFRARED SYSTEMS AT HONEYWELL

**Intensive research, development and manufacturing efforts are now being applied to these important areas of technology:**

**Space Navigation** — Minneapolis-Honeywell is exploring the role of optical and infrared devices in the navigation of space vehicles in cislunar and interplanetary space. These devices are being considered in terms of their own capabilities and their integration into navigation systems involving other means of sensing such as inertial and radio.

**Horizon and Disc Scanners** — An infrared sensor above the earth can accurately detect a horizon by sensing the change in radiation as the field of view sweeps across the horizon. Angular measurement of two opposing horizons can give altitude and vertical orientation. Such a horizon scanning system is designed for integration with Honeywell vertical gyro or precision gyro platform reference systems. It is adaptable to disc scanning for altitude and range measurement.

**Navigation Systems** — Currently under development are star-tracking systems which will provide automatic navigation in space. Honeywell is developing a gimballed star-tracking system capable of day and night tracking of navigational stars. Its accuracy is comparable to that of the most advanced gyro platform reference systems. Gyro stabilization and precision digital readout are important features of the design.

**Detection Systems** — Work is in progress on infrared target detection acquisition and tracking systems. Current activities concern long range detection of ballistic missiles and air-borne location of submarines. Other areas of activity involve battle field surveillance problems, such as detection identification and location of typical battle field targets.

**Fuzing** — Honeywell currently has in production an infrared fuze for an operational air-to-air missile. The company is working extensively on the development of a variety of other infrared fuzing systems.

Honeywell provides full corporate support for infrared systems with the research, development and manufacturing facilities from 14 corporate divisions. Honeywell has more experience in the areas important to the successful applications of infrared than any other company. These include: the manufacture of infrared cells, optical equipment and fuzes, plus extensive experience in navigation and guidance systems and systems management. Other related Honeywell capability involves data processing, analog and digital computers and recording equipment.

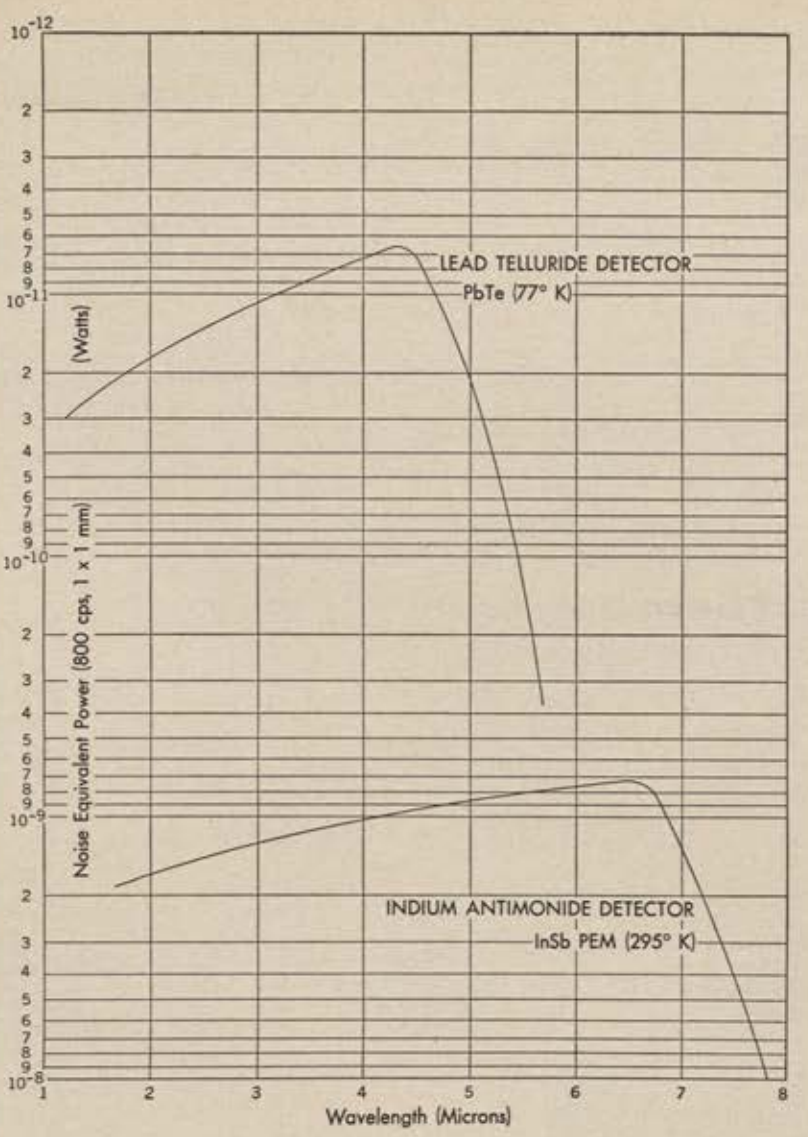
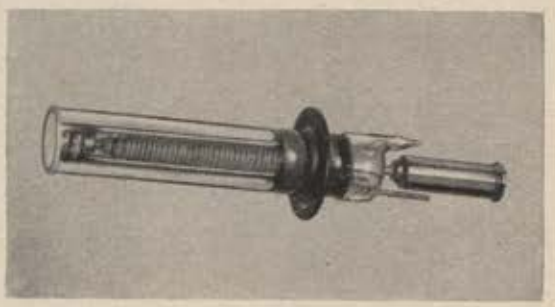



**Chart above shows the spectral response of two Honeywell detectors—heart of infrared systems—described and pictured at right.**

For further information on Honeywell infrared systems and components, call or write Honeywell, Military Products Group, Minneapolis, Minnesota.

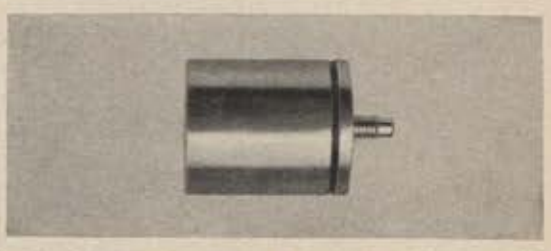
**Honeywell**

Military Products Group

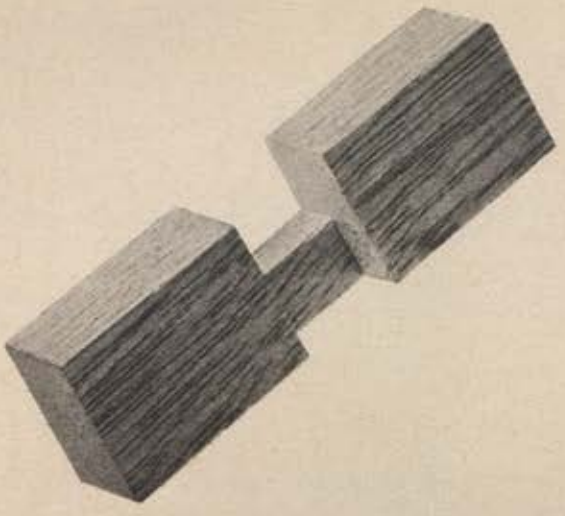


**Lead Telluride Detector**—Honeywell's photoconductive lead telluride (PbTe) detector operating at the temperature of liquid nitrogen, 77° Kelvin, has its peak response at 4.3 microns. At this wavelength, a detector with a 1 mm² sensitive area is capable of detecting $7 \times 10^{-12}$ watts with a signal-to-noise ratio of unity in a 1 cps bandwidth at 800 cps. The response time is no greater than 30 microseconds.

**Cryogenics**—Many sensors require cooling to low temperature for full effectiveness. Honeywell has designed a tiny cryostat which fits inside our own or other cells. When attached to a compressor or tank of nitrogen, it cools the cell to 77° Kelvin in less than two minutes. It has a diameter of .177 inch, a flow rate of two liters per minute at an input pressure of 2,000 psi and a heat exchanger one inch long. A small compressor system is being developed for spot cooling to 30° Kelvin.



**Indium Antimonide Detector**—Honeywell's indium antimonide photoelectromagnetic (InSb PEM) detector requires neither cooling nor bias supply. It is extremely fast, having a response time of less than 0.4 microseconds. Although it is less sensitive than the lead telluride detector to high temperature radiation, its noise equivalent power of $7 \times 10^{-10}$ watts for a 1 mm² area at 6.6 microns with a 1 cps bandwidth indicates greater sensitivity to sources of radiation near room temperature. Its response frequency is independent of frequency out to several hundred kilo-cycles per second, making it of great value in wide band applications. It is finding wide application in situations demanding long wave-length response, rugged construction, and simplicity of operation.

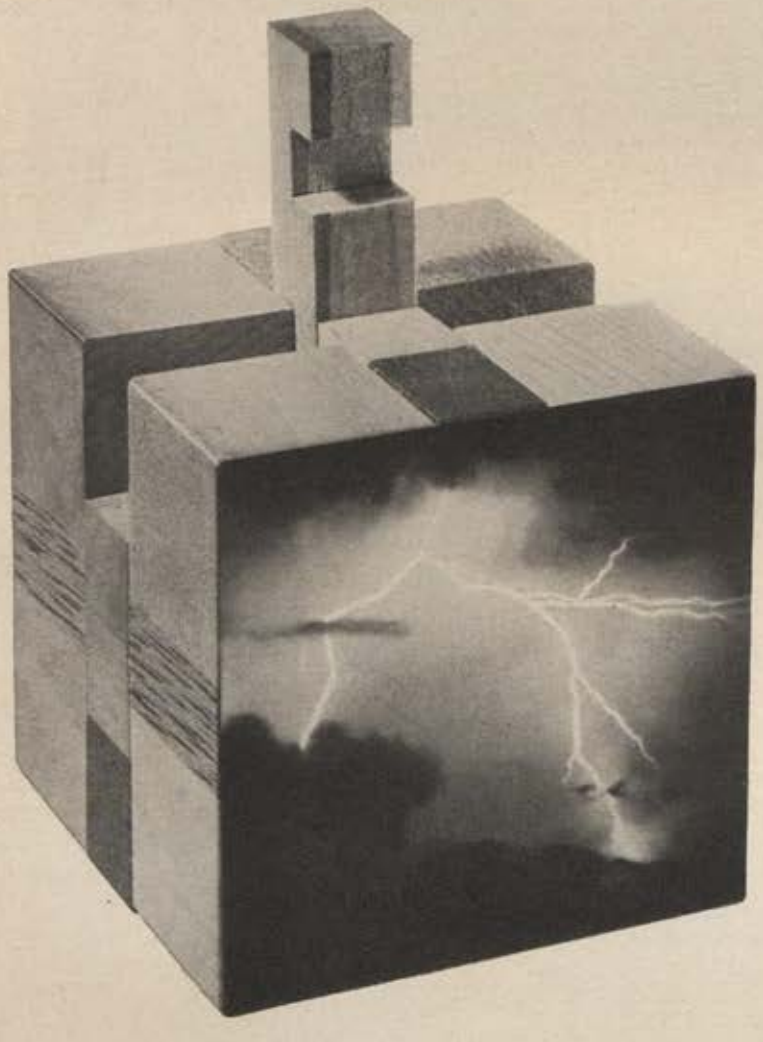


Allied Research scientists, engineers and technicians in the Geophysics Division, are working directly on the frontier of knowledge utilizing the latest scientific and engineering technological advancements to perform studies in . . . satellite meteorology . . . radar meteorology . . . short-range weather forecasting . . . cloud and fog dispersal . . . and other areas as diverse as the weather itself.

Contributions to this and other fields of interest are greatly enhanced by completely equipped laboratory, testing and production facilities.

The unusually broad capabilities of Allied Research have created outstanding opportunities for those dedicated to working on the frontier of knowledge in . . .

## SOLVING THE PUZZLES OF **METEOROLOGY**



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# Speaking of SPACE

## Century 21 Exposition

The Senate Foreign Relations Committee has approved "such funds as may be necessary" for exhibition of US federal agencies' scientific accomplishments in the eighteen-month international fair to be held in Seattle, Wash., in 1961-62. Theme of the exposition—Man in Outer Space.

## Radar Telescope

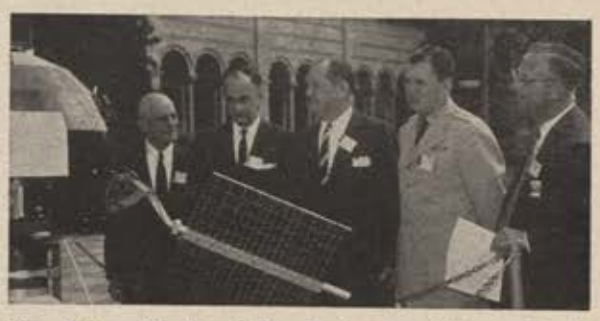
The largest radar telescope in the United States is under construction at Stanford University—to be completed in about a year. Its parabolic reflector, 142 feet in diameter, will bounce radar echoes from Venus, the sun, and the nearby planets. Radar telescopes transmit signals and pick up the echoes from space, as contrasted with radio telescopes that pick up only natural radiation from other bodies. The Stanford radar telescope, operating on a frequency from twenty to sixty megacycles a second, will be built by the Stanford Research Institute, with the support of the AF Cambridge Research Center, at a cost of $1.5 million.

## Aerospace Medical Center

USAF Aeromedics expect to run a thirty-day two-man sealed space cabin test at Brooks AFB, Tex., in November. The Aerospace Medical Center, opening in San Antonio in October, will consolidate the facilities of the USAF School of Aviation Medicine at Brooks, the USAF Hospital at Lackland, the USAF Epidemiological Laboratory at Lackland, and the branch of the School of Aviation Medicine at Gunter AFB, Ala.

## Poor Little Lambdas

Photographs of the strange particles of antimatter called antilambdas, particles generated in bombardments by the atom-smashing bevatron at the University of California's Lawrence Radiation Laboratory, were shown for the first time in Kiev, at a summer meeting of the International Conference on High Energy Physics. The photographs record for the first time the annihilation of a proton by an antiproton, the creation of a lambda particle and an antilambda particle, the decay of the lambda into a proton and a negative pi-meson, the decay of the antilambda into a positive pi-meson and an antiproton, and the antiproton hitting a proton to form two negative pi-mesons and two positive pi-mesons. The photographic tracks were made by the particles plunging through a six-foot bubble chamber.



*Dr. James H. Doolittle, chairman of Space Technology Lab.; Joseph V. Charyk, AF Ass't Sec'y for R&D; T. Keith Glennan of NASA; Brig. Gen. C. H. Terhune of AFBMD; and T. C. Morrow of STL, view the Explorer VI satellite at UCLA meeting.*

*GEORGE "MOON" MEYERS—By Jack Tippit*

*"Harry, I want you to meet this cat! He's my Uncle George, and man . . . he's way out . . . like he's been in orbit . . . and all that jazz!"*

## IAF News

The Council of the International Astronautical Federation met in London in September and elected PROF. LEONID I. SEDOV of the USSR its new president, replacing ANDREW HALEY of the US. Sedov is chairman of the Soviet Academy of Sciences' interplanetary communications division. THEODORE VON KARMAN, chairman of NATO's Advisory Group for Aeronautical Research and Development (AGARD), was appointed head of a new IAF committee to form an international academy of astronautics. The academy will establish research fellowships and act as an international clearing house for astronautical science.

## Current Reading

LEE A. DUBRIDGE, president of Caltech, in the August *Harper's*, suggests we make haste slowly in "Sense and Nonsense About Space." *"We may have 'conquered space',"* he advises, *"yet we are still rather like a fly who has reached the outside of the windowpane but who, in a thousand lifetimes, could not begin to explore even the next county. We, too, must be satisfied with nearby interplanetary space for the time being."* A practical scientific survey of space possibilities.

DONALD H. ROBEY, a "physicist-dreamer on the predesign staff of Convair," gives us a "Theory About Flying Saucers" in the September 5 *Saturday Review*. Robey relates sightings of flying saucers to the 1947 incidence of comets—which he surmises to be frozen ice wanderers. He uses the term cometoid to describe a spaceberg remnant of a frozen object too small to be a comet and too large to be completely melted before it reaches earth.

JOHN A. MCCONE, Chairman, US Atomic Energy Commission, in the *General Electric Defense Quarterly*, Vol. II, No. 3, an issue devoted to John Foster Dulles' theme of waging peace: *"Our future is inexorably linked to atomic energy . . . the first of the peaceful benefits of the atom is peace itself."*

Along the present trend toward probable developments as opposed to "far-out" ideas, HOWARD A. WILCOX (DoD R&E staff), in the August *Astronautics*, analyzes technological possibilities. On the positive side he lists sending men to the ends of the solar system, creation of artificial environments which will permit human habitation on the moon or Mars, control of man's biological evolution, prevention of death from biological causes. Among the impossibilities: measuring the absolute speed of earth relative to any postulated absolute space, creation of an antigravity screen, providing 100 percent militarily effective defense of a large target such as the US or the USSR. (*See "The Pain and Promise of the Future," page 72.*)


THROUGH HISTORY WITH J. WESLEY SMITH

"V—IV—III—II—I—oh, for the love of Mars!"

# SPACE WILL HAVE ITS ACES

Cadets at the Air Force Academy use a loose-leaf textbook on space. In it goes up-to-the-minute knowledge on research rockets and satellites. Soon the book will include accounts of manned vehicles for upper atmosphere, orbital and space flights. In early flights man and his vehicle will descend to earth by parachute. Next, pilots will return by controlled, glider-like landings. One day, true space cruisers will explore our solar system. The cadet has a vital role in these forthcoming pages for the book on space. He has an exciting place in manned research vehicles . . . a tremendous future in space!

AERONAUTICS · ASTRONAUTICS · ELECTRONICS · GENERAL DYNAMICS · RANGE SYSTEMS · RESEARCH

CHANCE VOUGHT
DALLAS, TEXAS

*Toward the preparation of man for the first steps into deep space, the Martin space medicine research program and space ecology laboratory facilities—now in development at the Denver Division—are among the most advanced activities in the free world. Especially noteworthy is the Martin Lunar Housing Similator. This will be a self-sustaining environmental closed system which will permit advanced study of survival requirements and techniques applicable to airless lunar or planetary conditions.*


**THE FIRST STEP**

## *SPEAKING OF SPACE*

### Political Sciencemanship

Political science— "that branch of the social sciences dealing with the organization and government of states" —is considering law, politics, and administration of the penetration of outer space. In a panel discussion on the subject at a recent Washington meeting of the American Political Science Association, HOWARD J. TAUBENFELD of the Golden Gate College and JOSEPH M. GOLDSEN of RAND led a discussion of practical steps. Mr. Taubenfeld, comparing outer space with the current situation in the Antarctic, spoke for internationalization of outer space exploration now, before any individual claims are made. Mr. Goldsen argued pragmatically that piecemeal agreements, such as on a system of identification of space vehicles, may be more effective. He cited the international atomic energy agreements and the subsequent bilateral working commitments as an example of how *not* to organize on international levels.

### Antipasto

Mary had an antilambda.
Its fleece was antimattered.
Whenever she would teleport
Her lambda antiscattered.

### Space Agency Staff

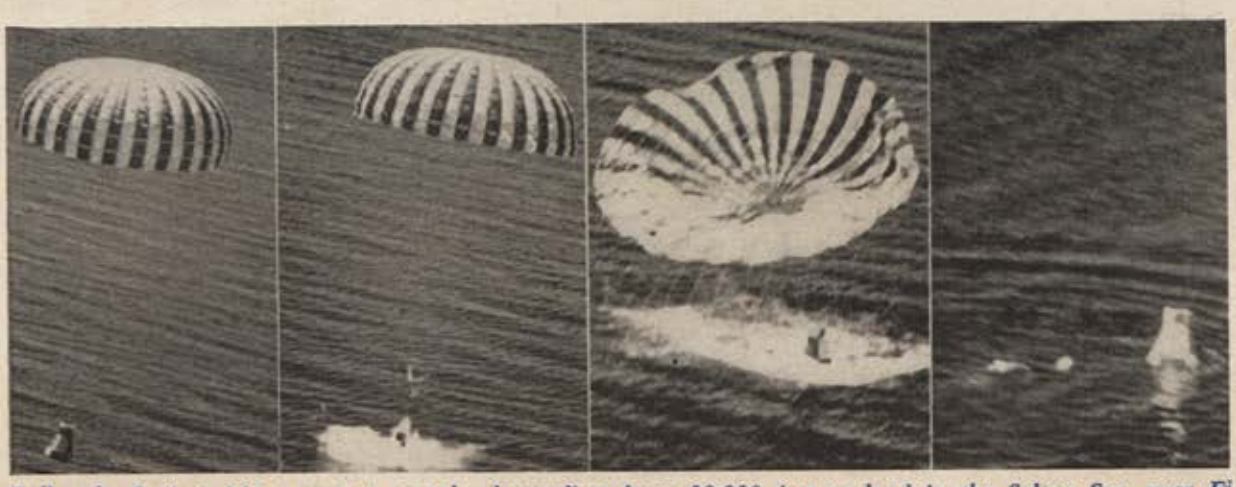
Director of NASA's new Goddard Space Flight Center, now building at Greenbelt, Md., is HARRY J. GOETT, who had been with NACA since 1936, and was chief of Ames Laboratory, Moffet Field, Calif.

