



AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

October 1956 • 35c



CAPT. JEAN GALLAGHER—USAF NURSE

ALSO IN THIS ISSUE:

Unification—The Next Step

Egg Heads in Hard Hats



LOCKHEED's *Electra* will fly in international service with Hamilton Standard Hydromatic propellers designed for turbine engines. Superior engineering, research, development, and production experience stand behind Hamilton Standard's leadership in propellers, and in other equipment for more than 40 outstanding types of turbine-powered aircraft.

WHEREVER MAN FLIES



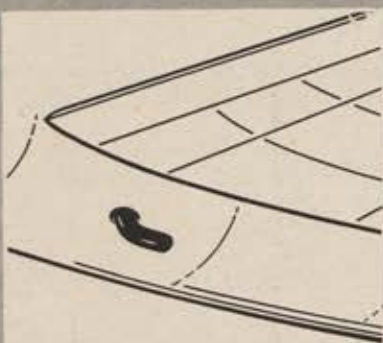
Propellers • Starters • Air Conditioning Systems • Fuel Controls • Valves • Pumps
HAMILTON STANDARD, WINDSOR LOCKS, CONNECTICUT

The end of the Ice Age



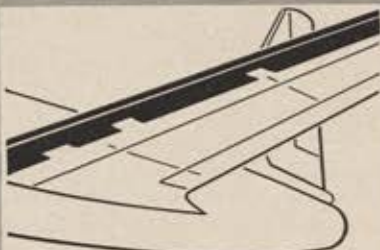
ICE—and its attendant hazards—have, since the beginning of flight, impeded the progress of all-weather flight. Now, when our very survival may depend upon aircraft aloft in *any* weather, comes the modern solution to this age-old problem—the Iceguard by Goodyear.

Here is *fully proved*, foolproof ice protection for aircraft—for propellers, wings, empennage—for air scoops, antennas, pipe and conduit—for any surface—any size, any shape.



YOUR PROBLEM SMALL?

Here, for relief tubes, is an Iceguard 2½ inches small—made of electrically conductive rubber.



YOUR PROBLEM BIG?

Here, for a wing leading edge, is an Iceguard—made of resistance wire and divider strip heaters molded into a special erosion-resistant rubber. Iceguard applications of this type have been built by Goodyear up to 17 feet in length.



YOUR PROBLEM SHAPE?

Here, specially designed for air scoops, is an Iceguard—made of electrically conductive rubber.

No matter what the size, no matter how complex the contour, no matter how tough the problem—here is fully automatic, electrothermal ice protection with the Iceguard by Goodyear—long a pioneer in aviation.

For details write: Goodyear, Aviation Products Division, Akron 16, Ohio, or Los Angeles 54, California

ICEGUARD

Pioneer Ice Protection by





Strategic Air Command ground crewman directs Boeing B-52 bomber into flight-line position at Castle Air Force Base, California.



Two of the eight J57 jet engines that power the B-52. Suspended in pairs, the engines deliver more than 10,000 pounds of thrust each.



B-52 tail towers nearly five stories above ground. Rear tip of fuselage contains armament and fire controls.

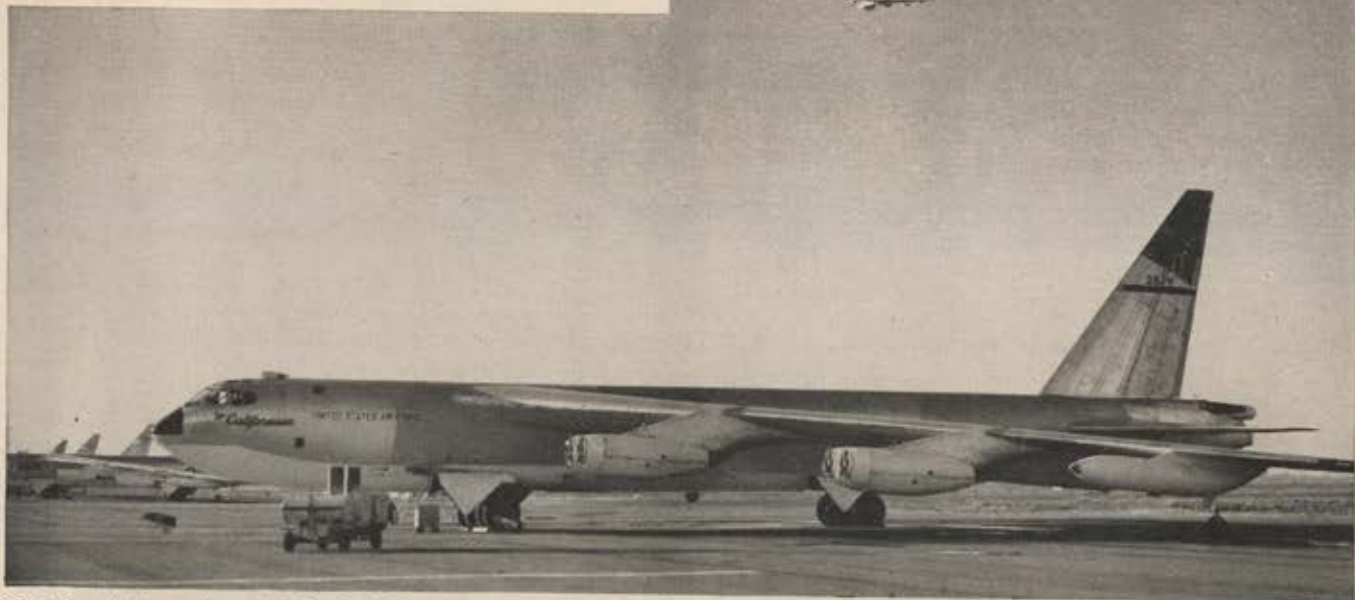
America's jet bomber wings go global with B-52s

The nation's defense program is taking giant strides forward as wings of the Strategic Air Command continue the transition to Boeing B-52 Stratofortresses.

First SAC unit to complete the switch to intercontinental B-52s was the 93rd Heavy Bomb Wing, at Castle Air Force Base, California, where the pictures on this page were taken. Another unit — the 42nd Heavy Bomb Wing at Loring Air Force Base, Maine — is now being equipped with B-52s.

Along with Boeing B-47 medium jet bombers, the B-52 heavy jet bombers are kept in combat readiness day and night by dedicated Strategic Air Command crews. Together they constitute the most potent deterrent against aggression now in existence.