ARNOLD W. FRUTKIN, who was director of the IGY information office at the National Academy of Sciences and secretary to the International Relations Committee of the Space Science Board at the Academy, directs NASA's Office of International Programs.

WALTER C. WILLIAMS, chief of NASA's High-Speed Flight Station at Edwards AFB, Calif., has joined the Project Mercury team as associate director, responsible for launching command, range, data-acquisition, and recovery operations connected with orbiting man in space.

The NASA western public information officer is MATTHEW H. PORTZ, transferred from the Lewis Research Center, Cleveland, Ohio.

## SPEAKING OF SPACE



*Full-scale Project Mercury test capsule descending from 30,000 feet to land in the Salton Sea, near El Centro, Calif. The one-ton capsule, released from a C-130, was carried by the Northrop Radioplane-developed and -produced Ringsail parachute, floated until it was recovered by the special NASA team.*

NASA's new Bioscience Advisory Committee, headed by SEYMOUR S. KETY, chief of the Laboratory of Clinical Science at the National Institute of Mental Health, Bethesda, Md., will aid NASA activity in the space-bioscience field.

### Space Law Bibliography

Dr. Eugene Pepin of the Institute of Air and Space Law of McGill University in Montreal has prepared an excellent *Bibliography of Air Law and Related Problems*, for 1958. Dr. Pepin has covered 462 books and articles, more than 450 laws and regulations in thirty countries, thirty-four inter-governmental regulations. The contents of the bibliography are presented in French and in English, the 297 listings in the language in which they originally appeared.

*For a welcome change from algae cookies and green cheese, scientists at Republic Aviation hope to raise carrots, beets, snap beans, and turnips at low pressure for possible lunar travelers of the future.*

### Atlas Movie Available

"On Target," a motion picture about the Convair Atlas ICBM, is available for public showing. Filmed in color at Cape Canaveral and along the South Atlantic missile range over a period of six months—running time twenty-seven minutes.

Available through the Princeton Television Center, Princeton, N. J.

### On the Calendar

October 8-10. Society of Experimental Test Pilots, "Pilot's Role in Space Exploration." Beverly Hilton Hotel, Beverly Hills, Calif.

November 11-13. Sixteenth National Meeting of the Operations Research Society of America. Huntington-Sheraton Hotel, Pasadena, Calif.

### Pending

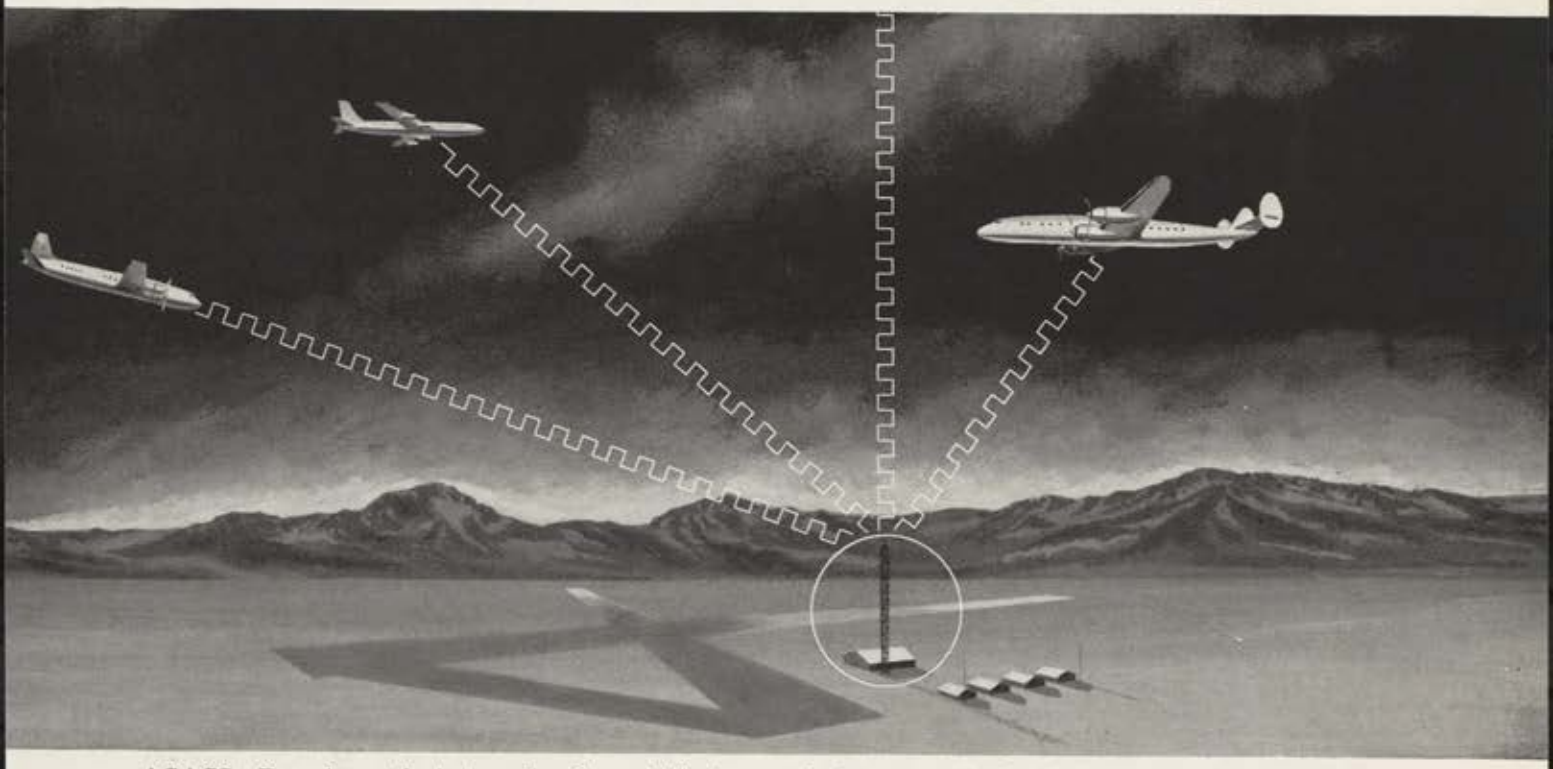
Our farthest-flung correspondent trudged in from the Patent Office the other day to report that a man in Baltimore seems to have an edge in the race for much-coveted space trademarks. He has listed the full spectrum—space research and development, services in space vehicles, spaceflight, spacesuits, spaceports, spacecraft, and, somewhat mysteriously, spacefoils.

—MICHAEL B. MILLER

*new wings for words*

# AGACS

*pronounced "AJAX"*



AGACS, Experimental Automatic Ground/Air/Ground Communication System is a new concept in Air Traffic Control Communications to meet the accelerated pace of increased air traffic. Primary objectives are efficient usage of frequency spectrum, added safety through increased reliability and reduced burden to pilot and controller, and adaptability to all classes of aircraft. AGACS provides compatibility with existing ground and airborne communication equipment, selective addressing of information, and a minimum number of frequency changes during flight. The system utilizes two-way time division data transfer over existing ground and air communication links to provide an automatic, mutual exchange of information. The airborne facilities display to the pilot the last significant Air/Ground and Ground/Air message quantities, while the controller may recall from central memory-storage equipment the last Air/Ground and Ground/Air message quantities for display. The AGACS program is still in the developmental stage. In August, 1959, RCA provided initial models of both airborne and ground equipments for the Bureau of Research and Development of the Federal Aviation Agency for extensive experimentation and flight tests.

**RADIO CORPORATION of AMERICA**

DEFENSE ELECTRONIC PRODUCTS

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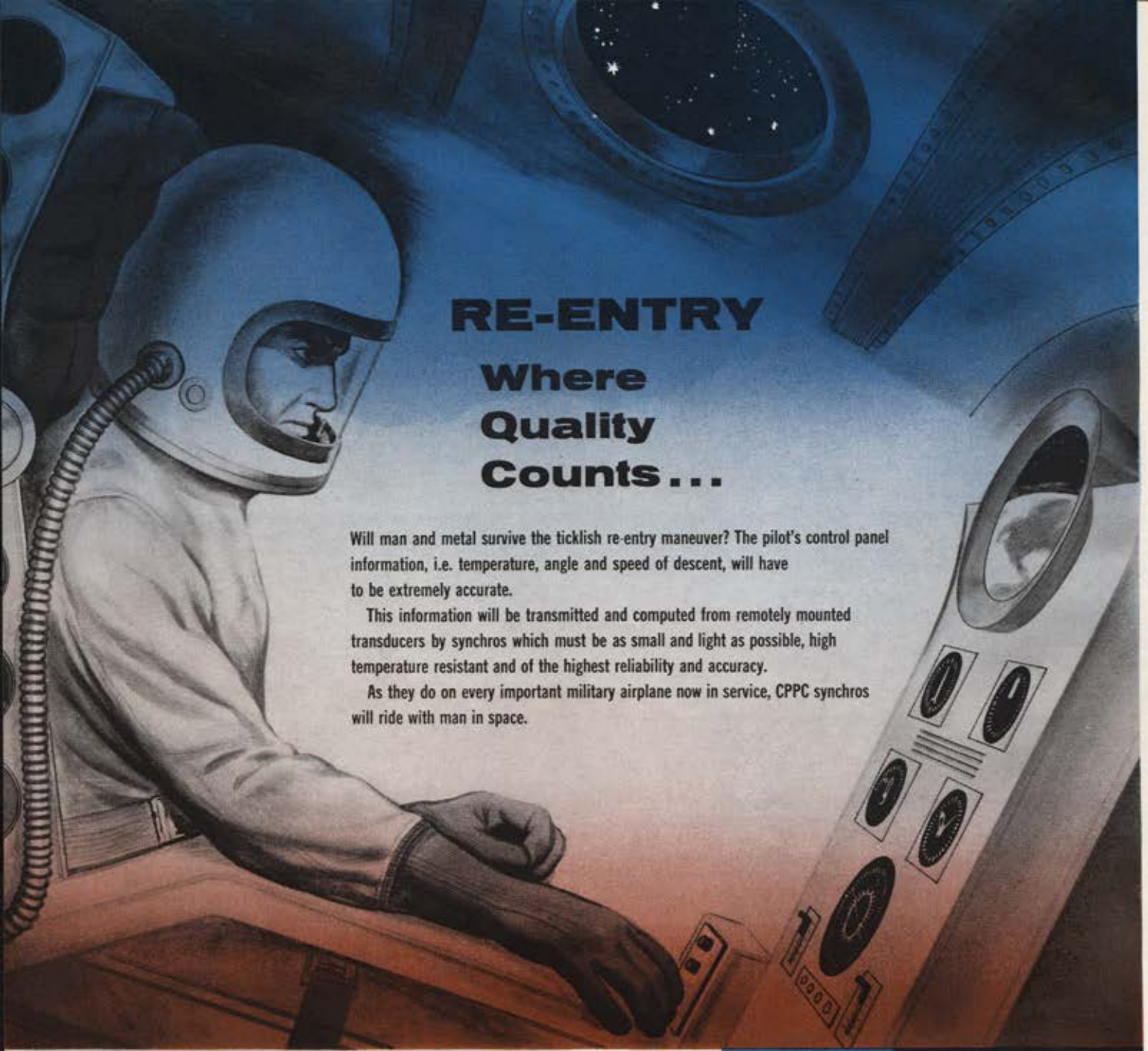


# RE-ENTRY

## Where Quality Counts...

Will man and metal survive the ticklish re-entry maneuver? The pilot's control panel information, i.e. temperature, angle and speed of descent, will have to be extremely accurate.

This information will be transmitted and computed from remotely mounted transducers by synchros which must be as small and light as possible, high temperature resistant and of the highest reliability and accuracy.

As they do on every important military airplane now in service, CPPC synchros will ride with man in space.

| | | PRIMARY | | | | | | D. C. RESISTANCE | | IMPEDANCE | | | | ACCURACY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SYNCHRO FUNCTION | CPPC TYPE | Input Voltage (400 ~) | Input Current (Amps.) | Input Power (Watts) | Output Voltage (Volts) | Sensitivity (MV/deg.) | Phase Shift (deg. lead) | Rotor (Ohms) | Stator (Ohms) | Zro (Ohms) | Zso (Ohms) | Zrss (Ohms) | Max. Null Voltage (MV) | Max. Error (Min.) |
| Torque Transmitter | CGC-8-A-7 | 26 | .100 | .54 | 11.8 | 206 | 8.5 | 37 | 12 | 54+j260 | 12+j45 | 80+j20 | 30 | 7 |
| Control Transformer | CTC-8-A-1 | 11.8 | .087 | .21 | 23.5 | 411 | 9 | 143 | 24 | 210+j690 | 28+j114 | 250+j73 | 30 | 7 |
| Control Transformer | CTC-8-A-4 | 11.8 | .030 | .073 | 22.5 | 393 | 8.5 | 365 | 64 | 470+j1770 | 81+j330 | 590+j190 | 30 | 7 |
| Torque Receiver | CRC-8-A-1 | 26 | .100 | .54 | 11.8 | 206 | 8.5 | 37 | 12 | 54+j260 | 12+j45 | 80+j20 | — | 30 sp. |
| Electrical Resolver | CSC-8-A-1 | 26 | .038 | .39 | 10.8 | 183 | 20 | 230 | 27 | 270+j630 | 39+j142 | 340+j67 | 30 | 7 |
| Electrical Resolver | CSC-8-A-4 | 26 | .038 | .39 | 26 | 454 | 20 | 230 | 170 | 270+j630 | 250+j830 | 340+j67 | 30 | 7 |
| Torque Differential | CDC-8-A-1 | 11.8 | .087 | .21 | 11.5 | 204 | 9 | 36 | 24 | 38+j122 | 28+j114 | 47+j13 | 30 | 7 |
| Vector Resolver | CVC-8-A-1 | 26 | .100 | .54 | 11.8 | 206 | 8.5 | 37 | 16.5 | 54+j260 | 19+j60 | 80+j20 | 30 | 7 |

See current catalogue for additional size 8 units.


SIZE 8 SYNCHROS

# CLIFTON PRECISION PRODUCTS CO., INC. cppc Clifton Heights, Pa.

ENGINEERS—Challenging positions at CPPC in advanced Rotary Components and Computers. Write David D. Brown, Director of Personnel, Dept. 810.

Beachfront hotels and Miami Beach's new Exhibition Hall form backdrop for Titan ICBM outside site of the AFA Convention.

AFA NEWS

Frederic M. Philips
ASSOCIATE EDITOR

# AFA 1959 Convention

## Report to the Nation from Miami Beach

THE United States Air Force hopes to develop a single top-performance, multipurpose airplane suitable for virtually all military purposes.

● "Preemptive attack" against an enemy about to attack the United States should, in the opinion of a top USAF commander, be "a consideration" for the American people.

● A powerful force of American planes could reach troubled Laos or other crisis spots in that part of the world within thirty-five hours of a decision to act.

● We have "no effective defense" against ballistic missile attack at present. The nation's defense against manned bomber attack has, however, improved considerably. The first Bomarc antiaircraft missiles are now on site in New Jersey.

● An "exhaustive program" to tighten Air Force materiel procurement procedures is now under way within USAF—and both service personnel and industry can expect to feel its effects.

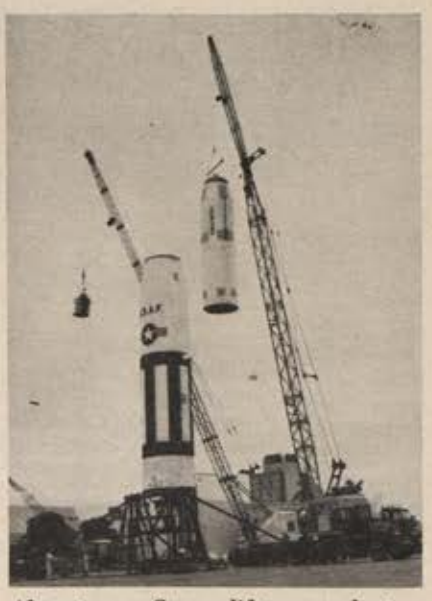
These were some of the highlights of a top-level Air Force "report to the nation" from this year's Air Force Association National Convention at Miami Beach, Fla. The Air Force's top leaders, headed by Secretary James H. Douglas and Chief of Staff Gen. Thomas D. White, came to grips with the whole range of problems and requirements now before our military leadership in addresses, briefings for newsmen, and symposia.

The presentations were the major features of the Convention—if any one group of events can be singled out

*(Continued on following page)*

USAF-Martin Titan ICBM is unloaded from C-133 after flight from Baltimore.

Tricky maneuver. Putting pieces together for outside-area exhibition.



Almost up. Crane lifts second stage of Titan, prior to careful fitting.

at such a multifaceted gathering as an AFA Convention.

AFA sounded the keynote for the Convention, which ran from September 3 to 6, with a new call for true unification of America's armed forces to meet a "military threat to the free world" that "continues to grow."

Only a "sweeping reorganization" of the nation's defense establishment, AFA declared in its annual policy statement, would assure American and free world security in the aerospace age "regardless of how service traditions and rivalries might be affected." *(See opposite page.)*

Most Convention events took place in Miami Beach's giant new $10 million Exhibition Hall and its adjacent Auditorium. In and around the Exhibition Hall, as well, was AFA's eye-popping Aerospace Panorama—a display of the latest in aviation and space weaponry and equipment.

A Martin Titan intercontinental ballistic missile and a Republic F-105 Thunderchief were among the Air Force weapons that stood on the display ground behind the hall. The eight-story-high Titan, in its first public showing, could be seen for miles across the flat Florida countryside.

Inside the Exhibition Hall, a model of the X-15 aerospace test vehicle was among the major attention-getters. Nearby, in dramatic contrast, stood a model of the first airplane to enter American military service, the Wright Military Flyer. It was tested and turned over to the country's infant air service just fifty years ago.

She's up. The Titan towers some eight stories over viewers. In the foreground, the Martin Mace is also on exhibit.

The "missile with a man in it," USAF's Republic F-105, surrounded by its armament, helped show USAF prowess.

In all, more than 150 companies filled some 56,000 square feet of exhibit space with a staggering array of aerospace hardware—once more providing evidence, as past Conventions and the World Congress of Flight have done, that the nation's defense is founded in substantial measure on a working team concept between industry and the armed forces.

The Convention, in still another of its many aspects, once more was the setting for presentation of AFA's top annual awards. Airpower awards were presented to six persons who contributed to progress in various fields within the broad framework of airpower.

*(Continued on page 92)*

CONTINUED

## THE AIR FORCE ASSOCIATION'S 1960

# STATEMENT OF POLICY

*The following Statement should be studied in the context of the events surrounding its drafting and adoption. AFA's wholehearted support of a unified defense establishment is a matter of public record. Hence it was of great interest to learn, on the eve of the AFA Convention, that the House Committee on Government Operations had published, as part of the conclusions of a report on "Organization and Management of Missile Programs," a recommendation that the President direct a study of the problems involved in merging the Army and Air Force. Such a move, in the eyes of AFA delegates, would be a step backward on the hard road to true unification, and their reaction formed the core of this statement.*

Despite the high cost of defense, the military threat to the free world continues to grow.

To achieve adequate defense at acceptable cost, the following action must be taken:

The national defense establishment must undergo a sweeping reorganization, as first proposed by the Air Force Association in 1956.

Defense reorganization must come to grips with basic issues. The Reorganization Acts of 1947 and 1958 have proved conclusively that a piecemeal approach to unification, based on compromise, evades the basic problems rather than solving them. Worse, it deceives the American people into thinking that unification is progressively being achieved.