BOEING



Side view of intercontinental B-52. This fleet, swept-wing giant is capable of speeds beyond 650 miles an hour, and altitudes above 10 miles.

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AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

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How General Electric Experience

+7 SECONDS

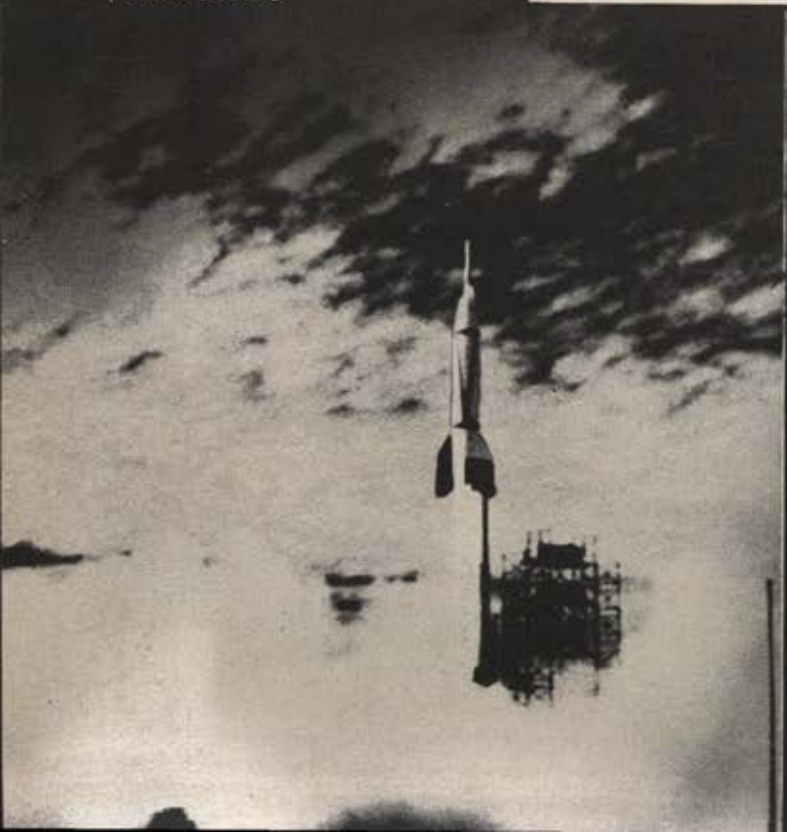


+10 SECONDS



1949—PROJECT BUMPER—The fifth of these two-stage rockets, fired by General Electric in 1949, established new records of altitude—244 miles—and velocity—5150 mph.

+14 SECONDS



+27 SECONDS



Advances Missile Technology

General Electric's Project Bumper established new records of altitude and velocity. But far more important is the valuable research data compiled in the successful completion of the Bumper project. Many problems were overcome with Bumper—problems in temperature, telemetry, separation, and aerodynamics. Bumper helped solve the problems of communicating with missiles at extreme altitudes, and was a major preliminary step in the development of a satellite. In solving these and other problems, General Electric has contributed a wealth of research data to the missile industry—information that is being utilized on the nation's top priority ballistic missile project.

General Electric's Special Defense Projects Department presently is working on an Air Force prime contract to develop the ICBM nose cone. Programs are being carried out in such varied fields as communications, hypersonics, metallurgy, mathematics, and thermodynamics to support this nose cone contract.

General Electric has formed the Special Defense Projects Department to act as a Company focal point for large, highly complex missile projects. Scientists in the new department, backed up by the vast resources of many General Electric operating departments and laboratories, are currently working to solve the perplexing problems associated with the ICBM nose cone and other missile projects.

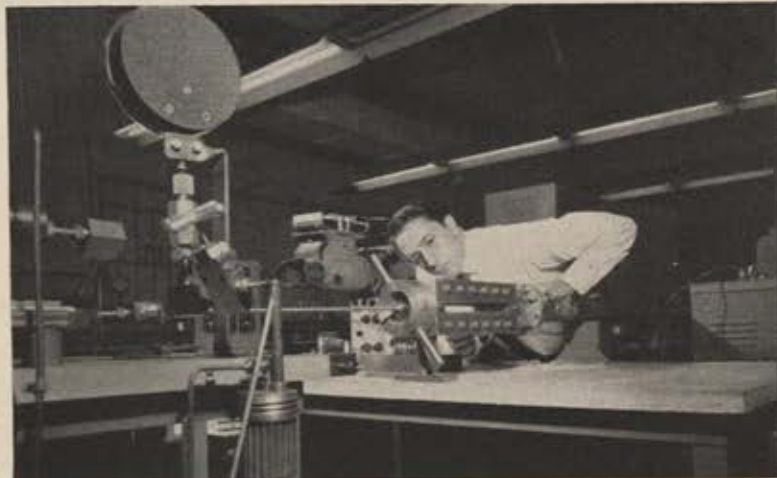
By focusing this wide range of specialized talents of General Electric personnel on highly complex defense system problems, the Special Defense Projects Department is making significant contributions to America's defense program. Section 224-5, General Electric Co., Schenectady 5, N. Y.

ENGINEERS: G.E.'s Special Defense Projects Department is currently expanding its staff of highly skilled engineers and scientists. If you have a background of successful creative engineering, send your qualifications to: Mr. George Metcalf, General Manager, Special Defense Projects Department, General Electric Co., 3198 Chestnut St., Philadelphia, Pa.

TODAY—CONTINUED RESEARCH AND EXPERIMENTATION in advanced missiles and missile systems is helping solve such advanced problems as development of the ICBM nose cone. Headquarters for General Electric's participation in these programs is the Special Defense Projects Department in Philadelphia, Pa.



MR. ROBERT P. HAVILAND, Flight Test Engineer at SDPD, directed Project Bumper and other advanced programs, gaining valuable experience which he is currently applying to present missile programs.



DR. YUSUF A. YOLER—widely known for research in hypersonics—is currently engaged in the design and development of wind tunnels, shock tunnels, mass accelerators, and other facilities for continued progress in missile systems.

Progress Is Our Most Important Product

GENERAL  ELECTRIC



air mail

Reason for Omission

Gentlemen: Some comment has arisen at this headquarters about the omission of the Eighteenth Air Force insignia from the cover of AIR FORCE Magazine. The comments, "Why?" and, "Let's see what the policy is," led to the writing of this letter.

Noting that insignias of inactive numbered air forces are included and several active air forces are omitted leads to the conclusion that some editorial policy is the reason.

2d Lt. Ronald P. McKenzie
Hqs., Eighteenth AF
Donaldson AFB, S. C.

● *The insignias appearing on our cover represent only those units which were active during World War II, and are a carry-over from the war-time, official AIR FORCE Magazine.—The Editors.*

A Real Accomplishment

Gentlemen: The Tenth Anniversary issue of AIR FORCE Magazine is the most impressive publishing job I have seen since the birth of *Time* and *Life* magazines.

Tex McCrary
New York, N. Y.

Not in the Pink

Gentlemen: As a result of recent discussions with Air Force personnel, I have discovered that the present physical training that is offered after basic training is almost non-existent.

Compare, for example, the continued training given during World War II with that given today and it will be obvious that our peacetime Air Force is far inferior to our war-time forces with regard to physical fitness. The program in 1942 included daily conditioning, which meant calisthenics plus one of the following: cross-country runs, obstacle course, combative type exercises, grass drills, and many other types of conditioning exercises. The present form of conditioning is limited to a few hours per week of such games as softball, volleyball, etc. Granted, these games if engaged in enthusiastically prove of no small value in body building. However, from what I've been able to discern, not enough men actively participate in such exercise for a long

enough time to produce the desired effects. Such training, compared with the former program seems inadequate.

May I suggest a return to a program of physical training similar to that used during World War II—a program that was mapped out by the top physical education men of the country to meet the demands of war.

If we are to keep the peace by keeping strong, it seems that our men should maintain a physical fitness that at least parallels their fitness in war.

Oscar John Bernstein
Pittsburgh, Penna.

Big Dividends

Gentlemen: Dr. Thomas F. Staton should be commended for his article "This Thing Called Leadership" in your July issue. I found it to be a most comprehensive and practical approach to a subject which vitally concerns the effectiveness of our Air Force.

At the rapid rate our force is being expanded and modernized, it becomes essential that our personnel capabilities keep pace. I am convinced that competent leadership can best guarantee this accomplishment.

Each of our officers and airmen can profit with the knowledge that "This Thing Called Leadership" can be developed through application of the principles and techniques described by Dr. Staton. I certainly agree that the dividends which can accrue to the individual, to the Air Force and to the nation are worthy of the effort.

As an indorsement to these comments, each of my commanders is being furnished with a copy of Dr. Staton's article.

Maj. Gen. Walter C. Sweeney, Jr.
Cmdr., Eighth AF, SAC
Westover AFB, Mass.

From a New Member

Gentlemen: It has given me great pride and satisfaction to become a member of the Air Force Association. The work accomplished by the Association has had a far-reaching effect upon all the units of the Air Force.

In reading over the issues of AIR FORCE Magazine received to date, I find many articles of extreme interest to military as well as civilian pursuits.

My active flying as a captain with one of the nation's airlines was terminated in 1947 because of illness, but I never glance at an airliner or an Air Force jet without a deep feeling of accomplishment. It's great to belong to a winning team.

William R. Calligan, Jr.
Seattle, Wash.

Finns First

Gentlemen: Just a small correction to this item in "Wing Tips" for August 1956: "The first western commercial airliner service to Moscow has been initiated by Scandinavian Airlines. . . ."

The first western commercial airliner service to Moscow was initiated by Finnish Air Lines (*Aero Oy*). Following a proving flight on February 10, 1956, regular schedules were begun on February 18.

Mel Clause
Hamburg, Germany

For Your Historical Collection

Gentlemen: I noticed, among other interesting things in that tremendous Tenth Anniversary issue, a beautiful picture that we have not seen before—the old Boeing P-26 fighter airplane—which appeared in your "Jet Blasts," page 233, and we wonder if there is

(Continued on page 9)

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Wings of old take on a new turn to bring true VTOL flight closer. Vertol research now takes on one of the most advanced assignments of the decade—high speed aircraft with vertical takeoff and landing capability.

Project: Vertol is now developing aircraft types which will fly as fast, as high, as far, as today's transports yet are able to take off and land at 0 mph forward speed.

Qualifications: Vertol's long-established leadership in the helicopter industry, Vertol's impressive research and development record in all aspects of vertical flight.



Progress: Vertol is currently developing a flying test bed for the Army under contract with the Office of Naval Research. In this aircraft—a small-scale variant of the larger, more powerful production types to come—a gas turbine drives rotor propellers housed in the wings of the aircraft. To takeoff and land vertically, both wings and rotor propellers pivot straight up; the rotor propellers furnish the necessary lift. At altitude, the wings tilt over into “normal” horizontal position, as the aircraft gathers flying speed; cruise is conventional and fast.

To give tomorrow's planes the universal landing and takeoff characteristics of today's helicopters is the essence of the Vertol “Skyways without Runways” concept.