Nor can the answer be found in a "water's-edge" approach to unification as proposed by a committee of Congress. Since the "missile muddle" does not stop at the water's edge, neither should effective efforts to solve it stop there. For example, the strategic potential of the submarine-launched Polaris missile can never be fully realized unless its delivery capability is integrated within a unified strategic command reporting directly to the Joint Chiefs of Staff, or its successor, under an over-all unified plan.

Half-hearted reorganization of the defense establishment by merging two of the military services, as proposed within Congress, ignores the revolutionary impact of technology on the traditional roles and missions of the military services.

Any unification act worthy of the name must provide a framework for ruthless elimination of marginal weapon systems regardless of how service traditions and rivalries might be affected.

These issues demand the immediate attention of the leaders of the Executive and Legislative branches of government. Further, defense reorganization—as the key to both military and economic security—must become the overriding issue of the day.

It is our belief, as it has been for several years, that the pattern for true unification must include the following:

- **One war plan.** This objective is impossible under the present system as each service strives for supremacy and self-sufficiency in the absence of clearly defined roles and missions.
- **One Secretariat and one Chief of Staff.** Consolidation at the top is essential, since the present system encourages the Secretaries and Chiefs of the individual services to support service supremacy and self-sufficiency.
- **One promotion list.** The present system is unrealistic and unfair to the officers of all services. It often presents them with the problem of supporting policies contrary to the interests of the service they represent.
- **Functional organization.** The job to be done must dictate the type of military reorganization achieved. The structure must be functionally oriented in terms of offense, defense, and logistics missions.

These actions will surely result in a more effective military force and in substantial economies.

However, the nation and its leaders must face up to the possibility that defense budgets, even though spent efficiently, may have to be increased to keep pace with the threat. Research and development of new weapon systems must be accelerated without compromising the need for operational quantities of systems required for the force in being.—END

**Panoramic view of the Aerospace Panorama during the public viewing. Thousands of Greater Miamians braved crowds to tour the Exhibition Hall, where they saw a vast array of the latest in military-scientific technological developments.**

## AFA's 1959 CONVENTION — CONTINUED

The foremost of these awards, the H. H. Arnold Trophy, went to Gen. Thomas S. Power, Commander in Chief of the Strategic Air Command, who was designated "Aviation's Man of the Year" for "bringing his command to a new level of war-deterrent toughness."

Among other awards presented at the Convention, as enumerated in greater detail later in this report, were the yearly "family awards" to outstanding members and units of the Air Force Association throughout the country.

Carl J. Long of Pittsburgh, Pa., became AFA's Man of the Year for his outstanding work in the field of aerospace education. Named the Association's Squadron of the Year was the Cleveland, Ohio, Squadron, also for service to the community in educational work.

In an allied "family" activity, delegates to the Convention elected a new slate of national officers and passed a string of resolutions at a series of business sessions.

Chicago patent lawyer Howard T. Markey, a brigadier general in the Air National Guard and a veteran of both World War II and the Korean War, was elected AFA President for the coming year. He succeeds Peter J. Schenk, who completed two years at the organization's helm with a stellar performance as Convention presiding officer.

Elected with Mr. Markey *(see box, page 98)* were three other national officers as well as national directors and regional vice presidents. The national officers were:

- Julian B. Rosenthal of New York, N.Y., also an attorney, who became Chairman of the Board succeeding James M. Trail of Boise, Idaho. Mr. Rosenthal had been national Secretary since the Association was formed in 1946.
- George D. Hardy of College Park, Md., who was chosen new Secretary.
- Investment specialist Jack B. Gross of Harrisburg, Pa., who was returned to office as AFA Treasurer, the post he had held during the past two years.

The annual policy statement, reiterating a call for all-service unification first put forth by AFA in 1956, was in part an answer to strong congressional assertions on the subject a few days earlier.

On the very eve of the Convention, the important Military Operations Subcommittee of the House Committee on Government Operations urged an Air Force-Army merger —in effect, a "remerger" of two services that were separated just twelve years ago. The subcommittee, chairman of which is Rep. Chet Holifield (D.-Calif.), recommended that President Eisenhower initiate study of such a move

Photo by George Hamilton, Miami Beach News Bureau

**Looking down the center aisle at the Panorama, visitors could see the US Air Force display that helped serve as fitting theme to the exhibition. On view in the USAF display was the USAF-North American X-15 which will take a man beyond the atmosphere and back to earth. On opposite page is a closeup of the Air Force display.**

to improve "management of the Defense Establishment" and eliminate "costly competition" between the two services.

The policy plank passed by AFA's delegates at Miami Beach, drafted particularly with the Holifield recommendations in mind, struck hard at what the delegates labeled a continuing "piecemeal approach to unification" as seen in the defense reorganization acts of 1947 and 1958.

The AFA statement decried the Holifield subcommittee's "water's-edge approach" that would leave America's sea service outside a newly unified Air Force-Army.

General White dealt with another but clearly related aspect of interservice relations in a major address before the Convention's Aerospace Banquet, one of the highlights of the four-day program.

Obviously referring to criticisms that have come mostly from Army and Navy sources, he noted that "some authorities" claim the nation has "concentrated excessively on the development of strategic weapons to the detriment of small war capabilities."

Others feel, he went on, that the US is "reaching a point of nuclear deterrent stalemate vis-à-vis the Soviets."

"I cannot agree with either of these viewpoints," USAF's Chief of Staff declared. "Unquestionably, the main danger to the forces of freedom is strong and growing Soviet aerospace power. To counter this threat, we must continue to dominate in the field in which we have excelled over the past decade—nuclear striking power."

As for "small wars," General White continued, "the Air Force maintains the capability to engage in minor conflicts within its over-all capacity to successfully wage a general war if this becomes necessary."

To reverse our strategic field now, turning major attention to limited war rather than general war, he said, would be "analagous to purchase of 100 percent insurance coverage on the windows in one's automobile at the risk of reducing one's over-all collision insurance."

General White then listed the "ten most needed" developments if the Air Force is to maintain its present global capabilities into the future. His lineup of "priority requirements for national security," offering a rare, thoroughly authoritative view of the military road ahead, read as follows:

- Sophisticated intercontinental ballistic missiles, now in a developmental evolution showing "great promise" of proving "one of the most formidable weapons in the history of warfare."
- Air-to-surface missiles such as the test-stage Hound Dog to be launched from bombers several hundred miles from targets and their air defense complexes.
- Follow-on long-range aircraft, preferably in the form of a single top-performance plane suiting virtually all military purposes to fulfill the requirement for manned craft throughout the "foreseeable future."
- Advanced all-weather tactical systems including missiles and vertical- or short-takeoff aircraft for use most particularly in overseas areas.
- A ballistic missile warning system, an Air Force responsibility now in the planning and construction stage. A satellite system employing infrared sensors is also under consideration.
- Long-range defenses, now under study, to enable countering of an enemy aerospace blow "as soon as possible after launch."
- A modern network of instantaneous, reliable, secure global communications exceeding in performance even the highly improved facilities now in use.
- Advanced aerospace reconnaissance systems, for which myriad approaches have been advanced, and USAF intends to "examine every one."
- A modernized air cargo fleet emphasizing speed, range, turn-around time, payload, and efficiency.
- Advanced manned space systems to fulfill "future offensive and defensive missions" in line with the "missions we now conduct at the lower altitudes."

Speaking the following day at the Convention's Awards Luncheon, at which General Power and other airpower trophy winners were honored, Secretary Douglas declared that he was "confident" America would "build a missile force to maintain our deterrent power without any gap between today's effective bomber force and tomorrow's effective force of missiles and bombers."

Of all the areas discussed by General White, the Secretary said, "I believe our longest steps forward have been in ballistic missiles, a field in which we have had disappointments and failures as well as successes."

Secretary Douglas stressed the vital part played by the Air Force supply and maintenance systems and personnel. He observed also that the Military Air Transport Service

*(Continued on following page)*


**Symbolic of the Air Force aerospace mission was USAF's "Aerospace Power for Peace" display, featuring the X-15 fringe-of-space craft, expected to perform its mission soon.**


**ARDC Commander Lt. Gen. Bernard A. Schriever is interviewed by newsman against background of Aerojet-General exhibit showing Aerojet-built first-stage engine of Titan.**

Aerospace needs for tomorrow were cited in address to Aerospace Banquet by Chief of Staff, Gen. Thomas D. White.

(MATS) is at the very core of the nation's logistics planning.

Expressing encouragement at the increased retention rate among Air Force officers and airmen, Secretary Douglas turned attention to AFA itself, asserting. "You of the Air Force Association have helped us understand the deficiencies in Air Force living and have helped point the way toward correcting them."

The Secretary also called AFA "an extraordinary and a surprising organization" that "has done much to alert us to the threat against our way of life and to define and support our military needs."

He accorded special mention to the World Congress of Flight, the AFA-sponsored Aerospace Education Council, and AIR FORCE/SPACE DIGEST.

In addition to these two addresses, a USAF "parade of stars" representing the primary components of the service shared their thinking with delegates and newsmen, and through them the public, in speeches and discussions.

One of these sessions, called the Air Force Symposium, brought together Gen. Curtis E. LeMay, USAF Vice Chief of Staff; Gen. Laurence S. Kuter, Commander in Chief, North American Air Defense Command; Gen. Frank F. Everest, Commander, Tactical Air Command; and Lt. Gen. William H. Tunner, Commander, Military Air Transport Service.

A series of major command briefings for newsmen was also held, marking something of an innovation in putting forth a giant volume of information quickly. In each of these, the commanders and their staffs briefed the news

French Air Corps Gen. Paul M. V. Stehlin chats with AFA's Gill Robb Wilson, Air Force Band's Col. George Howard.

Air National Guard's Maj. Gen. Clarence A. Shoop, General Stehlin, NORAD commander Gen. Laurence S. Kuter chat.

Air Force Secretary James H. Douglas, at Aerospace Luncheon, discusses USAF's current capabilities, requirements.

representatives, more than 300 of whom attended the Convention, and then the sessions were thrown open to questions from the newsmen.

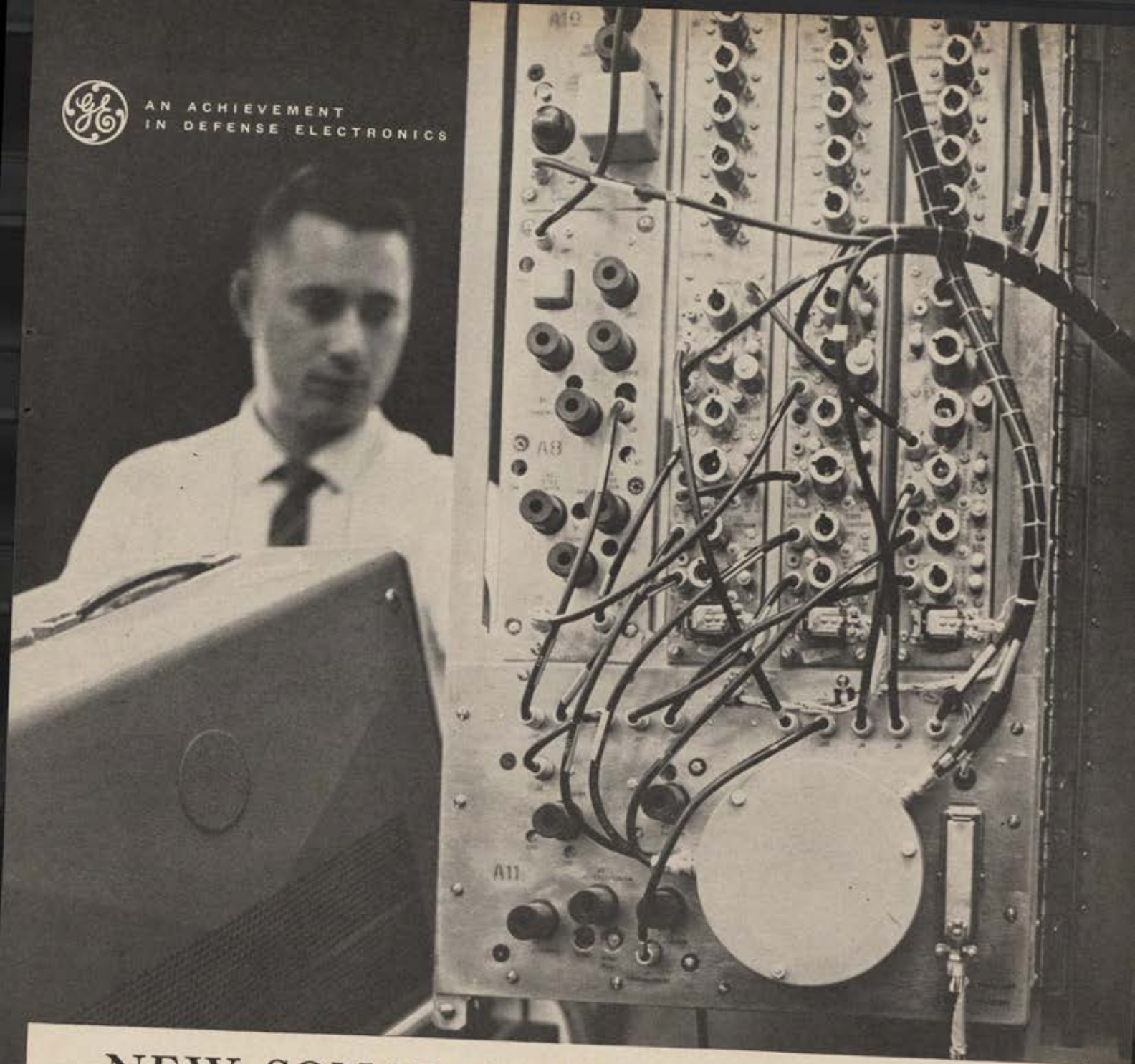
Donald R. Jackson, Assistant Secretary of the Air Force for Materiel, and Lt. Gen. Mark E. Bradley, Deputy Chief of Staff, Materiel, spoke before a Procurement Seminar designed specifically for industrial organizations taking part in the Convention.

Here, in brief, is what some of the men who run the Air Force had to say:

In the Strategic Air Command briefing for newsmen, the first of five command briefings held, General Power suggested that the American people might consider a policy of "preemptive attack" if attack by an enemy were imminent. But SAC's Commander in Chief said there was "little likelihood" that such a policy would actually be adopted.

General Power, answering a newsman's question, said that preemptive attack "is something for the American

*(Continued on page 98)*




# NEW SONAR SIGNAL PROCESSOR DOES WORK OF 1,000 UNITS

The first sonar signal processors to utilize time compression are being produced by General Electric. These new processors were developed in cooperation with the United States Navy. Extracting only critical bits of transmitted and received signals in series, one unit can perform as many correlating operations on a continuous signal—in the same time—as a parallel processor with thousands of units.

Excellent improvement in signal-to-noise ratio also makes these new processors effective against background levels which have formerly made certain signals undetectable by any other practical means. The new equipment is also designed to handle signals from more than one transducer.

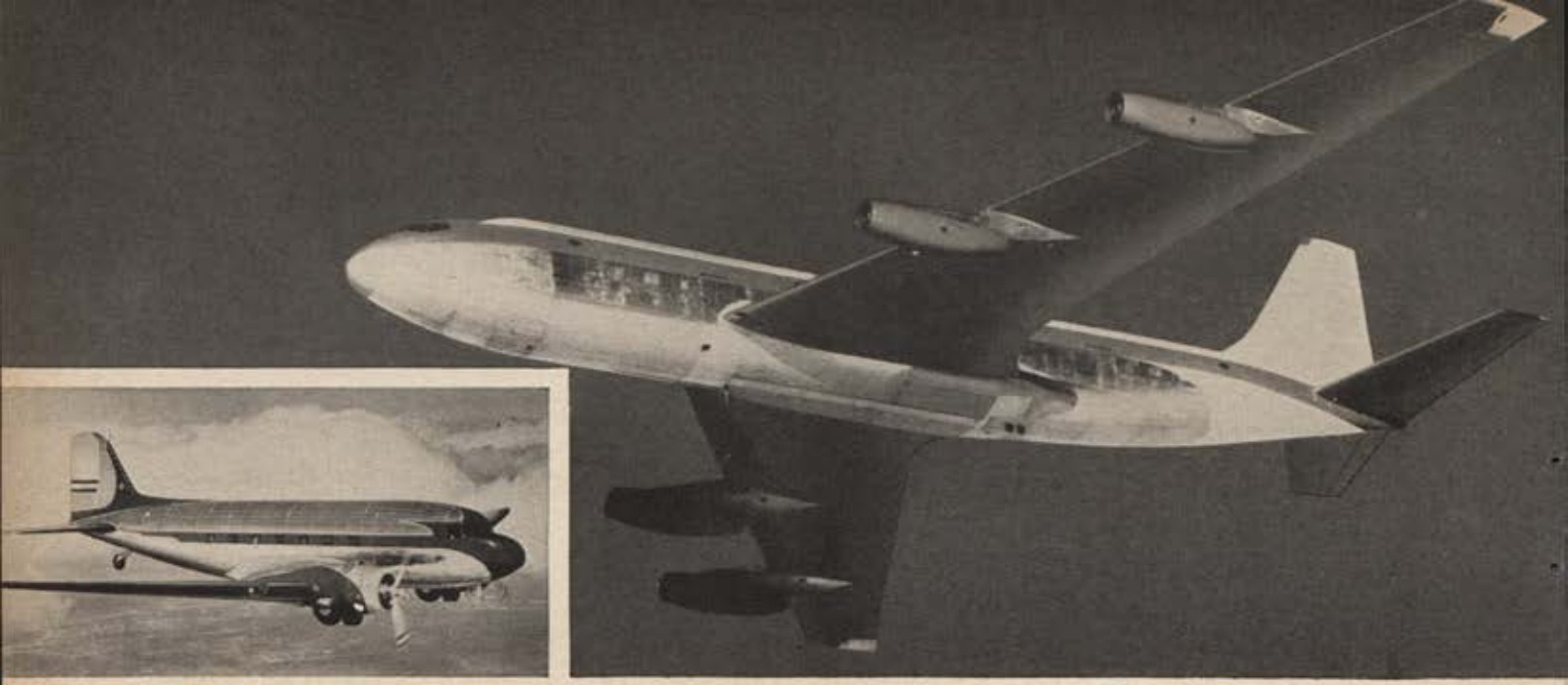
This advance in sonar signal processing is typical of General Electric's many achievements in defense electronics.

227-3

*Progress Is Our Most Important Product*

**GENERAL ELECTRIC**

DEFENSE ELECTRONICS DIVISION • HEAVY MILITARY ELECTRONICS DEPT. • SYRACUSE, N. Y.



"... from heyday of the DC-3 to grand entry of the supersonic fighter and commercial jet ..."

# *IGNITION:*

# From Quarter-Mach ...to Mach-Plus !

by E. DEAN PRICHARD
Associate Member, Aviation Writers Association

*Changing aviation needs spark new series of Champion Ignition Conferences beginning early next year*

For 14 years—from heyday of the DC-3 to grand entry of the supersonic fighter and commercial jet—some of the best brains in aviation have met annually in Toledo, O., to swap competitive know-how gained from thousands upon thousands of man- and engine-hours' experience. Top engineers, crack mechanics, aircraft engine and parts manufacturers, pilots, research technicians, nationally acclaimed Champion ignition experts. Locked in honest give-and-take, no problem too weighty or too insignificant to warrant attention, no holds barred in analysis and evaluation of aircraft engine components and operation.

These were the annual Airline Ignition Conferences staged by Champion Spark Plug Company—unique, free exchanges of information and ideas evolving from research as well as field experience. Symposiums unique in the aviation industry, unique in American industry; devoid of commercial "pitch," competitive interests united by a common goal: *Improved powerplant performance.*

Results are a matter of record. The Airline Ignition Conferences proved invaluable as commercial aviation "climbed-out" through the myriad complexities of advancing power from DC-3 status to DC-7 and Super Connie stature. Not only did the conferences aid in daily airline operation and maintenance, but new plugs were developed expressly *to make possible* the power zenith newer, bigger reciprocating engines were designed for and were trying to achieve.

Now—with the airline reciprocating-engine age at peak-power maturity and the needs of aviation changing—Champion is moving into a new era of conferences: annual *Business Aircraft Ignition Conferences* and plans for *Airline Jet Igniter Conferences.* Champion is "in recess" this Fall, usual conference time, working out details for a first annual business-flying conference soon after Christmas.