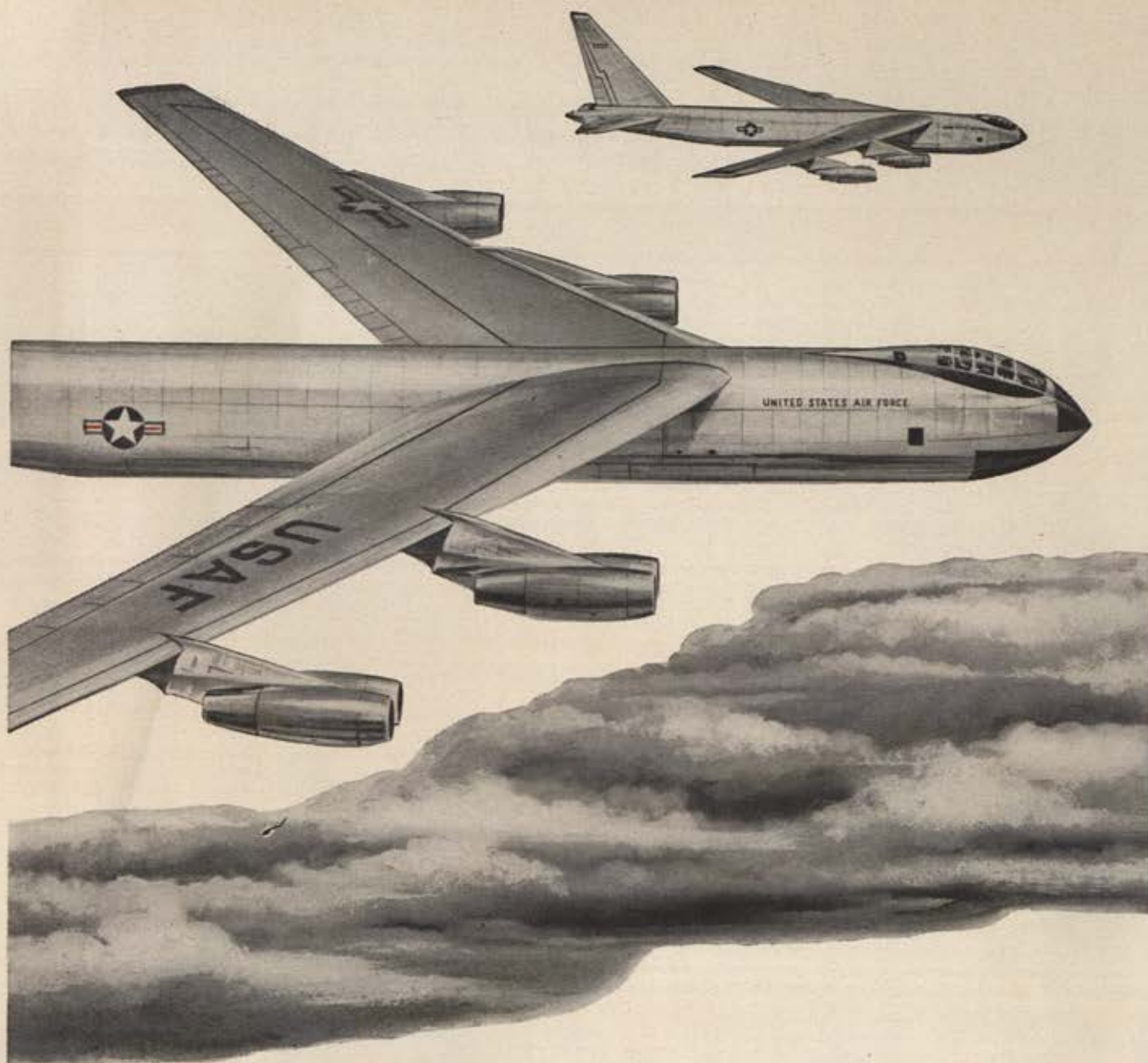
VERTOL



Aircraft Corporation

MORTON, PENNSYLVANIA

Engineers, join Vertol's
advanced engineering team!



RAYTHEON RADAR FOR THE B-52

Finding and smashing a bombing target through thick overcast when you are miles high, traveling at fantastic speeds, is no easy proposition.

To help solve this complex problem, the Air Force worked with Raytheon—a leader in both CW and pulse radar techniques and world's largest manufacturer of the magnetron and klystron tubes essential to radar.

Result? A precision radar of uncanny accuracy and outstanding reliability—a bombing radar which adds to the punch of this remarkable aircraft conceived by the foresight of the United States Air Force.

Excellence in Electronics



RAYTHEON MANUFACTURING COMPANY
WALTHAM 54, MASSACHUSETTS

any chance of borrowing this original print so we can have a copy negative made for our files. It is a beautiful shot of this fine little fighter plane, and we would like to have it for our historical collection here at Boeing.

I still have not been able to entirely digest the beautiful August issue of your always excellent magazine. Bit by bit, I am getting it all read from cover to cover during spare time in the evenings at home. It certainly is a most wonderful issue, and I can see that you put in many hours of hard work in compiling it.

Gordon S. Williams
Boeing Airplane Company
Seattle, Wash.

NATO Not Included

Gentlemen: Your superb Tenth Anniversary issue has just arrived, and as in the past, it will be my "bible" for the next twelve months.

In looking at the USAF Command and Staff Photochart, however, I was surprised to find the absence of generals with NATO assignments. Is this an oversight, or are they included in another issue?

Anyway, I just thought I'd call your attention to it for whatever you might want to do about it next year.

Lt. Col. William B. Abbott, Jr.
APO 183, N. Y.

● Our photocharts are intended to cover key positions within the headquarters or command concerned. In the case of the USAF Command and Staff Photochart we did not include NATO positions because they are not a part of the Headquarters, Air Staff, major AF commands, or numbered Air Forces of the Department of the Air Force.—The Editors.

Plan in Mind

Gentlemen: The Air Force is losing its trained technicians fast and if something isn't done soon more of the taxpayers' money will have to be used to train new personnel.

Where I work we have personnel sent to us with no training whatsoever and have to put them on on-the-job training. At the end of that time we find the airman doesn't like the job; he is dissatisfied, won't work, and is irresponsible. Then we have to ask that this airman be transferred.

Much of this could be eliminated by the following plan:

Every air base should have a well staffed screening center squadron where incoming personnel from basic training could be screened for their type of career field, then schooled



Dear Kitten:

It occurs to me—as I cruise along dictating this epistle to my homely copilot (his shorthand is lousy)—that the time has come when you must stop playing Tricks or Treats on Halloween. Last week at home, I noticed, in a fatherly kind of way, that you have—er—ah—developed to the point where you must cease galavantin' up and down the street after Taps.

In any event, whatever you do, don't go Trickin' or Treatin' at 1313 Livittup Lane where that bachelor advertising man, Hamilton Droolmore, lives! Working on the Southwest Airmotive account may have affected his mind.

I'm en route to the National Business Aircraft Association convention, October 23-24-25 at Miami and my airplane, as usual, is flyin' smooth as silk. Southwest Airmotive, pushing closer to its Silver Jubilee in '57, uses no Tricks—just skill and reliability—in Treatin' me and other business pilots to flying's most experienced service. And, for the biggest Treat of all, SAC is under way full-speed building its great, new \$2,000,000 business aircraft terminal. Here is proof to NBAA and everyone that SAC is no Johnny-Come-Lately, but that it has faith in business flying—and has kept this faith for a Quarter Century.

—And I've got faith in my 19-year-old, 5'3", 110-lb., red-headed, blue-eyed daughter. Don't you have ditto in Mr. Droolmore.

Love,

Daddy



SOUTHWEST AIRMOTIVE CO. • LOVE FIELD • DALLAS, TEXAS

right at the center for three months.

At the end of his first two months, the airman would be placed on his prospective job to work the third month. The supervisors on these jobs would be given progress charts which would be filled out daily. At the end of the month they would make out a report to the center.

If the report stated that the airman is not comprehending the job he chose, then this airman should be given a general discharge.

This plan would make the Air Force one hundred percent manned. It would step up reenlistments of al-

ready trained technicians, would build up morale of all personnel, and would save money and man hours.