"We've all come a long way, solved a lot of problems," said R. L. (Doc) Anderson, one of the

early Conference Chairmen and now Champion Aviation Service Manager. "Champion is deeply, genuinely grateful to all the men of the nation's airlines whose cooperation made this possible. We know you, as we, have benefited immeasurably.

"Now the priceless technical know-how of lab and field experience published in Champion's 14 airline conference reports will become increasingly important in daily maintenance and operation of this nation's *business* and *private* fleets—as they assume the dominant role in reciprocating-engine aviation. And this wealth of airline data will provide the very foundation for successful Business Aircraft Conferences—as well as a standard for developing Airline Jet Igniter Conferences."

The national Business Aircraft Conferences actually will supplement the work of Champion field representatives, who for years have been passing along airline conference benefits to business and private flying through district clinics. And the Airline Jet Igniter Conferences would supplement Champion's field work with the airlines on igniter performance.

Champion jet igniter know-how comes from having pioneered igniter development: Champion assisted in development of experimental military jet engines in 1942, has since joined forces with many jet engine manufacturers . . . and, as with spark plugs, remains in the forefront today in jet igniter development, producing more than any other manufacturer.

Complementing 14 years of Airline Ignition Conferences, engineering of improved spark plugs as well as igniters continues in Champion's new million-dollar Engineering-Research facility, adjacent the main plant at Toledo. From this background has just come, for example, Champion's new self-cleaning *Foul-Resistant* plug, much in demand since introduction several weeks ago. Many hands were involved in the development of this revolutionary plug—the answer to one problem (lead/carbon fouling) often aired at Ignition Conferences.

Champion is looking forward to the invaluable mutual benefits and achievements bound to result from future Business Aircraft and Airline Jet Conferences.

**CHAMPION SPARK PLUG COMPANY**
**TOLEDO 1, OHIO**

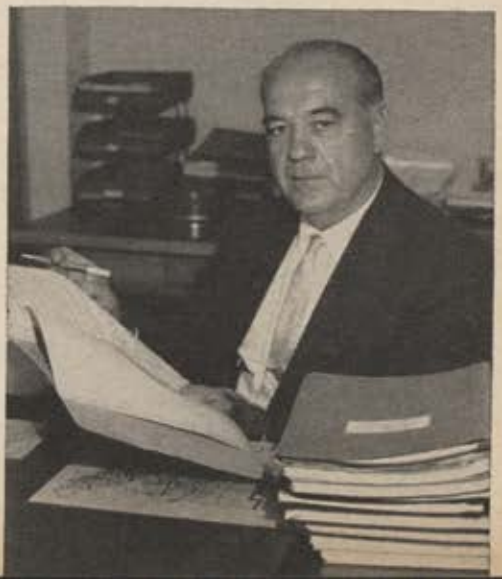
International Airline Representatives chat at conference: (L/R) Duane Stranahan, Champion Vice Pres.; Carl Schonfeld, KLM; Luciano Perani, Alitalia; Octavio Garcia, Avianca; Lucien Roy, Gilbert Goria, Air France; Roelof Brinks, KLM; R. A. Stranahan, Jr., Champion Pres.

Airline representatives conduct conference in the interests of improved powerplant performance.

**Champion Salutes 34 Ignition Conference Chairmen:**

| | | | | | |
|---|---|---|---|---|---|
| R. L. Anderson | —C&S | N. R. Parmet | —TWA | H. F. Osteen | —NAL |
| E. P. Kovac | —AAL; LASI | H. C. Archer | —NAL | Vernon L. Dodd | —NEA |
| C. E. Swanson | —NWA | Burke Starks | —C&S | A. A. Weigand | —EAL |
| A. M. Weber | —TCA | M. C. Fillmore | —SABENA | C. C. Mitchell | —AA |
| R. W. Farren | —TCA | A. B. Holmer | —SAS | H. M. Ingalls | —CAP |
| L. P. Larson | —NWA | J. M. Sorensen | —NWA | George Roycraft | —NOR |
| F. W. Lochner | —EAL | W. H. Wijnholds | —KLM | Dean Miller | —DAL |
| L. J. Krentz | —UAL | Earl J. Horrell | —CAL | J. A. Mitchell | —TCA |
| Arthur Kuhn | —PAA | C. A. Fisher | —TWA | R. C. Posz | —NWA |
| N. K. Davis | —UAL | T. R. Preitkis | —UAL | W. F. Davis | —PAI |
| J. E. Lindberg | —PAA-PAD | D. W. Crosby | —EAL | Duane Stranahan | —CSPC |
| | | W. J. Krissek | —TWA | | |

*Note: Affiliation listed is at time of chairmanship.*



Priceless technical know-how of world's leading airlines and spark plug manufacturer is compiled in 14 Conference Reports examined by R. L. (Doc) Anderson, Champion Aviation Service Mgr. This pooled competitive know-how, which helped move airlines into reciprocating-engine maturity and jet age, will further benefit business flying as Champion supplements regular district clinics with annual *Business Aircraft Conferences*, beginning next year.


**Howard T. Markey, Chicago patent lawyer, elected President of the Air Force Association for 1959-60 at the Miami Beach Convention. He replaces Peter J. Schenk as head of the nationwide airpower group.**

people to decide," adding, "certainly this is one consideration that should be played with. It is a decision that would have to be made at the time."

He distinguished, however, between "preemptive" and "preventive" wars, with the observation that no war could "prevent" war. A preemptive attack, he said, would forestall an impending attack by an enemy. Under such a policy, he said, if the US had known that Japan was about to attack Pearl Harbor in 1941, it would have launched a preemptive strike against the Japanese attack task force steaming toward Hawaii.

General Power's theory on preemptive war was widely understood to be a subject of discussion in a book he has written, *Design for Survival*, which Defense Secretary Neil McElroy has refused to approve for publication. Secretary McElroy has taken the position that it is inappropriate for a commander still in service to publish a book on the strategy he advocates for his command.

On this matter, SAC's chief said at the briefing that "It is my firm conviction that SAC cannot carry out its purpose without an understanding of its problems by the American people."

On other subjects, General Power said that for the foreseeable future manned bombers must constitute our first striking force in the event of an emergency because, in contrast to missiles, they could be called back. He also said that SAC needs additional bases and runways to perform at top efficiency with greatest security.

Col. Dale L. Shaffer, Chief of Plans in SAC's Directorate of Personnel, told the newsmen that improvements in the areas of spot promotions, alert pay, responsibility pay, and family housing would help bring added stability to SAC's body of trained personnel.

Gen. Frank F. Everest, Commander of the Tactical Air Command, told newsmen at another briefing that planes of his command could reach troubled Laos within thirty-five hours if the US decided to go to the aid of the Southeast Asian nation. TAC's Director of Plans, Maj. Gen. W. W. Momyer, added that Laotian airfields "within range of targets" could accommodate the American planes. Swift performances by TAC Composite Air Strike Force (CASF) units in last year's Lebanon and Formosa crises and in numerous global exercises were cited.

Lt. Gen. Joseph H. Atkinson, Commander of the Air

*(Continued on page 101)*

## AIR FORCE ASSOCIATION'S NEW LEADERS

**Elected for the Year 1959-60 at Miami Beach, Fla.**

### SECRETARY

**George D. Hardy**
*College Park, Md.*

### PRESIDENT

**Howard T. Markey**
*Chicago, Ill.*

### TREASURER

***Jack B. Gross**
*Harrisburg, Pa.*

### REGIONAL VICE PRESIDENTS

**New England Region**
**Philipe F. Coury*

**Northeast Region**
*Chester A. Richardson*

**Central East Region**
*Joseph L. Hodges*

**Southeast Region**
**Alex G. Morphonios*

**South Central Region**
*Willard O. Ross*

**Midwest Region**
*Chess Pizac*

**Southwest Region**
*Harry Crutcher, Jr.*

**Rocky Mountain Region**
**Dale R. Erickson*

**Great Lakes Region**
*Willard L. Dougherty*

**North Central Region**
*Edwin W. Rawlings*

**Northwest Region**
**Robert H. Mitchell*

**Far West Region**
*James C. Snapp, Jr.*

**Pacific Ocean Region**
**Roy J. Leffingwell*

### NATIONAL DIRECTORS

**Chairman of the Board—Julian B. Rosenthal, New York, N. Y.**

| | | | |
|---|---|---|---|
| ****John R. Alison**<br>*Hawthorne, Calif.* | ***A. Paul Fonda**<br>*Washington, D. C.* | ***W. Barton Leach**<br>*Cambridge, Mass.* | ***William W. Spruance**<br>*Wilmington, Del.* |
| **Lucas V. Beau**<br>*Washington, D. C.* | **Joseph J. Foss**<br>*Sioux Falls, S. D.* | **Harvey J. McKay**<br>*Glendale, Calif.* | ***Arthur C. Storz**<br>*Omaha, Neb.* |
| ***Walter T. Bonney**<br>*Silver Spring, Md.* | ***J. Wayne Fredericks**<br>*Bronxville, N. Y.* | ***John B. Montgomery**<br>*Cincinnati, Ohio* | ****Harold C. Stuart**<br>*Tulsa, Okla.* |
| **Roger J. Browne**<br>*New York, N. Y.* | ****John P. Henebry**<br>*Kenilworth, Ill.* | ***Charles O. Morgan, Jr.**<br>*San Francisco, Calif.* | ****James M. Trail**<br>*Boise, Idaho* |
| **Lee Cordell**<br>*Forest Park, Ill.* | ****Robert S. Johnson**<br>*Woodbury, N. Y.* | ***Msgr. William F. Mullally**<br>*St. Louis, Mo.* | ***Alden A. West**<br>*DeWitt, N. Y.* |
| ****Edward P. Curtis**<br>*Rochester, N. Y.* | ****Arthur F. Kelly**<br>*Los Angeles, Calif.* | ****Peter J. Schenk**<br>*Waltham, Mass.* | ****Gill Robb Wilson**<br>*LaVerne, Calif.* |
| ***James R. Dempsey**<br>*La Jolla, Calif.* | ****George C. Kenney**<br>*New York, N. Y.* | ****C. R. Smith**<br>*New York, N. Y.* | **Leonard A. Work**<br>*State College, Pa.* |
| ****James H. Doolittle**<br>*Los Angeles, Calif.* | ****Thomas G. Lanphier, Jr.**<br>*La Jolla, Calif.* | ****Carl A. Spaatz**<br>*Chevy Chase, Md.* | ***Paul S. Zuckerman**<br>*New York, N. Y.* |

**Thomas E. Cindric,** *Pittsburgh, Pa.—ex officio* **Rev. William Laird,** *Haddon Heights, N. J.—ex officio*

*Incumbent

**Permanent member


# Sikorsky S-60 —opens a new world of helicopter usefulness

**PRIME MOVER**—The Sikorsky S-60 crane helicopter, with a five-ton payload, is the prototype of a new family of UTVs (Universal Transport Vehicles) of almost unlimited usefulness. It is an aerial prime mover, an airborne cousin to such ground prime movers as locomotives and truck trailers.

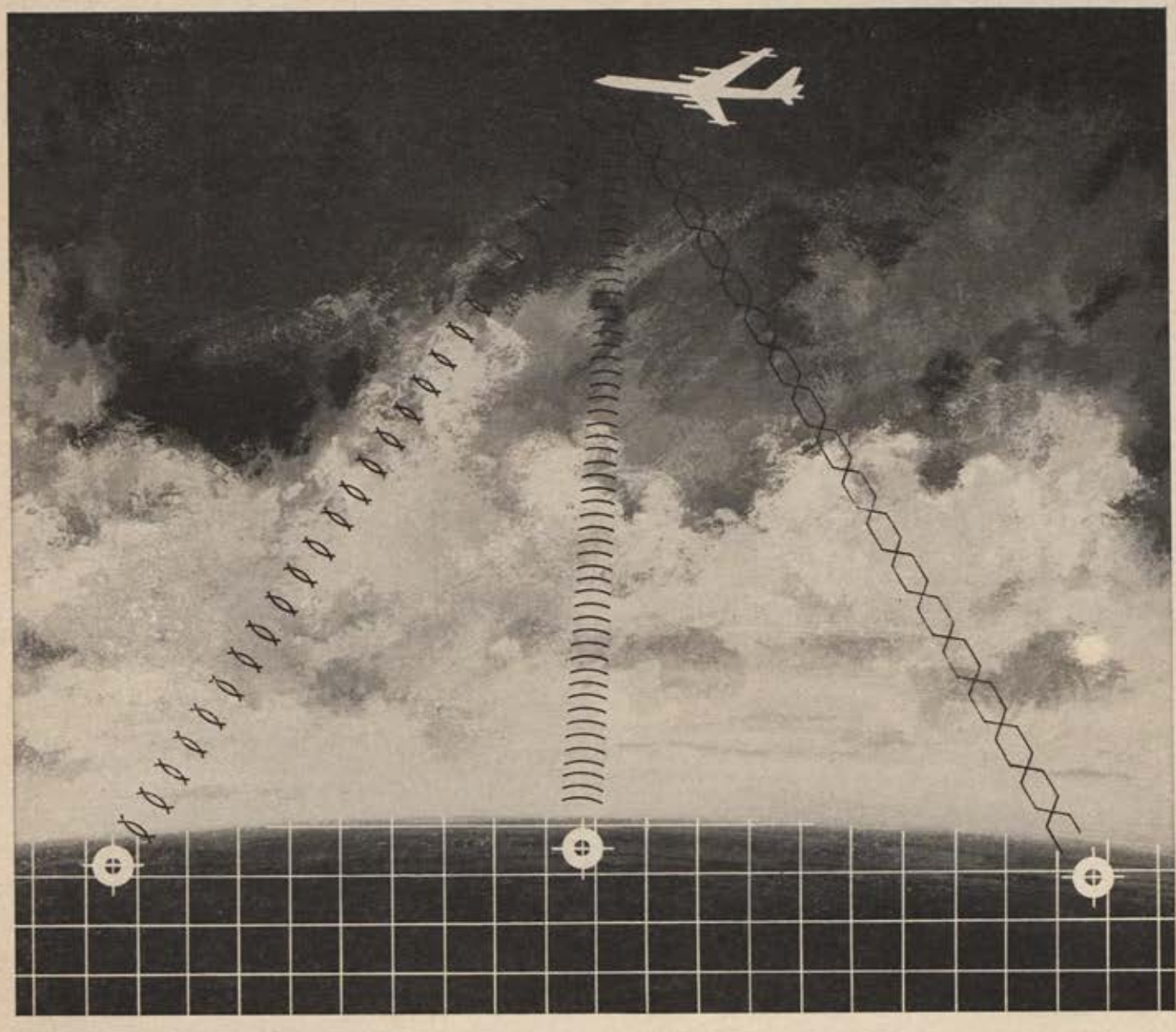
**INCREASED MOBILITY**—Independent of roads, tracks and all surface obstacles, flying cranes will move passengers and cargoes with unprecedented speed and agility. New techniques, using hoists, platforms, bins and pods, will greatly reduce loading and unloading times.
(Above, the dump truck technique makes possible quick unloading of transported fuel drums.)

**SMOOTH FLIGHT**—Loads suspended under the S-60 fuselage are virtually free of vibration—a major advantage in carrying big passenger pods or in transporting sensitive cargoes such as missiles.

**NEW POWER**—Sikorsky crane helicopters now in design will have high-powered gas turbine engines and will carry payloads from eight to 40 tons.

**SIKORSKY AIRCRAFT,** Stratford, Connecticut
*A division of United Aircraft Corporation*

SYLVANIA ELECTRONIC SYSTEMS . . . **IN RECONNAISSANCE**



## . . . advanced systems for advance intelligence

As the world's capabilities for electronic warfare expand, early warning and countermeasure systems depend more and more on advance intelligence. Electronic reconnaissance is the new watchword of the day.

Such systems, if they are to keep pace with offensive measures, demand the utmost in technical research, development and production capacities.

Sylvania has long occupied a leading position in supplying airborne and ground-based passive reconnaissance systems and subsystems to the Armed Forces. A very large part of Sylvania's research and development program is engaged in this work.

Sylvania assumes full responsibility in such advanced projects . . . from system analysis, through research, engineering, production . . . and on into field engineering, training of operating personnel, as well as supervision and maintenance. A Sylvania Systems representative will be happy to discuss these capabilities with you.

Sylvania Electronics Systems
A Division of Sylvania Electric Products Inc.
63 Second Avenue, Waltham, Mass.

SYLVANIA GENERAL SYSTEM
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

Defense Command, said at his organization's briefing that there was not now an effective defense against intercontinental ballistic missile attack by a potential enemy. He said he did not have "the slightest idea" when such a defense would be developed.

Atkinson cautioned, however, against "panic" over this problem in view of over-all deterrent strength. US defensive capability against manned bomber attack, he said,

**SQUADRON OF THE YEAR**

*Named AFA's "Unit of the Year," the Cleveland, Ohio, Squadron, commanded by Ray Saks, cited for "service in public space-age education, particularly for programs to acquaint youth with the space age and how USAF is trying to meet the problems."*

**SAC Commander, Gen. Thomas S. Power, named "Aviation's Man of the Year," received H. H. Arnold Trophy.**

**Dr. Frank E. Sorenson, University of Nebraska, receives Vandenberg Trophy for his work in air age education.**

**AFA's Man of the Year, Carl J. Long, Pittsburgh, Pa., receives the President's Trophy from AFA's Peter J. Schenk.**

**Winners all. Dr. W. Randolph Lovelace, II, and Brig. Gen. Don Flickinger, Science Award winners; Gen. Thomas S. Power, Man of the Year; former TAC commander, Gen. O. P. Weyland (Ret.), who accepted Schilling Trophy for TAC; and Maj. James F. Sunderman, Arts and Letters Award.**

has improved considerably in the past few years but would be even more satisfactory with a Mach 3 interceptor. The F-104 and F-106, ADC's newest and best, can reach Mach 2. The now-abandoned F-108 was to have had a Mach 3 capability.

General Atkinson also disclosed that the first Air Force Bomarc antiaircraft missiles are now operational. The first unit is at McGuire AFB, N. J. These missiles have a 200-to-400-mile range.

General Tunner listed three immediate objectives for his Military Air Transport Service. He told the newsmen that modernization of the strategic airlift fleet, maintenance of a five-hour aircraft utilization rate daily, and expansion of the amount of airlift used by other Defense Department agencies would ensure the nation of an adequate airlift capability in the event of war.

General Tunner said that he also favored "commercial augmentation at a necessary rate, consistent with the needs of the military establishment, to ensure prompt

*(Continued on following page)*

## TOP AFA AWARDS

**AIRPOWER AWARDS**

**Gen. Thomas S. Power,** *Commander in Chief of the Strategic Air Command, Aviation's Man of the Year — H. H. Arnold Trophy*

**Brig. Gen. Don Flickinger,** *Air Research and Development Command, and* **Dr. W. Randolph Lovelace, II,** *National Aeronautics and Space Administration—Science Trophy*

**Dr. Frank E. Sorenson,** *University of Nebraska—Hoyt S. Vandenberg Memorial Trophy*

**Maj. James F. Sunderman,** *USAF, Chief of the USAF Book Program—Arts and Letters Trophy*

**Tactical Air Command,** *Hq. Langley AFB, Va.—Schilling Memorial Trophy*

**CITATIONS OF HONOR**

**US Air Force Orientation Group**

**US Air Force Band**

**THE PRESIDENT'S TROPHIES**

**Carl J. Long,** *Pittsburgh, Pa.—AFA's Man of the Year*

**Cleveland, Ohio, Squadron**—*AFA's Unit of the Year*

**UNIT EXCEPTIONAL SERVICE PLAQUES**

**Pittsburgh Squadron,** *Pittsburgh, Pa.—Education*

**Mitchel Squadron,** *New York, N. Y.—Membership*

**San Diego Squadron,** *San Diego, Calif.—Programming*

**Utah Wing**—*Community Relations*

**INDIVIDUAL EXCEPTIONAL SERVICE PLAQUES**

**Walter T. Bonney,** *Silver Spring, Md.*

**Willard L. Dougherty,** *Cleveland, Ohio*

**Howard T. Markey,** *Chicago, Ill.*

**O. Donald Olson,** *Colorado Springs, Colo.*

**James C. Snapp, Jr.,** *San Diego, Calif.*

**MEDALS OF MERIT**

**Carl C. Alford,** *Glendale, Calif.*

**A. Paul Fonda,** *Washington, D. C.*

**Robert Gerlach,** *Milwaukee, Wis.*

**Maj. Gen. Robert E. L. Eaton,** *USAF, Milwaukee, Wis.*

**Harvey J. McKay,** *Glendale, Calif.*

**Msgr. William F. Mullally,** *St. Louis, Mo.*

**G. Barney Rawlings,** *Las Vegas, Nev.*

**Capt. Richard G. Schaller,** *USAF, Air Force Academy*

**Donald Strait,** *Basking Ridge, N. J.*

**GOLD LIFE MEMBERSHIP CARD**

**James H. Doolittle,** *Los Angeles, Calif.*

**Outgoing AFA President, Peter J. Schenk, acknowledges applause after receiving USAF Exceptional Service Award.**

**For his World Congress of Flight contributions, AFA's James H. Straubel receives USAF Exceptional Service Award.**

**For community relations work, ADC honored Colorado Wing's Don Olson. Gen. Joseph Atkinson makes the award.**

delivery in peacetime, and a powerful reserve force that can be called upon, after the first surge, to wartime strength, to help meet any emergency."