A/IC Florence B. Vernon
Hamilton AFB, Calif.

New-Writing Look

Gentlemen: I'd like to mediate between William E. Martin of Los Angeles and the editors ("Air Mail," August '56).

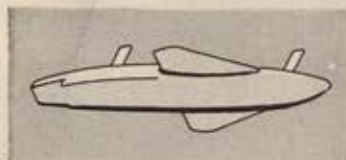
Both are partially right.

"Reverse writing is an ability that comes almost without effort to many left-handed persons."

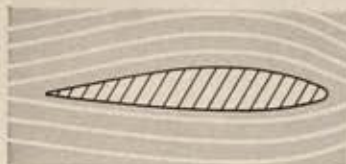
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Yes even ice- and snow-covered areas can be utilized as landing fields for aircraft designed to include the Pantobase landing system. A product of Stroukoff research and development, Pantobase will permit landings and take-offs from snow, ice, sand, water and unimproved terrain, thereby extending the operational capabilities of the aircraft and reducing the need for conventional airports in many remote and previously inaccessible parts of the earth's surface.



Pantobase—When designed into an aircraft the Pantobase system enables the plane to land and take-off from many types of surface without changes of additional landing equipment.



BLC—Boundary layer control as developed by Stroukoff increases the effective lift and delays stalling of the wing, thereby reducing required speeds and distances for take-offs and landings.

Achievement is a tradition at Stroukoff. A leader in the development and design of cargo and transport aircraft, Stroukoff offers challenging opportunities to creative engineers.

Extending the Frontiers  *of Aircraft Performance*

Stroukoff

WEST TRENTON, NEW JERSEY

Add this: It is also an ability that can be easily developed by any person knowing how to write. He can be either right- or left-handed. All that's needed is two simple ingredients; the curious desire for technical self-improvement, and the ability to follow a plan of exercise, unhampered by all of the assumed reasons as to why it won't work, though interested.

Also, a right-handed person can very quickly learn to write with the left hand, and vice-versa.

The editors, too, rang a fifty percent bell.

Martin's type of "reverse writing" does require a mirror, at first. Mastery of this system, mechanically, takes less than one quarter of the time required by the "new-writing look" now being laboriously learned by the plotters. In both instances the person has to learn to read backwards.

Martin's system has this advantage, however, over the other. It isn't necessary to waste the time required learning how to mechanically form the letters so they retain their "old look." It's much easier to learn a new way to read than to write. The former gives the gray matter a little much needed exercise. The latter only compounds the one felonious habit of putting too great a percentage of attention at the end of the hand—rather than taking measures for putting it back in the "head office" where starvation is taking place.

Capt. Robert B. Hagmann
Scott Bar, Calif.

Get it Right, Please!

Gentlemen: As mentioned in *Air Force Magazine*, some radio and TV announcers and newspaper reporters still refer to us as the Army Air Corps. In fact, it happened here over the local radio station, but after I wrote a postcard to the station the misnaming was quickly rectified and it hasn't occurred again.

I would like to suggest that all Air Force members, both active and Reserve, make an effort to correct this situation by writing personal letters to the person or office in their area that commits this type of mistake. Or perhaps the AFA Squadrons could make this "correction" a project by contacting all news media in their local area by means of a letter or pamphlet. This pamphlet would explain the over-all mission of the Air Force, pertinent background history, and the fact that we are the *Air Force* and want to be known as such.

1st Lt. Willis E. Lorey
George AFB, Calif.

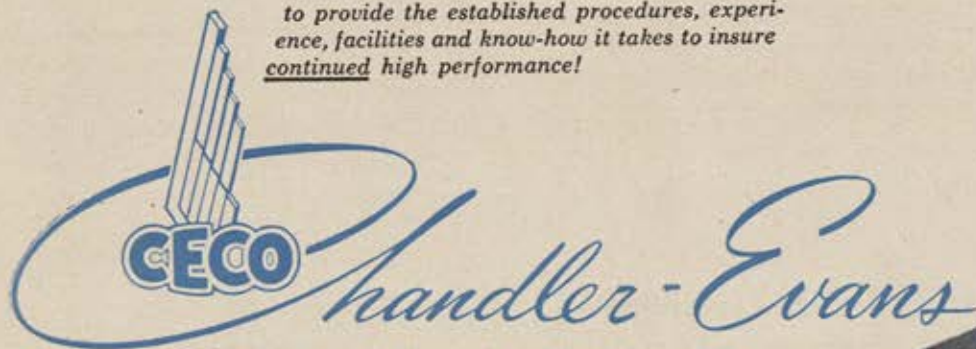


IN FIGHTING TRIM... ALL THE TIME

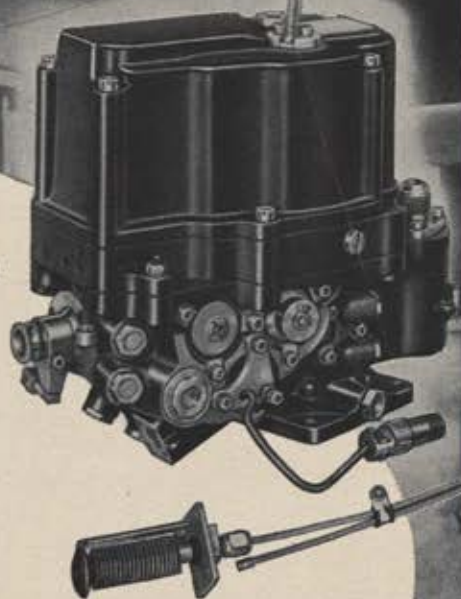
Thanks to CHANDLER-EVANS' Modification Service

Chandler-Evans is currently engaged in several modification programs that provide a complete and unique up-dating service. Under these programs, CECO Fuel Control Systems and Components returned to our plant are tested and recalibrated, using the finest, most modern facilities available. Since design progress never stops at CECO, controls are modified to incorporate all new engineering developments; past performance characteristics are carefully noted to provide data for still further advances.

You can depend on CECO Fuel Controls and Components to insure initial high performance . . . and you can depend on Chandler-Evans Modification Service to provide the established procedures, experience, facilities and know-how it takes to insure continued high performance!