But only by having strong military airlift in being in peacetime, he declared, could the nation be certain of possessing an adequate capability in this regard in the event of war.

Lt. Gen. William F. McKee, Vice Commander of the Air Materiel Command, made clear in the final press briefing that an over-all tightening up of Air Force materiel procurement procedures is now under way. USAF is committed, he said, to an "exhaustive program to improve subcontract management," including pricing teams, increased backup audits, and possible new requirements for contractors to attest to accuracy and currency of cost estimates.

Further, General McKee said, USAF is moving to improve "the procurement skills of personnel" and institute "more precise auditing techniques." The service realizes, he said, that "inefficiency or irresponsible self-interest at this point could well bring future critical inadequacies of our air strength, from which there is no road to renegotiation."

Lt. Gen. Bernard A. Schriever, Commander of the Air Research and Development Command, and his staff shared this briefing with AMC. General Schriever, batting down a host of questions covering the broad range of activities pursued by his far-flung command, revealed in one sequence that the Dyna-Soar space project is moving ahead despite some press reports to the contrary.

General Schriever said a contract on Dyna-Soar, a space vehicle project that is designed to pick up where the current X-15 leaves off in exploration of the fringes of space, would probably be let in "a month or six weeks." The ARDC head said that the Office of the Secretary of Defense had asked him to conduct a study of the Dyna-Soar booster program and the management setup on the country's next planned "spaceship." He was ready to submit his recommendations on these matters, General Schriever said.

The Air Force Symposium, bringing together Generals LeMay, Kuter, Everest, and Tunner, was keyed to a theme of today's global USAF and its across-the-board responsibilities. This was a full-Convention, rather than a press, function.

General Kuter, who headed the Pacific Air Forces before taking over NORAD this past summer, predicted continuing "local crises" precipitated on the rim of Asia by Communist China. He pointed to Laos, the Formosa Strait, and Korea as particularly uneasy locales.

"There is not the slightest reason to be surprised by a resurgence of fighting in the Taiwan (Formosa) Strait or by activity in any other area where the Chinese Communists feel they can gain ground," Kuter said.

"I think it is very safe to say that in the months ahead they will probe for soft spots. When they find one that is inviting they will make a thrust—they will push. Without any doubt they will continue to create local crises. These will be expanded to whatever extent they feel will serve their objectives profitably."

America's Military Assistance Program has helped build the air forces of Japan, South Korea, Nationalist China, the Philippines, and Thailand until they are now fighting forces to be reckoned with, General Kuter asserted. The Chinese Nationalist Air Force is the "show piece" among these, the General said.

In this connection, he said that the Navy-developed Sidewinder air-to-air missile was "very fine," but "too much public credit" had been accorded it for its performance in the Formosa crisis last year.

"Over the Taiwan Strait only six were fired," General Kuter told the Symposium. "Four knocked down MIGs. . . . Twenty-six MIGs were knocked down by fifty-caliber machine guns fired by superb Nationalist Chinese fighter pilots."

Symposium attention was focused on the other side of the world, the European area, in remarks from General

*(Continued on page 105)*

# Sharp new eye for navigation

SHARPEST new "eye" for flight is the Ryan C-W Doppler navigator. Based on the advanced development of continuous-wave radar, this system of electronics "intelligence" has been pioneered by Ryan and the U.S. Navy for navigation at all speeds. It tells pilots how to fly to any spot on the globe, with speed and precision, and lets them know exactly where they are at all times.

With the Ryan navigator, military aircraft and jetliners can fly a new "electronic skyway" which provides precise separation between planes and conserves time and fuel. And, because RYANAV systems work right down to ground and sea levels, these advantages accrue at take-off, climb-out, descent and landings, as well as enroute.

The Navy has selected RYANAV for installation in six major types of naval aircraft. They are already in squadron use in the Navy's first all-weather anti-submarine helicopters and are being installed in Army aircraft and helicopters, for low-level "nap of the earth" operations.

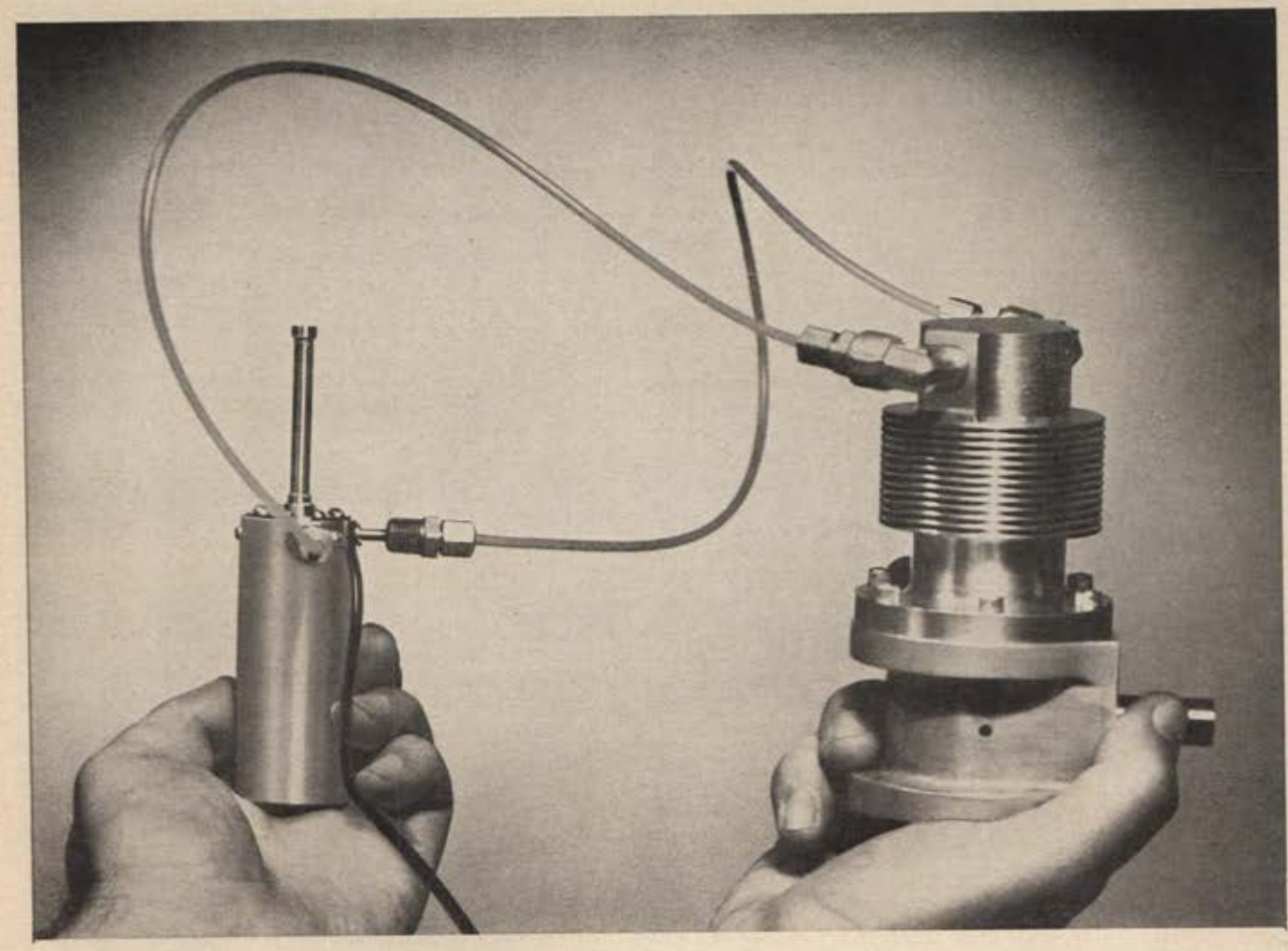
Reasons for such wide and versatile use are found in the unique features of RYANAV systems: They are the lightest, simplest, most reliable, most compact of their type. They are setting new standards of accuracy, freedom from adjustment, and ease of maintenance . . . opening new areas of navigational, guidance, and orientation applications. Ryan electronics engineering assistance is available upon request, to those who wish to explore these areas.

***Ryan's rapid growth in electronics is creating new opportunities for engineers and technicians***

**RYAN BUILDS BETTER**

ELECTRONICS DIVISION

**Ryan Aeronautical Company, San Diego, Calif.**



# Tiny super-coolers from Hamilton Standard

# FOR INFRARED APPLICATIONS

This is a closed cycle, low-pressure mechanical refrigerating system that can chill infrared cells to any predetermined temperature down to 60 degrees Kelvin (-350°F). Such extremely low temperatures increase the sensitivity of infrared detectors, giving them extended long wave length response.

The system, one of many possible package configurations, comprises the min-IR-cooler, at left, with a new miniaturized compressor. The combination provides the first reliable miniature system yet devised that will produce such low temperatures. Weighing under 10 pounds complete, it is ideal for operation in missiles or aircraft. It is further adaptable to any IR application and to a wide range of environmental conditions.

The min-IR-cooler was conceived by Arthur D. Little, Inc., and jointly developed with Hamilton Standard to perform with a Hamilton Standard-developed compressor offering high performance at unusually low weight. The system is an important new addition to the complete range of temperature and environmental control devices and systems produced by Hamilton Standard.

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ENGINE CONTROLS • ENVIRONMENTAL CONTROL SYSTEMS • PROPELLERS • STARTERS
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**Gen. Thomas S. Power (seated, far right), Commander in Chief of the Strategic Air Command, fields questions from the press during the SAC briefing for newsmen at the Miami Beach Convention. Members of General Power's briefing team are at the left. The six major commands that briefed newsmen during the Convention included Air Defense Command, Air Research and Development Command, Military Air Transport Service, Air Materiel Command, and Tactical Air Command, along with SAC.**

Everest, who recently took over TAC after serving as Commander in Chief, US Air Forces in Europe. Despite problems of sovereignty, national interests, weakened economies, language barriers, and a heritage of historical difficulties, General Everest reported, the NATO air forces were demonstrating that "common effort in a great cause can make firm friends."

"It would be an illusion to imagine that working with allied air forces presented no difficulties," he said, citing differing levels of experience among national air forces as a major practical obstacle. For example, World War II virtually destroyed the French and German air forces—their rebuilding has not been an overnight job. But, General Everest concluded, substantial progress has been achieved toward developing strong unified free world air strength in Europe and the future is certain to "bring an even greater solidarity."

General Tunner, speaking once more at the Symposium, said of MATS's global role, with apparent reference to such as the Berlin and Korean Airlifts and command response to the Lebanon and Formosa crises, that "MATS has been called upon a number of times in the past decade to perform in that hazy area which is neither cold war nor hot war. I do not presume to say that the existence of MATS has stopped a hot war. I do know that in past years MATS operated in areas that could hardly be called peaceful and in crises that demanded the utmost in flexibility."

Acting as what he called "clean-up man" of the Symposium, General LeMay discussed the "extensive worldwide aspects" of the Air Force, delivering at one point this epigrammatic passage, which seemed once and for all to answer repeated reminders one sees that some four-fifths of the earth is covered with water:

"Aerospace power by its very nature is global. One hundred percent of the earth's surface is covered with air—usable air expanding into space—the natural operating medium of aerospace power."

The Procurement Seminar, in similar vein to AMC General McKee's briefing talk, had this message for the aerospace industry: tighten up procedures, further improve efficiency, help save taxpayers' dollars.

General Bradley, DCS/Materiel, declared that "unless Congress is convinced that the Air Force spends its funds carefully, it will not be willing to grant the Air Force the sums it needs. The denial of funds would seriously affect the ability of the Air Force to execute its mission."

General Bradley called on manufacturers of Air Force hardware for "reliable and accurate" contract information, contract negotiation "without undue delay," and reduction of "overhead costs." He also warned them that, in the current state of world affairs and weapons technology, "production runs are not going to increase again."

Assistant Secretary of the Air Force Jackson pointed to

*(Continued on following page)*

**Gill Robb Wilson was keynote speaker at the Aerospace Banquet. Guests at the banquet were the Outstanding Airmen of 1959, representing the major commands of the Air Force plus the Reserve and Air National Guard. Featured speaker at the banquet was Chief of Staff, General White, who reviewed Air Force strength and listed significant future Air Force needs.**

## 1959 CONVENTION SPONSORS

*The Air Force Association is most grateful to the following firms and groups for their contribution to the success of its 1959 National Convention and Airpower Panorama through sponsorship of the events and activities listed:*

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"monumental problems" faced by USAF budget makers. He said industry "will feel the impact in terms of further emphasis to work harder—and harder—on reduction of costs" with "competition becoming even keener than in the past."

Mr. Jackson had good words for both the multicompany "team" concept for weapon system development and the Air Force "make-or-buy" procurement plan. In terms of "quality and completeness" of proposals and speed of development, he said, the industry "team" system has proved itself. Under the make-or-buy system, a contractor informs the Air Force in advance of contract negotiation which components of a weapon system he intends to produce himself and which will be supplied by another manufacturer; USAF is thus assured that the contractor is not planning to use the contract to expand into new areas of production where there already are sufficient subcontractors.

Classified briefings for industry, for which secret clearance was required, were also held by AMC and ARDC.

AFA's two major concerns are national security and education. The second of these two was treated at three educators' workshops, including a field trip to Cape Canaveral and an educators' luncheon program. Presiding officer at each of these events was Dr. Frank E. Sorenson, University of Nebraska professor and chairman of the AFA-sponsored Aerospace Education Council. Some seventy educators from across the nation attended.

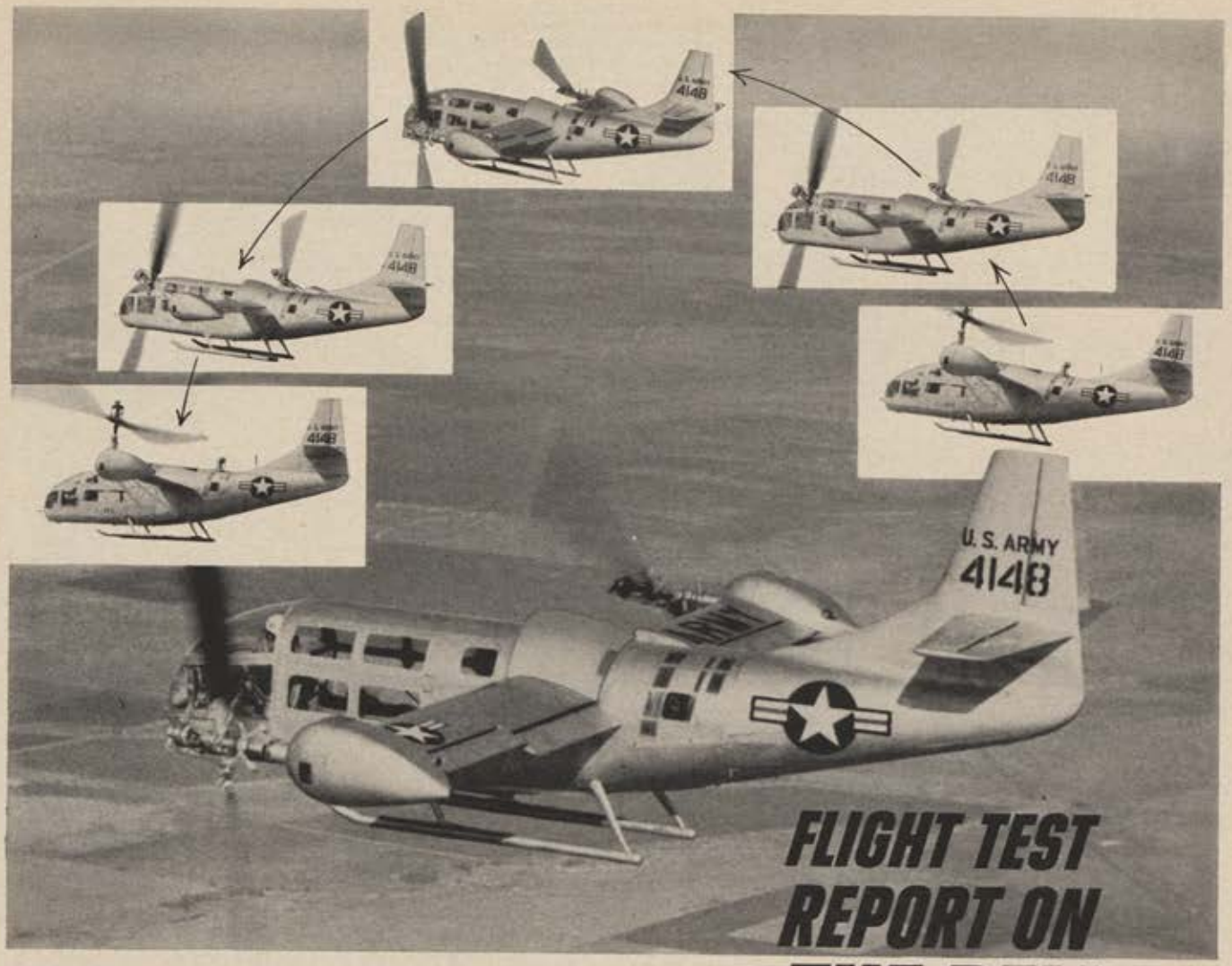
At the luncheon, ARDC's General Schriever presented prize watches to two teen-age space scientists who were victors in airpower categories at the National Science Fair in Hartford, Conn., last spring. The youths were Joie Pierce Jones, eighteen, of Abilene, Tex., and Robert E. Fischer, sixteen, of Forest Hills, N. Y.

The "big five" of AFA's annual awards, the airpower trophies, were presented by outgoing Association President Schenk at the Awards Luncheon prior to Secretary Douglas' speech. In addition to General Power, who received the Arnold Trophy as "Aviation's Man of the Year," these were the men honored for contributions to airpower in the past year:

- Brig. Gen. Don Flickinger, Special Assistant for Bioastronautics to the Commander, ARDC, and Dr. W. Randolph Lovelace, II, co-recipients of the Science Trophy for leading the way in the field of physiological research for America's Project Mercury man-in-space program.
- Dr. Sorenson, winner of the Hoyt S. Vandenberg Memorial Trophy for outstanding service in the field of education in his private capacity and with governmental

*(Continued on page 109)*


**Visitors to Panorama view, left, a General Electric engine, and right, a model of the first US military airplane.**




# FLIGHT TEST REPORT ON THE BELL XV-3

THE REVOLUTIONARY BELL XV-3 is the convertiplane that's surpassing expectations. Developed for the U.S. Army as part of the military's over-all VTOL program, the XV-3 has moved well beyond Bell's extensive shakedown tests . . . has successfully completed a thorough Phase II Air Force evaluation at Edwards AFB.

***Demonstrated capabilities to date include—***

- Over 60 full conversions in all flight regimes, including climbing turns and descents, full and partial power.
- More than 25 gear shifts proving out smooth, high-efficiency cruise flight.
- All normal airplane maneuvers, including slips, stalls, pull-ups and rolls.
- Basic emergency procedures, including power-off reconversions from airplane flight to full autorotation helicopter landings.
- Outstanding STOL performance under overload conditions.

The XV-3 was ready on time for all the 33 scheduled tests of the six-week USAF program. This dependability, plus the technical data obtained, show without question that the XV-3 has solved VTOL's central problem — that of combining vertical, low-speed capabilities of the helicopter with long-range, high-speed advantages of the airplane in a reliable, serviceable machine.

The XV-3's fixed-wing, low disc loading configuration inherently provides higher hovering efficiencies, lower downwash velocities than other VTOL types. Now, recent tests have also confirmed superior stability and controllability in all flight regimes, higher efficiencies in airplane cruise.

Now shown to be technically and operationally practical, the XV-3 concept is ready for advanced military VTOL/STOL systems.

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# Wherever you fly... More Channels nearby!

## WITH ARC's NEW TYPE T-25A 360 CHANNEL TRANSMITTER

As air traffic becomes heavier, pilots are busier with more frequent ground communications. To meet this growing need in traffic control, ARC designed the Type T-25A 360 Channel Transmitter with the widest range of frequencies — more than adequate for today or years to come. Weighing only 7.7 pounds including shock mounting, the T-25A provides complete coverage of 360 channels at 50 kc spacing between 118.00-135.95 megacycles. It is a 6-10 watt unit (nominal 8 watts), providing ample range for planning approaches in congested air traffic areas. Power consumption of only 2.0 amperes during transmission on the 28 volt model, plus the 2.0 amps input to the receiver dynamotor that supplies high voltage. This means little added power drain on the electrical system.

This transmitter is recommended for use with ARC's line of tunable receivers, (R-13B and R-19) for a primary communication system on small aircraft or as a "back-up" to ARC Type 210 Transmitter-Receiver on larger aircraft.

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and United Nations agencies including UNESCO, the Point Four Program, and the Department of the Air Force.

- The officers and airmen of the Tactical Air Command, awarded the Schilling Trophy for airpower contributions in the field of flight in recognition of the fast, powerful CASF responses to last year's Lebanon and Formosa situations. Gen. O. P. Weyland, USAF (Ret.), who retired as TAC Commander in August, accepted the trophy on behalf of the command. The trophy is named in memory of the late Col. David C. Schilling, World War II fighter ace and postwar SAC pioneer.
- Maj. James F. Sunderman, Chief of the USAF Book Program and Deputy Chief of the Magazine and Book Branch, who won the Arts and Letters Trophy for work with editors and authors that has brought into commercial publication more than 250 books on airpower and related topics in the past five years.

Other major awards, including surprise USAF presentations to Mr. Schenk and AFA Executive Director James H. Straubel, were made at the Aerospace Banquet in prelude to the major address by General White.

Honored at the banquet were the twenty Outstanding Airmen of the 850,000-strong US Air Force, four officers and one civilian whose efforts help make the giant AMC system work, and the globe-roaming Air Force Band and Orientation Group.

Maj. Gen. Ben I. Funk, Commander of AMC's Ballistic Missiles Center, Inglewood, Calif., received the annual Distinguished Management Award for providing "the generative logistic spearhead in the vital development and progress of the United States Air Force ballistic missiles program."

The award to General Funk was one of five given jointly each year by AFA and AMC to command personnel who have particularly distinguished themselves.

The other four awards this year went to:

- Col. Julian H. Bowman, USAF, Deputy Chief of Staff, Hq. Air Materiel Command, who received the General Management Award.
- Col. Carl B. Ekstrand, USAF, Director of Maintenance Engineering, Hq. Oklahoma City Air Materiel Area, Tinker AFB, Okla., who was recipient of the Maintenance Engineering Management Award.
- Louis R. Koepnick, Deputy Director for Weapon Systems, Directorate of Procurement and Production, Hq. AMC, and Assistant to the Commander, AMC Aeronautical Systems Center, winner of the Procurement and Production Award.
- Col. Robert L. Hohs, USAF, Chief, Materiel Requirements Division, Directorate of Supply, Hq. AMC, who received the Supply Management Award.

The Outstanding Airmen, representing every major command in the Air Force, as well as the Air Force Reserve and Air National Guard, were chosen by their respective commands on the basis of all-around performance. They occupied the front tier on a two-tier dais stretching across the head of the banquet hall. The airmen, all senior noncommissioned officers, and their wives were AFA guests throughout the Convention.

The group included:

Senior M/Sgt. Anthony J. Baione, Headquarters Command.

M/Sgt. Frank J. Barnet, Air Training Command.

M/Sgt. Perry C. Bishop, Air Research and Development Command.

Senior M/Sgt. Robert T. Campbell, Jr., Continental Air Command.

Senior M/Sgt. John H. Casey, Pacific Air Forces.

**Honored at Aerospace Educators' Luncheon were National Science Fair winners Joie Pierce Jones, Abilene, Tex., second from left, and Robert E. Fischer, Forest Hills, N. Y. Gill Robb Wilson, Lt. Gen. B. A. Schriever made presentations.**

T/Sgt. William G. Dodds, USAF Accounting and Finance Center.

Senior M/Sgt. Clyde Ellison, Alaskan Air Command.

T/Sgt. Hawthorne C. Evans, Jr., Air Force Reserve.

Senior M/Sgt. Richard W. Higgins, Strategic Air Command.

T/Sgt. Dick Lamb, Air Materiel Command.

Senior M/Sgt. Dwight H. McCracken, Military Air Transport Service.

M/Sgt. Robert L. McLaughlin, Air National Guard.

Senior M/Sgt. Robert K. Moorehead, Air University.

Senior M/Sgt. Howard James Randall, Air Defense Command.

Senior M/Sgt. Anthony F. Reiskis, USAF Security Service.

M/Sgt. Miguel M. Serna, Caribbean Air Command.

Senior M/Sgt. James O. Simmons, United States Air Force Academy.

Senior M/Sgt. Frank H. Tolhurst, Tactical Air Command.

M/Sgt. Charles L. Wiles, United States Air Forces in Europe.

T/Sgt. Leonard T. Newton, Jr., USAF Recruiting Service.

Citations of Honor went to the USAF Band, commanded by Col. George S. Howard, and to the USAF Orientation Group, commanded by Col. Reginald M. Cram. The Band, which makes continuing trips around the country and the world, was cited for "contributions through the medium of music to peace and understanding among nations." The Orientation Group, charged with putting on official USAF exhibits and displays, also a globe-trotting outfit, was praised for "contributations to public understanding of the role of airpower in national defense."

Secretary Douglas delivered nonscheduled tributes to Mr. Schenk and Mr. Straubel at the close of the banquet's awards ceremony, presenting them USAF Exceptional Service medals for helping bring "better understanding of the Air Force and its mission to the public."

Mr. Schenk, it was noted, "has been of inestimable value to the United States Air Force and the nation as electronics expert, industry executive, and scientific adviser." The World Congress of Flight, organized primarily by Mr. Straubel and the AFA staff under him, was said to have been of "tremendous value" for the field for aviation.

Earlier on the day of the banquet, the Air Force's best air defense squadron was honored by the Night Fighter Association, an organization of past and present fighter

*(Continued on following page)*

**Some of USAF's Outstanding Airmen talk with Chief of Staff Gen. Thomas D. White during the Air Force Association Convention. From left, Senior M/Sgt. James O. Simmons, Air Force Academy; M/Sgt. Perry Bishop, ARDC; T/Sgt. Leonard T. Newton, Jr., Recruiting Service; General White; Senior M/Sgt. Anthony J. Baione, Headquarters Command; Senior M/Sgt. Robert T. Campbell, Jr., CONAC; Senior M/Sgt. Dwight H. McCracken, MATS; and Senior M/Sgt. Clyde Ellison, AAC.**

pilots that each year meets in conjunction with the AFA Convention. The 54th Fighter-Interceptor Squadron of Ellsworth AFB, S. D., an F-89J Scorpion outfit, received the Hughes Achievement Trophy.

Lt. Col. Ernest B. Nuckols, Jr., Squadron Commander, and five squadron members accepted the trophy, donated by the Hughes Aircraft Company. The outfit earned the award on the basis of high score in a number of competitive categories with ADC.

General Kuter and General of the French Air Corps Paul M. V. Stehlin spoke at the luncheon ceremony. Other Night Fighter presentations went to the top ANG fighter-interceptor unit, the 173d F-I Squadron, Lincoln, Neb. Capt. R. L. Salisbury, Perrin AFB, Tex., took a third award as USAF's outstanding interceptor instructor.

AFA "family awards," presented at an AFA Honors Luncheon, included a gold life membership card to the organization's first president, James H. Doolittle, and eighteen medals and plaques to top units and individual members as well as the AFA Man of the Year and Squadron of the Year trophies (*see box, page 101*). O. Donald Olson, AFA Colorado Wing Commander and winner of one of the exceptional service plaques, also was awarded a certificate of appreciation from the Air Force for helping enhance "public appreciation" of the Air Defense Command's operations and mission.

Delegates to the Convention passed eight resolutions in business sessions that were also devoted to election of officers and the annual policy statement. In these resolutions, AFA:

- Recommended an end to restrictions on employment of retired military officers in defense industry.
- Called for improved armed forces housing.
- Suggested a defense study of the nation's "inadequate" military airlift.
- Endorsed a major beef-up of US civil defense.
- Urged increased career inducements for members of the armed forces.
- Proposed purchase of surplus commercial transport planes of the DC-6 and DC-7 types for the Air Reserve Forces.
- Reiterated a view that a portion of the nation's military budget should be specially earmarked for the Reserves by Congress.
- Backed a plan to encourage Reservists to continue Reserve training by a retirement pay modification.

The Reserve resolutions, as well as the substantial body of reserve activities at the Convention, are dealt with in the "Ready Room" column that follows this report. The kickoff event of the Convention, as in previous years, was the Air National Guard Ricks Trophy event.

Over-all, the Convention at Maimi Beach was a thumping success in every regard—from the opening Ricks event to the Air Force Reunion Party and Ball at the plush Fontainebleau Hotel on Saturday night, September 5. As a vehicle of public education for national security, it appeared to have performed its mission admirably.

The Convention registration totaled about 3,200. Seventy USAF generals and 276 presidents, vice presidents, and board chairmen of industrial concerns attended; 386 companies in all were represented. Sixty-two military and civilian officials from twenty-two foreign countries were on hand. The Aerospace Panorama was spectacularly impressive. Nearly 108,000 persons visited it when the Exhibition Hall was opened to the public on the week end of September 5 and 6, topping by more than 10,000 the number who saw the Panorama at Dallas last year. Hundreds of newsmen from across the country and both major wire services covered the Convention in detail for readers here and abroad.

In fact, even Radio Moscow was interested. It attacked Secretary Douglas' Awards Luncheon address. The Russian air attaché in this country, Maj. Gen. Mikhail N. Kostuk, was also on hand, it might be noted. He viewed the Panorama, listened to some briefings including that of General Power, and told the press that "we Russians, we're not fighting anybody."

Attaché Kostuk, in the manner of competition-minded Russian officials, said that the Panorama was "nice" but "sometimes we put on good ones too."

Exhibitors, Convention committees, and sponsors (*see page 106*), could all share a deep satisfaction at the close of Labor Day week end, 1959, for a job well done. This applied perhaps most to the Miami AFA Squadron, which carried on the full-scale job of hosting the Convention through a number of committees.

Committee chairmen, working under Regional Vice President Alex Morphonios, were: J. Alan Cross and Ted Koschler, general committees; Mrs. Bunny Steward, information; Charles F. Smith, airports; Hamilton Foster, registration; Jackson G. Flowers, Panorama; Edward Barber, reception; William Renegar, transportation; Dr. Louis C. Pessolano, promotion; Edwin M. Ashley, special activities; and Martin Kirkland and Phil Radell, arrangements.

Top military host was Maj. Gen. Donald N. Yates, USAF. Reserve host was Col. Forrest R. Harsh, AFRes., and ANG-designated host was Lt. Col. Leon A. Moore, Jr., ANG. Maj. David B. O'Hara, USAF, was Air Force Project Officer.

Two Miami public relations firms, headed by Bob Daly and Stuart G. Newman, turned in an excellent performance helping publicize the Convention and Panorama locally.

Next year's Convention is set for San Francisco, from September 21 to 25. Hope to see you there.—END


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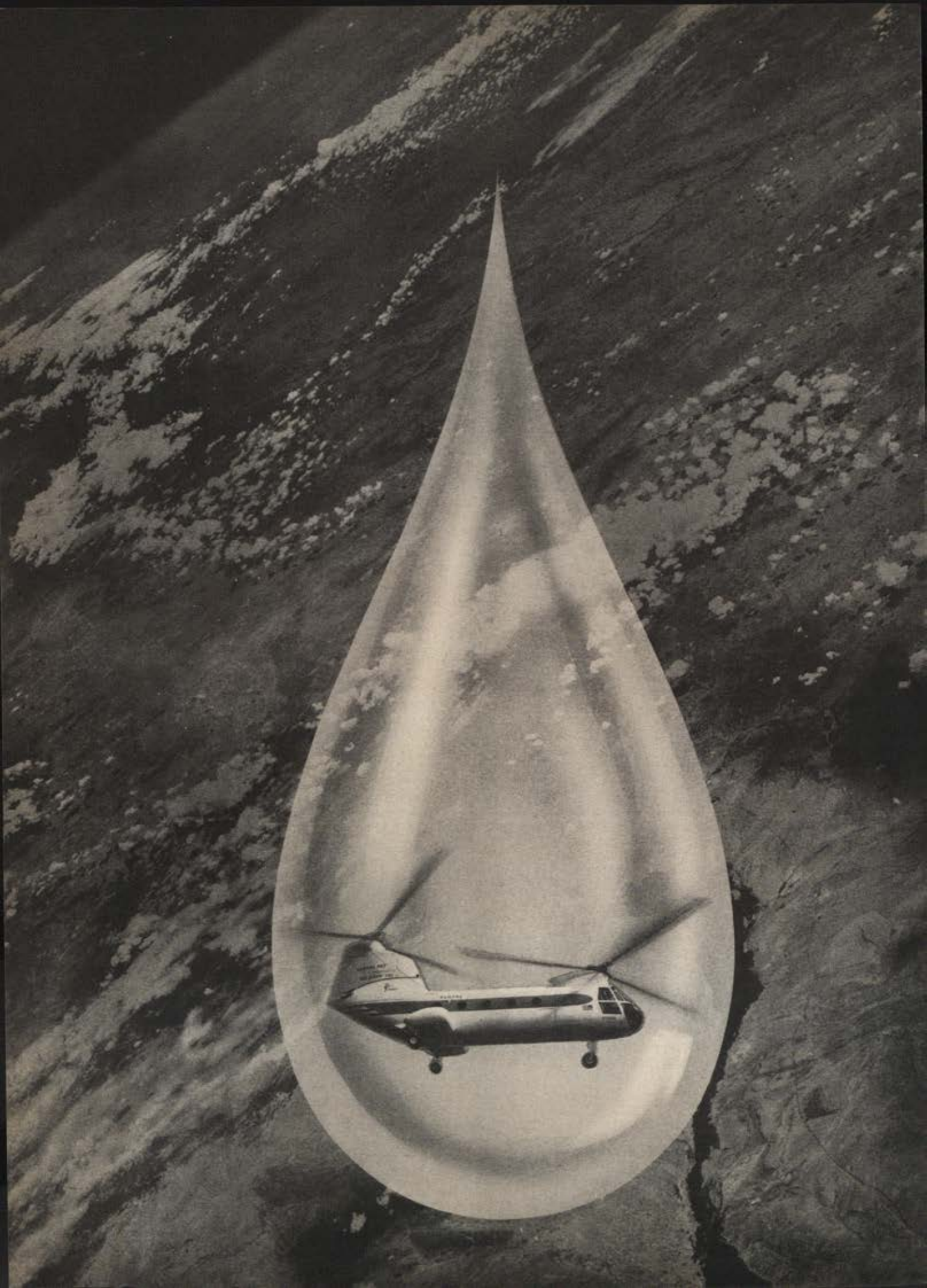

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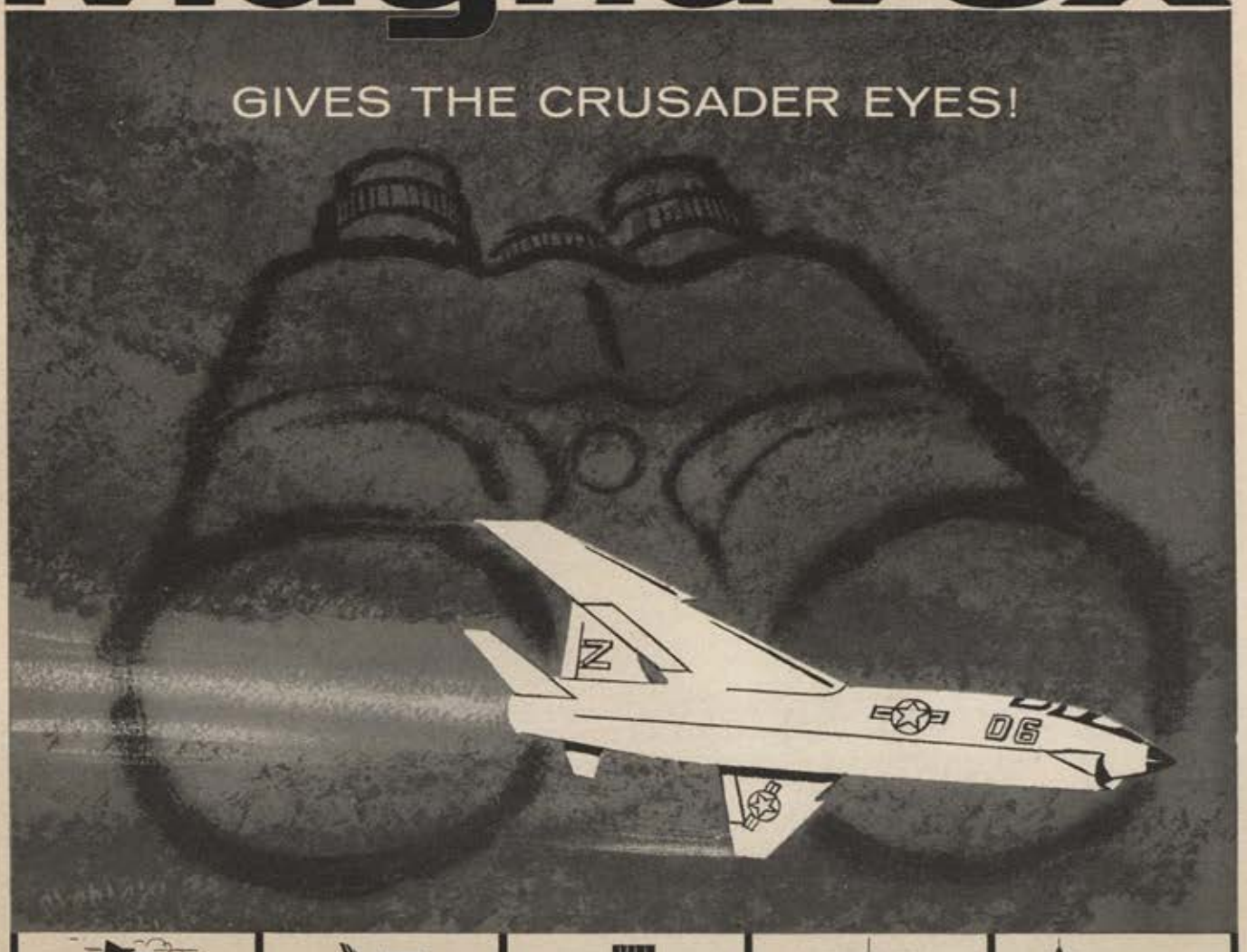


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# The READY ROOM

RESERVE AND AIR GUARD NEWS

## Focus on the Reserves

The Reserve Forces held a generous share of the spotlight at the AFA National Convention in Miami Beach last month.

Delegates to the Convention approved three resolutions pertinent to the Air Reserve Forces. They dealt with:

1. Reserve retirement.
2. A separate Air Force Reserve budget.
3. Surplus aircraft for use by the Air Reserve Forces.

AFA urged Congress, in all future appropriations, to earmark funds intended for the Air Force Reserve "and ensure that they be used for no other purpose."

This action followed an announcement to AFA delegates that Air Force Secretary James H. Douglas had approved most features in the report of the *ad hoc* committee, headed by Brig. Gen. James Howard, a Washington, D. C., Reservist.

The title of this resolution is perhaps misleading, since neither it nor the *ad hoc* committee's report actually calls for a separate Reserve budget, but instead seeks to assure that funds in USAF's budget intended for the Air Force Reserve are clearly identified. This identification serves a dual purpose—first, in justifying the funds during budget reviews in the Department of Defense, the Bureau of the Budget, and before congressional committees; and second, in guaranteeing that the funds approved by the Congress will indeed be spent on Reserve programs.