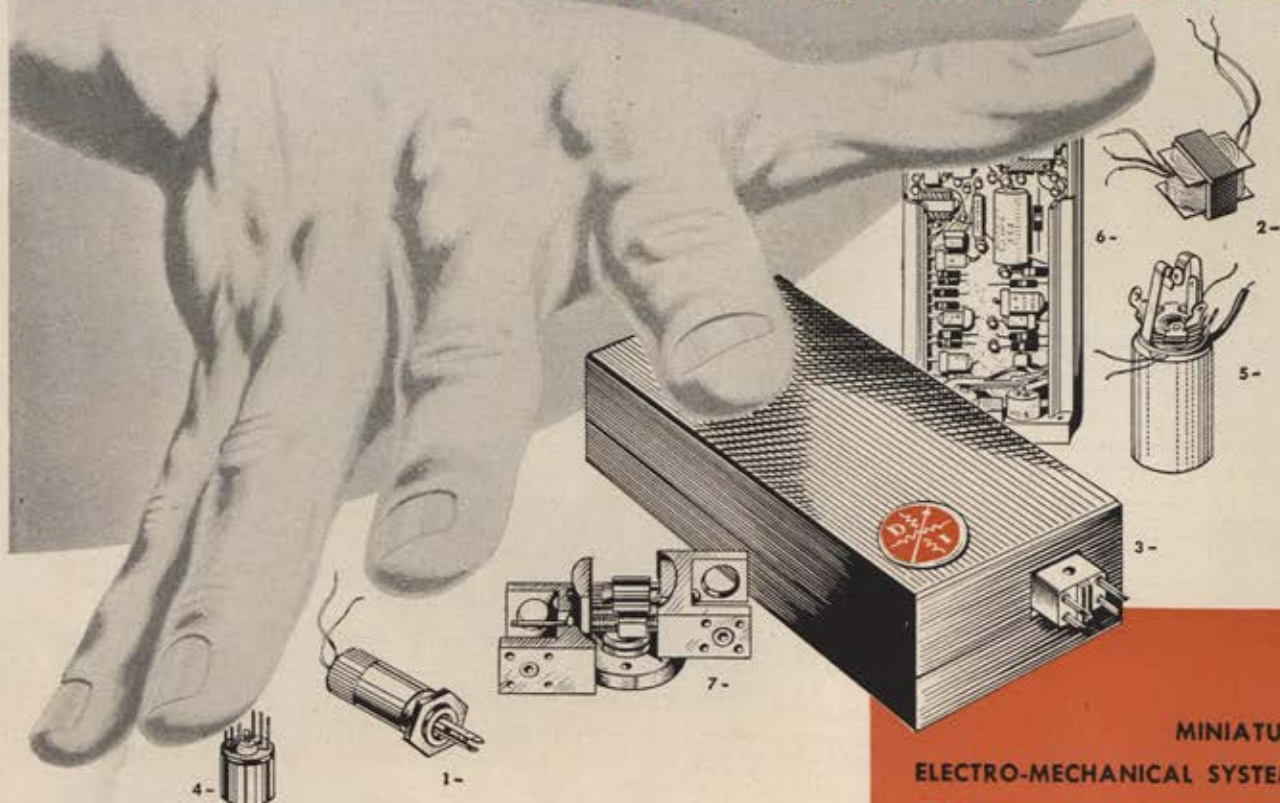
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to Meet Tomorrow's Progress



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Mr. A. M. Wright.

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*for commercial and
military applications*

The span of Daystrom's "know-how" is unparalleled in development, design and production. Under one roof—from drawing board to finished product—Daystrom meets all rigid quality standards . . . high reliability . . . and low costs. In the field of miniaturization Daystrom has developed many general-purpose miniaturized components, through the design and manufacture of complete systems involving fire control, computers, missile applications and process control. Daystrom can help you, too. Write for further information.



INSTRUMENT

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Newark, N.J./Ponce, P.R.

Heath Company
Benton Harbor,
Mich.

Daystrom Pacific
Santa Monica,
Calif.

Daystrom Electric
Poughkeepsie,
N.Y.

Daystrom Furniture Div
Olean, N.Y./Alma,
N.C.

MINIATURE ELECTRO-MECHANICAL SYSTEMS TO EXACT SPECIFICATIONS —

- 1 - Miniature Solenoids
- 2 - Driver Transformers
- 3 - Transistorized Receivers
- 4 - Miniature I. F. Transformers
- 5 - Perimeter Jacks
- 6 - Power Transistor Servo Amplifiers
- 7 - Miniature Ball Disc Integrator

These were developed for Daystrom miniaturized systems such as All-Attitude Indicators—Transistor Servo Amplifiers—Transistor Circuitry for Telemetry Computers and Control Applications—Dead Reckoning Indicators—Magnetic Pick-ups—Miniature Differentials, and others.

DIVISION of DAYSTROM INC.

**ARCHBALD,
PENNA.**

wing tips

By Wilfred Owen

A total of 4,820 civilian aircraft were produced in the United States during 1955. The number exported was 1,714.

There are five all-cargo air carriers operating in the United States: Aerovias Sud Americana, Flying Tigers, Riddle, Seaboard and Western, and Slick.

In 1955, Military Air Transport Service planes completed 9,260 Atlantic crossings and 7,500 Pacific crossings. MATS carried nearly twice as many ton-miles of domestic and international cargo and mail as American, United, TWA, Pan American, and Eastern combined.

Last year seven major US airlines spent more than a million dollars for sparkplugs—655,000 of them. The airlines also had 17,743 tires retreaded.

Illinois police have ordered boys to stop shooting



arrows at jet aircraft in the vicinity of Glenview Naval Air Station.

A civil commercial airplane flew between the United States and Europe every seventeen minutes during July.

The world's largest network of air routes is operated by Air France, with 174,000 miles covering 205 cities in seventy-three countries.

The latest plan to capture more tourist business is a proposed twenty percent fare reduction for fifteen-day round trip transatlantic hops.

New helicopter speed records were claimed in the United States in July. A Sikorsky H-34 flew 141.9 miles per hour over a 100-kilometer course (sixty-two miles).

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AIR FORCE
CAREER

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Operations Research, Armament, Launching



by Grayson Merrill, Captain, USN; Harold Goldberg, Vice-President for Research, Emerson Radio-phonograph Corporation; Robert H. Helmholtz, U. S. Naval Air Missile Test Center.

This book, the third in a six-volume series on guided-missile technology, comprises the principles of operations research as a basis for guided missile decision-making, armament and launching systems.

OPERATIONS RESEARCH explains the requirements of the Armed Services, and shows how missiles are developed on a teamwork basis with industry. Sample problems detail how missile operational requirements are derived, performance specifications are set, competitive weapon systems evaluated, and plans for initial employment are made.