In remarks entered in the *Congressional Record*, Congressman Anderson argued that C-130s would substantially reduce operating costs per ton-mile in comparison with C-119s. He gave these figures:

| | Range | Cargo Load | Passengers |
|---|---|---|---|
| C-119 | 1,000 mi. | 10,000 lbs. | 42 |
| C-130 | 3,200 mi. | 35,000 lbs. | 96 |

At an operating cost one-third greater per troop carrier wing, he explained, the airlift yield would be more than doubled.

**Left, Maj. Gen. Winston P. Wilson, Deputy Chief, National Guard Bureau, and Norma Maxey, "Miss Space," greet Michigan ANG pilot Capt. Donald K. Reid, winner of Ricks Trophy event, shown here with his wife at Miami International Airport. At right, General Wilson and Guard Bureau's Col. Fred Hook talk with Lt. Bob Graham, Nashville, one of the runners-up.**

● **Reserve Retirement.** AFA noted that the majority of Reserve Forces officers are likely to qualify for Reserve retirement after twenty years' service when they are in their early forties, yet they must wait until age sixty to receive retirement pay.

USAF provides numerous inducements to encourage a Reserve Forces officer to reach the twenty-year goal, AFA noted, but offers very little incentive to him to remain active after he reaches that point in his career.

After twenty years' service, the Reserve officer is mature, experienced, and dependable, with considerable potential to the Air Force, the resolution declared. To keep such Reservists active, AFA recommended a plan which would allow them to qualify for retirement pay after thirty years of service, or at age sixty with twenty years, whichever date occurs first.

● **Separate Budget.** In this resolution, AFA endorsed major provisions contained in the report of the *ad hoc* committee on a separate Reserve budget which was submitted to the Secretary of the Air Force last May.

● **Surplus Aircraft.** AFA recommended to the Department of Defense and Congress that surplus commercial DC-6 and DC-7 aircraft be purchased or leased for assignment to the Air Reserve Forces to augment USAF's airlift capability.

In this connection, identical bills have been introduced in the House and Senate to buy 200 C-130 aircraft for the Reserves to replace obsolete C-119s. The Senate bill (S. 2488) was introduced by Strom Thurmond of South Carolina, and the House bill (H. R. 8508) by LeRoy H. Anderson of Montana. Both are Reservists.

## Ricks Trophy Event

In the Convention's kickoff event, on Wednesday, September 2, Capt. Donald K. Reid of Detroit, Mich., showed rare cloud-dodging skill to win the Ricks Memorial Trophy for 1959.

Under the rules of this year's event, the pilot who got the three best aerial photos of specified targets in the shortest elapsed time was the victor. Clouds were a problem over the entire Memphis, Tenn., to Miami course, along which were dotted the eight designated targets.

Captain Reid, a flying-training supervisor for the 171st Tactical Reconnaissance Squadron, Michigan Air National Guard, was second in elapsed time from Memphis to Miami, covering the 750-nautical-mile route in his Republic RF-84F at an average speed of 504 knots. He turned in three excellent photos. Captain Reid is thirty-one and a veteran of 102 tactical-support missions in Korea.

The clouds forced the ten contest-

*(Continued on following page)*


Reserve Forces Seminar panelists at AFA Convention included (from left) Maj. Gen. W. P. Wilson of Guard Bureau; Maj. Gen. R. E. L. Eaton, Ass't C/S for Reserve Forces; CONAC's Lt. Gen. W. E. Hall; L. S. Thompson, of AF Secretariate.

One of the speakers at the Reserve Forces Seminar was ANG Brig. Gen. Donald Strait, Cmdr., 108th F-I Wing.

AFA President Schenk presents Ricks Trophy to Capt. Donald Reid, shown (from left) with 2d, 3d, and 4th place winners —Captains John Neher, Merwin Read, and Gilbert Browning.

CONAC Commander, Lt. Gen. William E. Hall, chats with Reserve Forces outstanding airmen, T/Sgt. Hawthorne C. Evans, Jr. (left) and M/Sgt. Robert McLaughlin.

ants to trust largely to luck that at least three targets would be clear when they passed overhead at 25,000 feet or more. But some, including Lt. Bob Graham of the 105th Tactical Reconnaissance Squadron of Nashville, Tenn., who turned in the fastest time, just couldn't find holes big enough to snap the required photos.

Second place went to Capt. John Neher of the 160th TR Squadron, Montgomery, Ala., who at thirty-seven has logged more than 13,000 hours of military and civilian pilot time. Capt. Merwin Read, Jr., thirty-six, Commander of the 107th TR Squadron, also in Detroit, was third, and Capt. Gilbert Browning, thirty-four, of the 106th TR Squadron, Birmingham, Ala., placed fourth.

## Other Convention Highlights

For the first time, an Air Guardsman has been elected President of the Air Force Association. He is Brig. Gen. Howard T. Markey, thirty-eight, a patent lawyer in civilian life, who commands the 126th Air Defense Wing, Illinois Air National Guard (*see page 98*).

Both the Reserve and Guard "Outstanding Airmen," selected for honors at the Convention, proved so outstanding that they were commissioned before arriving at Miami Beach. T/Sgt. Hawthorne Evans of Tennessee was appointed a first lieutenant this summer after being chosen the Air Force Reserve's outstanding airman. The Air Guard's candidate, M/Sgt. Robert L. McLaughlin of California, was granted federal recognition as a captain in the medical service corps late in August, but he didn't know it until Maj. Gen. Winston P. Wilson, Deputy Chief of the National Guard Bureau, pinned double tracks on him just after he received his plaque at the Convention from outgoing AFA President Peter J. Schenk.

Overseas deployment of Air Guard tactical fighter units was advocated by Brig. Gen. Don Strait, Commander of New Jersey's 108th Fighter-Interceptor Wing, during the Convention's Reserve Forces Seminar on September 3 (*see cut*).

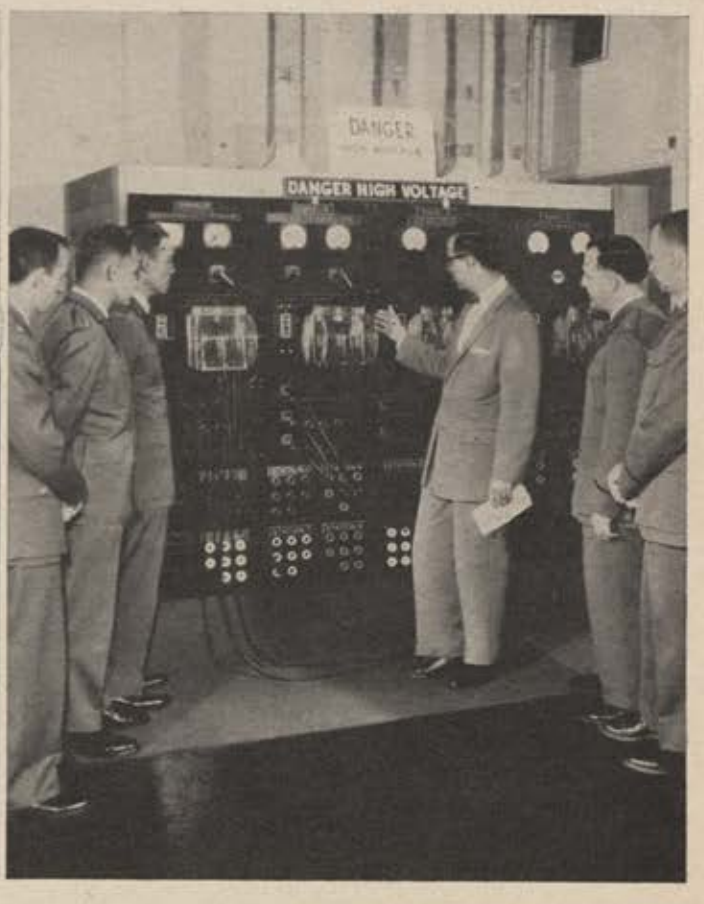
"I can think of no more logical or dramatic way to demonstrate our operational capability than to dispatch a flight of F-84F aircraft nonstop to Europe on an actual deployment exercise," he said. "Our units would gain a great deal of valuable experience, in addition to receiving a real shot in the arm moralewise."

Incidentally, General Strait himself received a "shot in the arm" by being named Commander of Air Guard forces in next year's big Bright Star/Pine Cone III maneuvers, which should dwarf this year's Dark Cloud/Pine Cone II exercise. General Strait will command a tactical fighter and reconnaissance force including two full Air Guard wings, plus a squadron of SA-16s, and a composite squad-

*(Continued on page 119)*

# America's future calls for academic excellence

Dr. John A. Hannah, President
Michigan State University,
East Lansing, Michigan




## Educational opportunities for the Air Force Officer

New forces in world affairs have increased the educational requirements of young Americans. Technological breakthroughs, world political organizations, internationalism and population explosions are forces demanding dynamic and expanded educational programs for our future leaders. In a world where the battles of tomorrow are being fought in the classrooms of today, I naturally am interested in seeing our educational system meet the challenge by providing American students with the skills and scholarship they need to face the future.

I have been closely associated with our Armed Forces and the military education programs. I can state unreservedly that the U. S. Air Force has one of the finest and most comprehensive educational programs in the world. It is available on a basis of qualification, dedication and interest.

Throughout the world, Air Force officers are working toward and receiving degrees from the undergraduate to the doctorate level every year. Courses of study range from the scientific and technical areas through the humanities.

The program includes study at civilian universities and in the resident schools of the Institute of Technology at Wright-Patterson Air Force Base. On-the-job training is also provided with various industries and hospitals. In addition, there are literally thousands of off-duty night school courses offered on or near Air Force bases.

Since the Air Force encourages and pays the bills for most of this education — tuition plus regular pay and allowances — the young officer seeking to further his education will find ample opportunity to do so as a career member of the United States Air Force.

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ron of TAC fighter and reconnaissance aircraft. The Air Force Reserve is expected to mount an airlift force including from 450 to 500 C-119s and C-123s.

A number of outstanding speeches were delivered at the Reserve Forces Seminar. Other speakers, along with General Strait, were Brig. Gen. Ramsay D. Potts, Jr., AFRes., Commander, 459th Troop Carrier Wing, Washington, D. C.; Col. Robert Keim, AFRes., Information Service Specialist of New York; Col. Willard S. Magalhaes, ANG, Commander, 152d Tactical Control Group, New York, and M/Sgt. Ronald McDonald, AFRes., 2478th Air Reserve Training Wing, California. Each presented valued observations on the Reserve Forces program from his vantage point. The Seminar presentations will be distributed among Reserve Forces units in the near future.

## Back at the Pentagon

The Air Reserve Forces are also being given a lot of thought at the Pentagon these days.

In the July "Ready Room" we reported that then USAF Under Secretary Malcolm MacIntyre, in whose office is vested statutory responsibility for administering the Reserve Forces, had called for a searching look at the entire Reserve Forces program. Not long afterward he resigned from the Air Force to become President of Eastern Air Lines.

For some time before Mr. MacIntyre called for this scrutiny, a concept paper establishing a basic concept for the use of Air Reserve Forces was making the rounds. It is expected to emerge from the Air Staff in the near future.

It is not clear at this point whether Mr. MacIntyre's successor, Dudley Sharp, holds the same views in this regard as his predecessor. The concept paper could, in addition, eliminate the need for other actions.

The *ad hoc* committee for a separate budget, whose recommendations were also reported in July, heard comments from Lt. Gen. William E. Hall, Commander, Continental Air Command, and Maj. Gen. Richard Grussendorf, then Assistant Chief of Staff for Reserve Forces, that the latter's office needed beefing up. The committee recommended to Secretary Douglas that a study be made to strengthen the authority of the Office of Assistant Chief of Staff for Reserve Forces. (General Grussendorf has since been succeeded by Maj. Gen. Robert E. L. Eaton and has himself become Chairman, Air Force Personnel Council.)

When the Secretary received the *ad hoc* committee's recommendation, he replied that the Air Force had recently completed a similar study of its own. It showed, the Secretary said, that the Assistant Chief of Staff for Reserve Forces in reality already had virtually all the authority the *ad hoc* committee sought for him. Mr. Douglas suggested, therefore, that AFCRF be given an opportunity to exercise its reaffirmed powers before any action be taken on this recommendation by the committee.



## New Faces

When the Air Reserve Forces Policy Committee meets in Washington October 19-21 there will be several new faces around the table. This is the top Reserve Forces policy group. It includes six men each from the Air Guard, the Air Force Reserve, and the active Air Force, plus two alternates each from the Guard and Reserve.

The committee is charged with reporting to the Secretary of the Air Force on all policy matters affecting the Reserve Forces. Recommendations

*(Continued on following page)*

are normally made to the committee through similar groups functioning at numbered Air Force level, but recommendations may also be directed to the committee at its semiannual sessions or to its individual members—who provide a broad geographical and functional coverage of Reserve Forces activities.

Committee chairman is Maj. Gen. Clarence A. Shoop of the California Air National Guard. He was appointed to a three-year term this past July 1, after having served briefly last spring in filling out the term of Brig. Gen. George R. Dodson of Oregon, who died last December.

Other Air Guardsmen on the committee are Brig. Gen. William W. Spruance, Assistant Adjutant General for Air in Delaware; Brig. Gen. Bernard M. Davey, Commander of Georgia's 116th Fighter-Interceptor Wing; Brig. Gen. George R. Doster, Jr., Commander of the 117th Tactical Reconnaissance Wing, Alabama; Brig. Gen. Frank Bailey, Acting Chief of Staff for Air in Arkansas; and Col. James M. Trail, Chief of Staff for Air, Idaho, and outgoing Chairman of the Board of the Air Force Association.

Air Guard alternates are Brigadier Generals Joe Foss of South Dakota, and John M. Campbell of Nebraska, each Chief of Staff for Air in his home state.

Senior member of the Air Force Reserve sextet is Brig. Gen. John O. Bradshaw, who commands the 434th Troop Carrier Wing, Bakalar AFB, Ind. His colleagues are Brig. Gen. Ramsay D. Potts, Jr., Commander of the 459th Troop Carrier Wing, Washington, D. C., and Colonels Asa W. Candler, Commander, 9191st Air Reserve Group, Atlanta, Ga.; Jack P. Crowther, who commands the 9341st Air Reserve Group in Los Angeles; Donald T. Carney, a mobilization assignee with the 3415th Tech Training Wing, Lowry AFB, Colo.; and Edward H. Haseltine, Wing Executive, 94th Troop Carrier Wing, Lawrence G. Hanscom Field, Mass.

Reserve alternates are Colonels William P. Wright of New York City, a mobilization assignee at Hq. ARDC, Andrews AFB, Md., and Joseph W. Barron, Commander, 9102d Air Reserve Group, Pittsburgh.

USAF members include Major Generals Robert B. Landry, Assistant DCS/Personnel; Elvin S. Ligon, Jr., Director of Personnel Planning, DCS/P; Benjamin J. Webster, Director of Programs under DCS/Plans and Programs; Lloyd P. Hopwood, Director of Personnel Procurement and Training; and Brig. Gen. F. J. Sutterlin, Deputy Director of Operations. One USAF position is vacant at this writing, but was to be filled before the October 19 meeting convenes.

Completing the lineup of the committee are its executive secretaries, Col. Russell W. Tarvin for the Reserve and Col. I. G. Brown for the Guard, plus Mrs. Helen Nabti, Administrative Assistant.

## Up the Ladder

Maj. Gen. Clayton Stiles has relinquished command of the 514th Troop Carrier Wing at Mitchel AFB, N. Y., to accept appointment to a mobilization assignment as Vice Commander of the Continental Air Command. And in California, Maj. Gen. John R. Alison stepped out as Commander of the 452d Troop Carrier Wing in Long Beach to accept a mobilization assignment as Vice Commander of the Fourth Air Force. Their replacements in the Wing Commander slots have not yet been named.—END

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There are some other specific exclusions, covering groundings due to insanity, court-martial, attempted suicide, etc.; here they are in detail:

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2. "Fear of flying," as officially certified by responsible authority of the Member's Service and approved by the head of the Service in accordance with applicable regulations.

3. Caused by intentional self-injury, attempted suicide, criminal assault committed by the Member, or fighting, except in self-defense.

4. Directly or indirectly caused by war, whether declared or not, if act of an enemy in such war is the direct cause of loss insured hereunder, hostile action, civil war, invasion, or the resulting civil commotions or riots.

5. Failure to meet flying proficiency standards as established by the Member's Service unless caused by or aggravated by or attributed to disease or injuries.

6. Inability of a member to continue to meet physical standards for Hazardous Flight Duty because of a revision in those standards, rather than because of preceding injury or disease causing a change in the physical condition of such member.

7. Accidents caused while riding or driving in any kind of race.

8. Alcohol, drugs, venereal disease, arrest or confinement.

9. Willful violation of flying regulations resulting in suspension from flying as a punitive measure, or as adjudged by responsible authority of the Member's Service.

10. Sentence to dismissal from the service by a general court-martial, submitted resignation for the good of the service, or suspension from flying for administrative reasons not due to injuries or disease.

11. Loss of life shall not be deemed as loss for purposes of this insurance.

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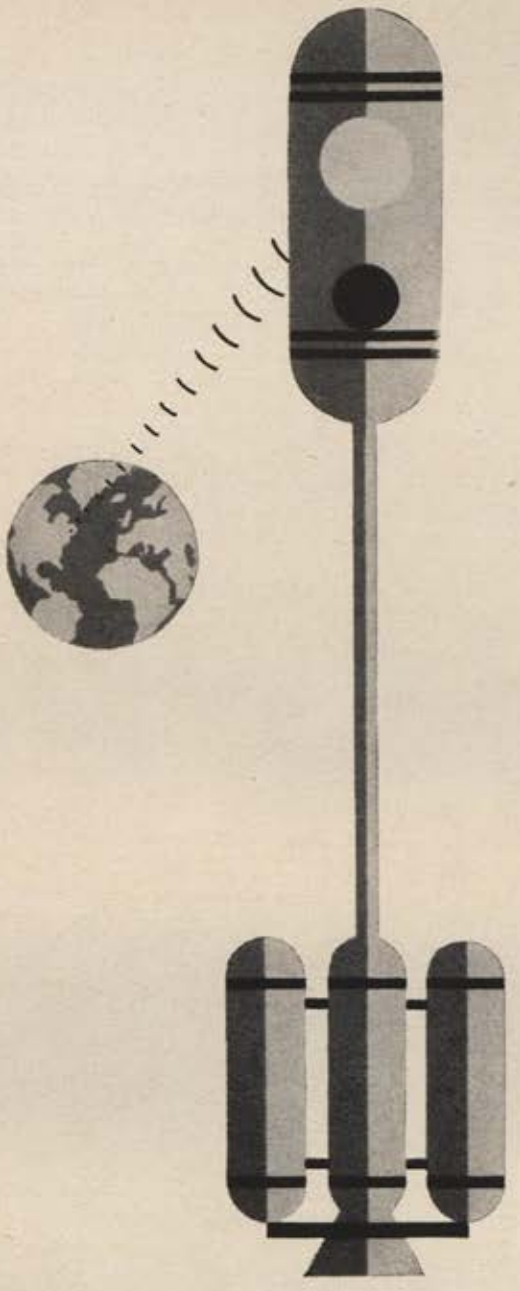

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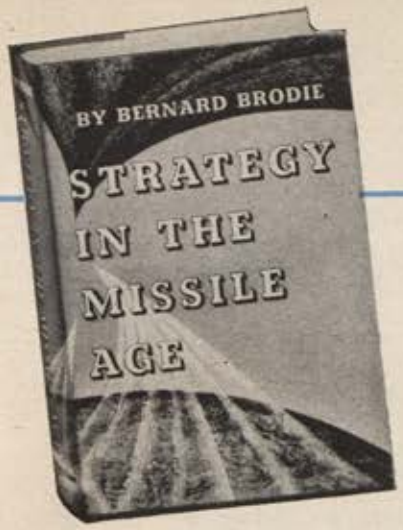


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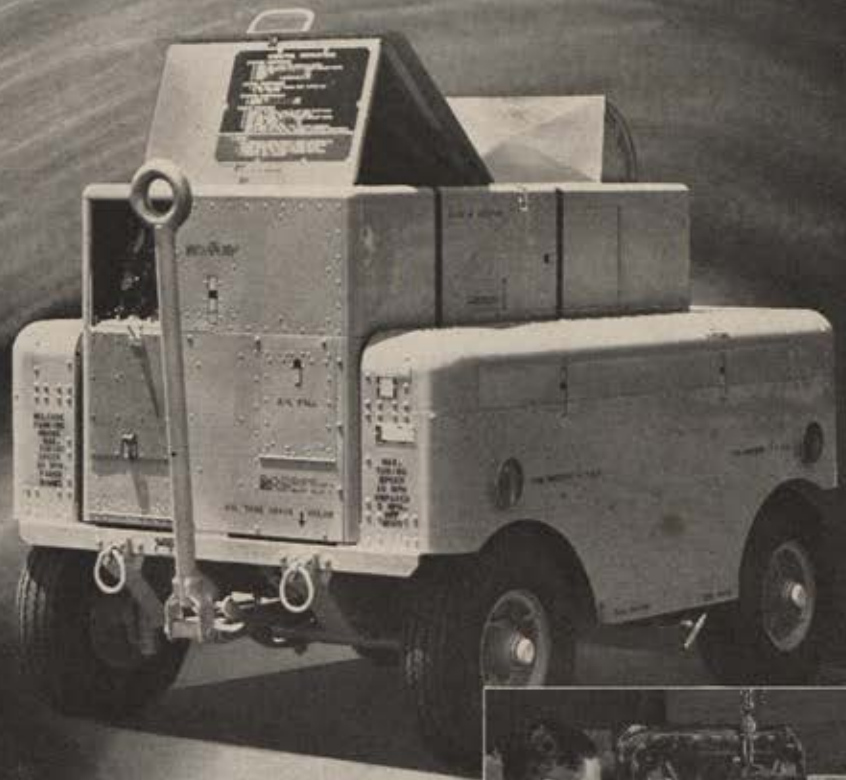

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*AiResearch engineers inspecting improved AiResearch GTC 85-20 gas turbine unit after successful 5,000 start cycle test.*

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A Book Review

# Strategy in the Missile Age

REVIEWED BY COL. THOMAS W. WOLFE, USAF

*Strategy in the Missile Age*, by Bernard Brodie. A RAND Corporation Research Study, published by the Princeton University Press (New York, N. Y., 1959, 342 pp., $6.50)

IN THE introduction to his excellent book, the author, Bernard Brodie, calls attention to the lack in America of a vigorous tradition of intellectual concern with the field of national strategy—that "border area where military problems and political ones meet." Professional soldiers are kept too busy dealing with complex technical and tactical problems to give much thought to the larger area of strategy. Under the pressures of office, civilians concerned with security affairs likewise have little time or inclination for far-ranging strategic thought, while scholars for the most part have simply remained aloof from the problems of strategy.