THE ARMAMENT section examines factors affecting design requirements such as target characteristics, demands of the guidance and propulsion systems, and logistic, economic and safety considerations. Types of warheads, fuses, and safety and aiming devices are described and analyzed. A typical systems-engineering case illustrates how the armament development proceeds from design requirement to field test and evaluation.

THE LAUNCHING section explains the elements and characteristics of launching systems, and the principles of their design. Covers booster assemblies, catapults, and airborne and surface launchers.

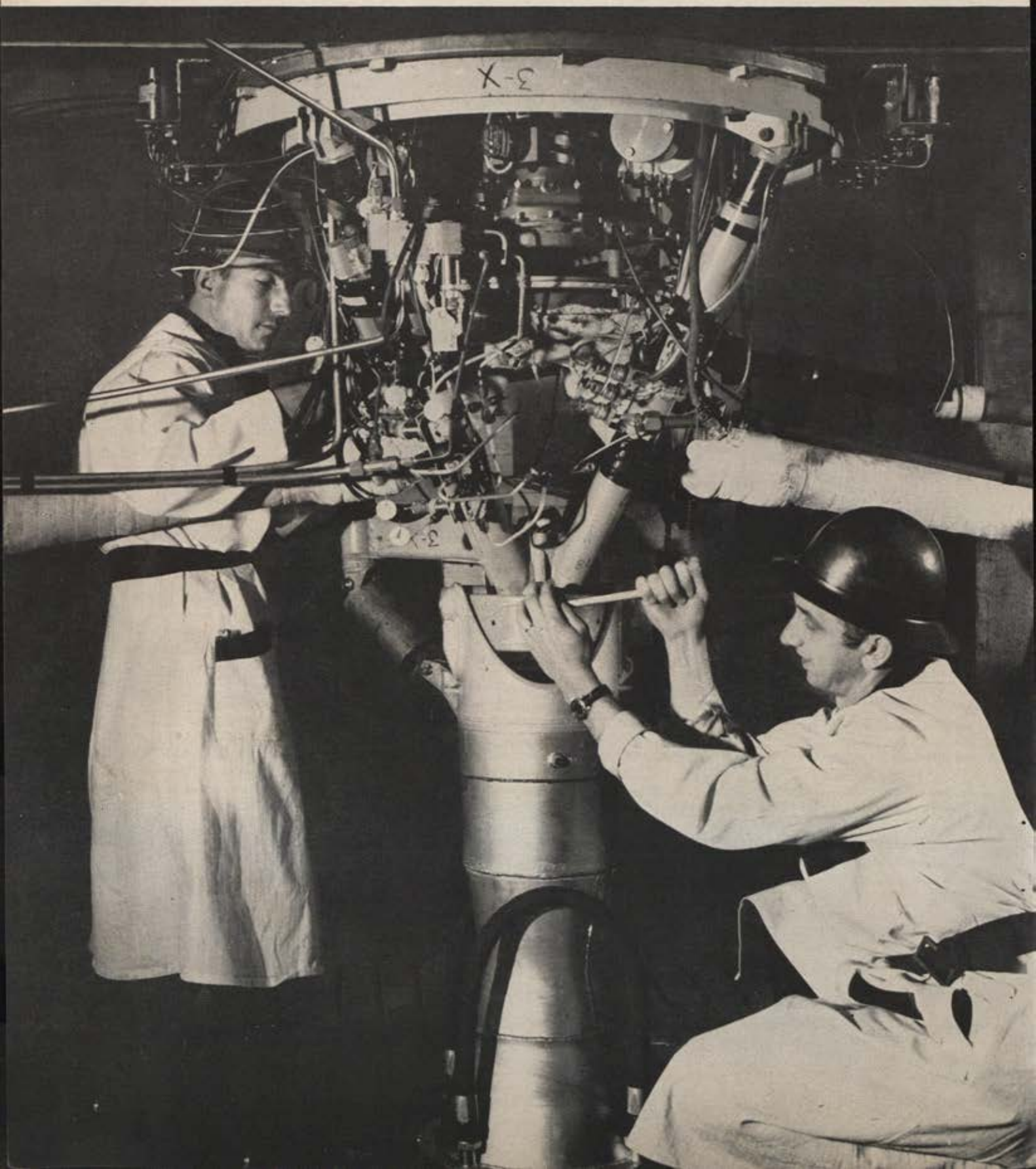
603 pages, illustrated, \$10.00

At all bookstores or write

VAN NOSTRAND 120 Alexander Street, Princeton, N. J.

PROGRESS REPORT ON PROJECT VANGUARD

General Electric X405 to



Propel 11-Ton Rocket 4000 mph

New G-E rocket engine delivers more than 27,000 lbs thrust for about 150 seconds to accelerate earth satellite vehicle

A powerful new General Electric rocket engine—the X405—will deliver a thrust of more than 27,000 pounds when it launches the 11-ton, three-stage VANGUARD rocket during the International Geophysical year. Main power boost for VANGUARD, G.E.'s powerplant will propel the multi-stage finless rocket through its initial 36 miles of flight toward outer space.

Burning a hydrocarbon fuel and liquid oxygen, G.E.'s highly efficient X405 will run for about 150 seconds. At burnout, the X405 will have accelerated the VANGUARD rocket to a speed of 4000 mph—more than a mile a second!

Advanced components, including a turbopump and thrust chamber, characterize the X405. The turbopump

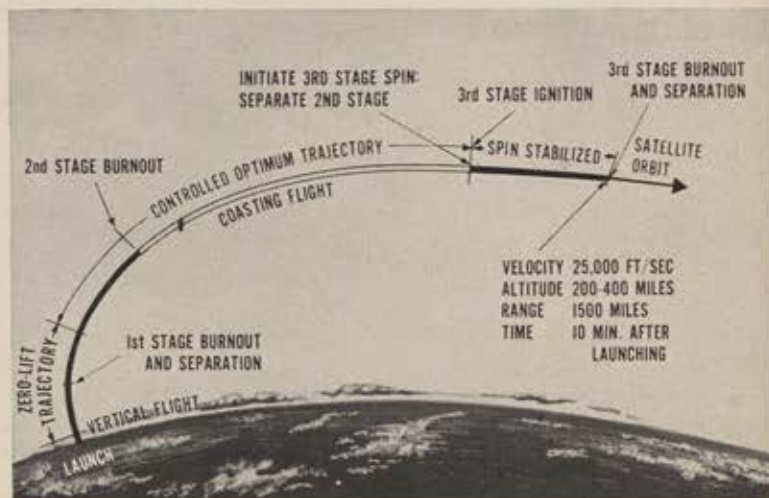
makes possible a high chamber pressure and delivers the superior performance required for VANGUARD'S very long-duration, high-altitude flight. It will also be gimbal-mounted to permit changing thrust direction as much as 5° for accurate flight path control.