The neglect of strategy did not matter too much, perhaps, prior to the advent of the nuclear age. Today, however, the "cosmic forces" in the hands of the military profession have a direct and vital impact on the lives and well being of the whole population. A quantum change in the technology of war has made imperative a quantum change in the understanding and control of the forces it embodies. In short, as the stakes have shot up, strategy has acquired an altogether new dimension—posing great common problems upon which Brodie urges that the best insights of military and civilian thought alike be brought to bear.

RAND-Corporation-expert Brodie, one of this country's more deeply brooding and articulate students of modern warfare, makes a valuable contribution to this task in the present study, which is published jointly by RAND and the Princeton University Press.

The central and most compelling problem facing the United States today, Brodie declares, grows out of the fact that we have committed ourselves to a strategy of deterrence and rejected any notion of initiating a nuclear war. This means that if total war comes, the chances are high that we will receive rather than deliver the first blow. From this situation—which Brodie feels neither the American people nor their leaders have yet begun to think through—many consequences flow.

For example, having accepted the enormous risk of absorbing the initial nuclear blow if deterrence fails, we must devote far more imagination, energy, and resources than we have yet done to minimizing the advantages an enemy could hope to reap by striking first. Highest priority, Brodie suggests, should go to reducing the vulnerability of our retaliatory forces—by base hardening, dispersion, mobility, or whatever other measures experts may devise. A much more searching look must be given, he says, to the possibilities of defense against strategic attack, both in the realm of active defense measures and in civil defense—the latter being an area of monumental neglect in the author's eyes.

In this connection, Brodie points with some dismay to the "inconsistency" of US military leaders who place great faith upon our own thermonuclear weapons for the security of the country, but who at the same time "reject the most obvious consequences of their use against us."

Corollary to Brodie's pivotal thesis—that a nation committed to a nonaggressive and defensive strategy must show profound interest in means for improving its defensive posture and retaliation—is the question of the likelihood of total war in the nuclear age. Obviously, if nuclear weapons have "abolished" war, as many people would like to believe, then there would be little point in heroic measures to prepare the nation for this eventuality. Brodie's answer is sensible and dispassionate: We must "take seriously the fact that the danger of total war is real and finite." In fact, to ignore the danger of total war—"an immeasurably worse phenomenon than war as we have known it in the past"—is to increase substantially the chance that it may occur.

What about the place of "limited war" in the spectrum of nuclear-age conflict? While warning against the limited-war school which tends to argue that our attention and resources can be diverted from preoccupation with big war problems, Brodie urges that we provide ourselves with a substantial capability for coping with local aggression by local application of force—including, if need be, nonnuclear types of action. In this connection, he counsels that in limited wars airpower, like naval power, may have to resign itself to playing an ancillary role to ground forces, particularly if more effort is not devoted to developing the tactical use of airpower in a nonnuclear environment.

As to the question of whether our whole response to nuclear-age security problems may reflect an exaggerated reading of Soviet intent to make war upon us, Brodie takes the view that our planning must not be staked on Soviet intentions. Generally speaking, he says that the chief reason why either side would ever launch a deliberately planned war would be to "remove a menace which had become subjectively intolerable." It seems to this reviewer that Brodie has here overlooked the point that *ultimate objectives* may also influence the deliberate planning of war. Our strategic objective and the Soviet objective are not symmetrical. Their aim is revolutionary—Communist conquest and domination of the world. Ours is to prevent this. In the nature of things, the Communist leaders must sooner or later come to grips with the fact that they cannot dislodge the United States from their path unless they are willing to resort to war. The alternative, of course, would be for the Communists to bury the goal of world revolution.

Be that as it may, this reviewer agrees with Brodie that in addressing ourselves to the old problem of whether to adjust our military posture to the opponent's intentions or capabilities—the latter is the soundest approach. The indisputable prospect that, in the decade of the sixties, Soviet capabilities for our military destruction will increase clearly dictates that our countereffforts must proceed at a pace necessary to cope with the threat, whatever Soviet intentions may be.—END

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*The reviewer, Col. Thomas W. Wolfe, USAF, is currently on duty in Hq. USAF as a staff adviser on strategic and Soviet affairs. Colonel Wolfe served as US Air Attaché in Moscow, 1956-58, and prior to that was a member of Gen. Nathan F. Twining's air delegation to the USSR in June, 1956. He holds an M.A. degree from Columbia University and a Ph.D. from Georgetown University. Colonel Wolfe is a graduate of the Naval War College.*

# airman's bookshelf

## Legend of the Air War

***The Saga of Pappy Gunn*, by Gen. George C. Kenney, USAF (Ret.), (Duell, Sloan & Pearce, $3).**

*Reviewed by Marvin W. McFarland*

It is unusual for a great soldier and airman of four-star rank to become a distinguished author. Yet so it has been with Gen. George Kenney who some years ago gave us his war memoirs, *General Kenney Reports*, then a fascinating little book, *The MacArthur I Know*, and now this amusing, highly readable, and inspiring tribute to Col. Paul Irvin "Pappy" Gunn, a great air hero and legendary character of the war in the Pacific.

The book is probably the first of its kind—a full-length story of a combat man written by his top commander.

Perhaps it won't be the last by the ingenious Kenney.

Kenney appraises Pappy Gunn as an "extraordinary character" and "one of the finest story tellers I have ever known."

These apt labels fit author Kenney as well. In fact, there is nearly as much about Kenney as about Gunn in this volume—but no one will be sorry for that.

Pappy and the General were kindred souls, similar in devotion, intelligence, ingenuity, and courage. One can easily imagine that had their roles been reversed—Kenney the combat airman and Gunn the general—the relationship would have been quite the same.

The young Kenney could not have been too different from Gunn in getting tough jobs done with a minimum of formality and a maximum of unconventionality, or in winning the loyalty of and extracting the best performance from his associates.

General Kenney renders a great service in this and his other books in putting into the record the peculiar quality, the special problems, the unique flavor of the air war in the Southwest Pacific. Even now, that war is not as well understood as it should be. The lessons this conflict has to teach us, in human terms as well as in the fields of materiel, strategy, and tactics, have not yet been assimilated into our thinking.

History books dealing with the air phases of World War II have generally concerned themselves with massive bombing operations against industrial and population centers. Comparatively small consideration is given the kind of in-fighting that took place over the vast land and water areas of the world that lie on the periphery of what we call civilization—and on the periphery of our thinking.

The present world struggle is a battle for mastery of peripheral regions and so-called backward peoples. If the shooting ever starts again in earnest, the Pappy Gunns and George Kenneys, with their brains and courage, may weigh just as heavily in the balance as the thermonuclear bangs which neither side may dare to use.

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**About the reviewer:** *Mr. McFarland holds the Guggenheim Chair of Aeronautics of the Library of Congress and heads the Aeronautics Section of the Library's Science Division. He edited the popular two-volume* Papers of Wilbur and Orville Wright. *Mr. McFarland has contributed in the past to* AIR FORCE/SPACE DIGEST.

## On the Russian Front

There has been a vast increase in books on Soviet aerospace and military progress in the past few years.

Newest in this category is Asher Lee's *Soviet Air and Rocket Forces* (Praeger, $7.50), a collection of lengthy monographs by US, British, German, and Russian experts dealing with Soviet airpower since 1917.

The volume is divided roughly into five sections: developments from 1917 to 1941; World War II operations; postwar problems faced by the Red Air Force; Soviet strategy during World War II and since; and Soviet air weapons and operations today, including strategic air defense, long-range attack, jet fighters and bombers, aircraft and rocket production, and plans for the future.

Chapters explore these areas in detail and with a variety of topical coverage. For example, technical and flying training is discussed by a former Soviet air officer. Essays entitled "Air Allies of Russia," "Politics in the Air Force," "The German Legacy," and "Civil Aviation," deal with lesser known but fascinating material.

## The Worlds Beyond

Two recent books on space technology surpass any general coverage of this new field yet published.

*Space Handbook: Astronautics and Its Applications*, by Robert W. Buchheim and the staff of the RAND Corporation (Random House, $3.95), is a bold attempt to establish better public understanding of our space programs. It was written for the House of Representatives Committee on Astronautics and Space Exploration in early 1959 to fulfill "a real need . . . for an authoritative study in lay terms which would set forth clearly the present and definitely foreseeable state of the art of spaceflight."

Major parts cover the historical background of our space efforts, the technology of today, presented in all its many facets, applications of this technology for peaceful purposes, and astronautics in other countries.

The book, says the Committee, "represents the most comprehensive unclassified study on the subject now available. . . ." Readers will agree with this judgment.

Thirty-eight American space specialists—the field's top talent in the US—contribute analytical papers to *Space Technology*, edited by Howard Seifert (Wiley, $22.50).

These papers originated as lectures in a comprehensive graduate-level course presented by the Department of Engineering and Physical Sciences, University Extension, University of California, in cooperation with the Space Technology Laboratories. This course was conceived before Sputnik I by Dr. Simon Ramo to provide a "systematic exposition of the physical principles relating to space exploration" for a large number of engineers who were about to enter the fields of ballistic-missile and space-vehicle development.

Despite the high-level pitch of the course, 4,500 students enrolled. In addition, Los Angeles area TV presentation of it was made and kinescope film distributed to sixty organizations throughout the United States. An aggregate audience of more than 100,000 people was estimated to have viewed the film.

Now available in this magnificent volume, the course covers flight dynamics; terrestrial, satellite, lunar, and planetary trajectories; atmospheric reentry; propulsion and structure; communications and guidance; man in space; and the broad potential applications of space technology. The book is well illustrated with diagrams, charts, and tables.

*(Continued on page 134)*

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## AIRMAN'S BOOKSHELF — CONTINUED

### Canaveral and Mars

Prolific aerospace author Martin Caidin's latest probe into space is a popular descriptive history of the Air Force Missile Test Center, Patrick AFB, Fla., including the launch complex at Cape Canaveral and the downrange course. *Spaceport U.S.A.* (Dutton, $4.95) traces Cape Canaveral from its Navy days, through initial conversion into a missile site, to the highly complex experimental test center it is today.

Current operations, the test facilities, launching, tracking, and instrumentation equipment are described in vivid, lucid Caidin prose.

But Canaveral is much more than machinery and Caidin, in photo and narrative, talks of the missilemen—known and unknown—who send the mighty Thors, Atlases, and Titans into outer space.

In the same stylistic vein, science author Arthur C. Clarke probes the universe and its mysteries in *The Challenge of the Spaceship: Previews of Tomorrow's World* (Harper, $3.50). Clarke speculates on the impact of space exploration on mankind, electronic investigation of the universe, weather control, unidentified flying objects, astronomical explanation of the Star of Bethlehem, the evolution of man, and other widesweeping topics.

On actual spaceflight, a subject at which the Clarke pen excels, the reader is taken on a "vacation" to the moon, Mars, and a satellite hotel, and given a look at earth through the eyes of a Martian.





### Flying Doctors

Australian author Jon Cleary has written a gripping, compelling air novel in *Back of Sunset* (Morrow, $3.95).

His subject is Australia's Royal Flying Doctor Service which is a government-sponsored medical service covering two-thirds of the vast, thinly populated, and largely inaccessible "wasteland" of the great island continent.

Cleary's hero is a city doctor who gives up a soft private practice among the elite and well born of Sydney to take over one of the twelve Flying Doctor bases in the wild, primitive country. The base, Winnemincka, has a rude sort of hospital, three nurses, an antiquated aircraft, and a young, nerveless bush pilot. It operates a radio receiver-transmitter covering a 400-mile range—a quarter of a million square miles. Daily conference calls to each station set up the requirements for air visits to attend the sick and dying at scattered, isolated locales.

The flying doctor's calls are made under the most difficult conditions. Navigation is accomplished through instinct and seat-of-the-pants skills. Hastily ignited brush fires outline smooth ground areas for night landings.

Cleary's story, laced with authentic medical and flying detail, is genuinely exciting and excellent reading.

—MAJ. JAMES F. SUNDERMAN

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| 3. For permanent total loss of sight of one eye | $ 5,000.00 | $ 6,250.00 |
| 4. Loss of two limbs | $10,000.00 | $12,500.00 |
| 5. Loss of one limb | $ 5,000.00 | $ 6,250.00 |
| 6. Permanent total loss of sight of one eye and loss of one limb | $10,000.00 | $12,500.00 |
| 7. Medical expenses not reimbursed by other insurance (irrespective of number of units) up to | $ 500.00 | $ 500.00 |

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Limit of Liability: The Insurer's Aggregate Limit of Liability with respect to all insured persons holding certificates issued under this master policy while in any one aircraft shall not exceed $500,000.00. Should the total of the individual limits of liability with respect to such Insured Persons while in any aircraft exceed $500,000, then the amount applicable to each Insured Person shall be proportionately reduced to effect a proportionate distribution of the said Aggregate Limit.

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Application must be accompanied by check or money order. Send remittance to Travel Insurance, Air Force Association, Mills Building, Washington 6, D. C.

TRAVEL INSURANCE Air Force Association
Mills Building, Washington 6, D. C.

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# 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

• To assist in obtaining and maintaining adequate airpower for national security and world peace. • To keep AFA members and the public abreast of developments in the field of aviation. • To preserve and foster the spirit of fellowship among former and present personnel of the United States Air Force.

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*The signal lanterns in Boston's North Church tower winked for only a fleeting moment in the gloom of the night, one . . . two! British troops were to come by sea, hoping to surprise the Colonial Minutemen and seize the military supplies of muskets, cannon and gunpowder prudently stored in Concord, 22 miles away; as well as the provincial leaders Samuel Adams and John Hancock known to be staying in nearby Lexington. So Paul Revere was off, down the lonely moonlit road toward Lexington on his immortal midnight ride to alarm the countryside. Later that day "The embattled farmers . . . fired the shot heard round the world." The war for independence and freedom was at hand.*

GRANT WOOD (1892-1942). "The Midnight Ride of Paul Revere." The Metropolitan Museum of Art. George A. Hearn Fund, 1950

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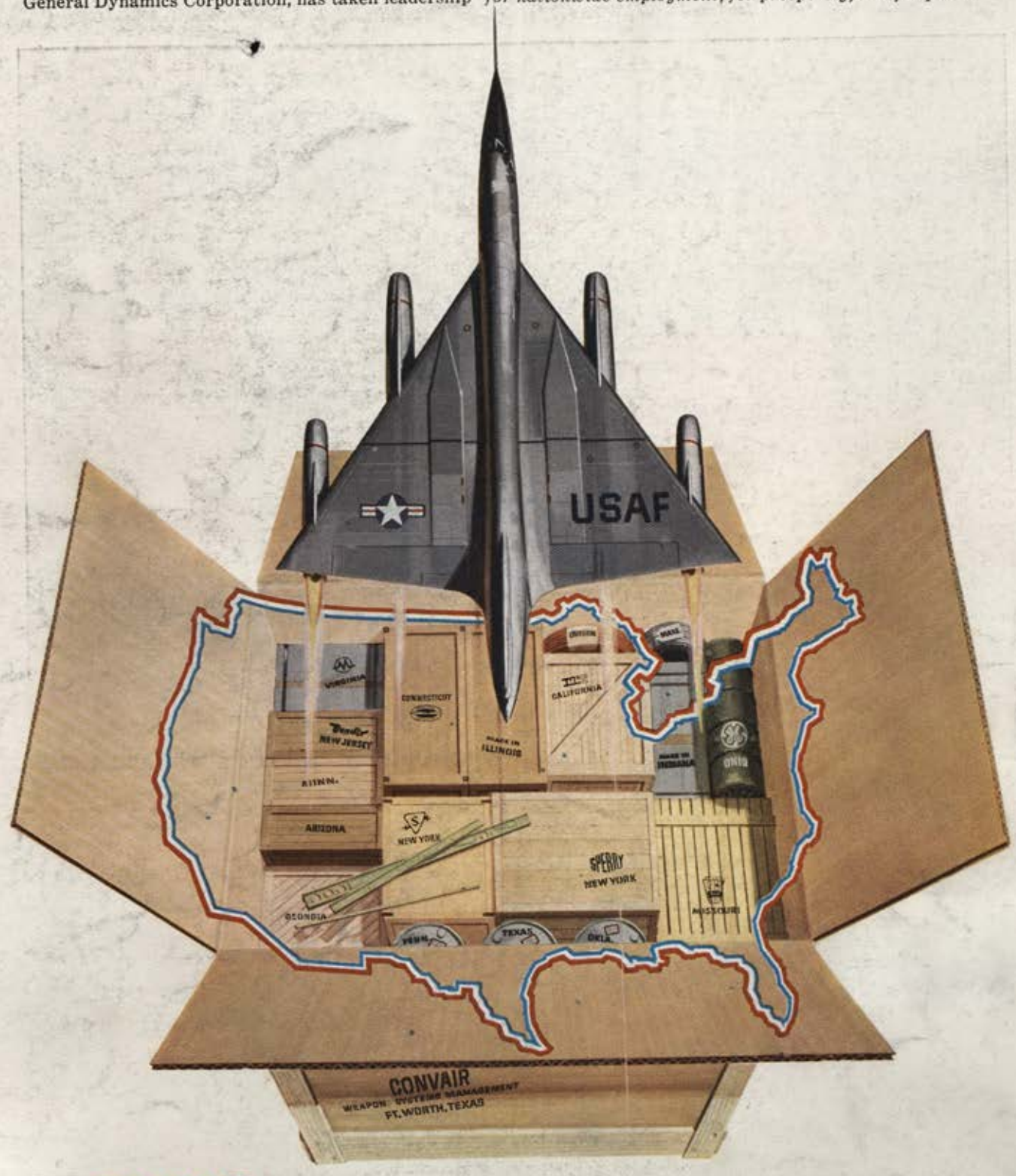


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