The superior performance of G.E.'s X405 results from data obtained from past flight-proven G-E liquid propellant systems. More than a decade of rocket engine experience has enabled the G-E rocket team to answer quickly, and successfully, the challenge of VANGUARD. The X405 is still another reason why General Electric today is able to offer the U.S. rocket industry highly reliable, high-performance rocket powerplants . . . of unmatched quality.

234-8



MARTIN BALTIMORE'S ROCKET EXPERIENCE, illustrated by the Viking above, led the Navy to select the company as prime contractor for PROJECT VANGUARD.



FLIGHT PLAN OF FIRST EARTH SATELLITE. Launched from Patrick AFB, Florida, the satellite will establish an orbit that will permit scientists of many nations to observe its flight path.

ENGINEERS AND SCIENTISTS—Expansion is creating vast opportunities at General Electric in rocket propulsion.
For illustrated brochures, write Technical Recruiting, Bldg. 100, AGT, General Electric Company, Cincinnati 15, O.

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GENERAL  ELECTRIC

AIRPOWER IN THE NEWS

By Lee Klein



Top award in SAC's "World Series" goes to the 11th Bomb Wing. Col. Howard Moore accepts it from General LeMay.



General LeMay gives P. T. Cullen Trophy to Lt. Col. A. H. Middleton for the 91st Strategic Reconnaissance Wing.

■ After losing out to the B-47 in last year's event, the faithful old Convair B-36 regained top honors in SAC's eighth annual bombing, navigation, and reconnaissance competition held at the end of August at Lockbourne AFB, Ohio, and Loring AFB, Me. Last year, for the first time, the all-jet Boeing B-47 Stratojets had won top honors in the competition (see *AIR FORCE*, December '55). This year, in the over-all bombing-navigation competition, two B-36 wings, the 11th Bomb Wing of Carswell AFB, Tex., and the 28th Bomb Wing of Ellsworth AFB, S. Dak., won first and second place. Top award for the event, the Gen. Muir S. Fairchild Trophy, was presented to Col. Howard Moore, Commander of the 11th, by Gen. Curtis E. LeMay, SAC Commander-in-Chief, at a ceremony at Lockbourne AFB, Ohio, on August 31. Other winners in the eighth-annual "World Series of Bombing" were:

- **Reconnaissance**—won by the 91st Strategic Reconnaissance Wing (RB-47s) of Lockbourne AFB, Ohio. The P. T. Cullen Trophy for this event was awarded to Col.

- A. H. Middleton of the 91st Wing by General LeMay.

- **Bombing**—won by the 306th Bomb Wing of MacDill AFB, Fla., flying Boeing B-47 Stratojets.

- **Navigation**—surprise winner of this event was the 93d Bomb Wing of Castle AFB, Calif., newly converted to B-52 Stratofortresses.

- **Best over-all crew**—the crew of Lt. Col. William J. Amos, aircraft commander of a B-47 based with the 98th Bomb Wing at Lincoln AFB, Nebr. Other members of the crew—all of whom were promoted on the spot to the next highest rank by General LeMay—were: 1st Lt. James H. Grady, pilot; Capt. William L. Polhemus, observer; and A/1C Forrest D. White, crew chief.

The competition, which lasted six nights, included eighty of SAC's crews who flew piston and jet B-36s and all-jet B-47s and B-52s. They took off from Loring AFB, Me., and Lockbourne AFB, Ohio, on 3,000-mile courses to pin-point targets in Richmond, Va., Holyoke, Mass., and Montreal, Canada.

■ The AF lost its second B-52 Stratofortress in a crash last month in California (the first also crashed in that state). No immediate clue to the cause of the crash—which killed five crewmen—was given in the statements of the aircraft commander and pilot who escaped by



Spot promotions go to Capt. William L. Polhemus and A/1C Forrest D. White. (See text for others in the top crew.)

jettisoning from the burning plane after ordering the crew to bail out. The huge intercontinental jet bomber was approaching Castle AFB for a landing when the cockpit filled with smoke and then with flames. The plane exploded and burned on impact, destroying a farm house and tearing down power and telephone lines.

■ Just before we went to press, AF Capt. Iven C. Kincheloe was reported to have flown the Bell X-2 rocket research plane to a record altitude of 126,000 feet—almost twenty-four miles. The previous record, over 90,000 feet, was set in 1954 by Maj. Arthur Murray in the Bell X-1A.

Meanwhile, Bell Aircraft Corp., builders of both the X-1A and the X-2, announced that Lawrence D. Bell, 62, has resigned as president of the company he formed in Buffalo in 1935. Mr. Bell, now chairman of the board, said his health prompted him to relinquish the position. Leston P. Faneuf, formerly vice president, succeeds him.

(Continued on page 19)

Candid cameraman shoots at 600 m.p.h.

Designed to reconnoitre at near-sonic speeds, from the stratosphere or at treetop level, the Douglas RB-66 brings new flexibility to the task of gathering military information.

Compact and hard to spot, combining long range with blinding speed, the Tactical Air Force's RB-66 is suited to swift passes at enemy heartland where—in photo-reconnaissance—its cameras pry into details of defense, transport, and manufacture. The Douglas RB-66 is equipped to fly night or day missions in any weather.



Jack Hanna

The U. S. Air Force Douglas RB-66: Swept-wing RB-66 with its payload of ultramodern photo equipment will search out needed information at a moment's notice. But success depends on pilot, photo-navigator and the necessary ground crews. Our Air Force always needs good men, and offers opportunity in return. Visit your recruiting office now.

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The AVRO CF-100, with its superior armament, search and fire control system is the most potent aerial defender operating with the North American continent's Distant Early Warning and other Radar defenses.

Continuous development of the AVRO CF-100 through nine variants indicates its capabilities and versatility.

The current rocket-firing Mark 5 is providing improved bomber interception performance at higher altitude.

CF-100's will start augmenting RCAF NATO squadrons in Europe this year to help meet that Continent's night-fighter, all-weather defense requirements.



AVRO AIRCRAFT LIMITED

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MEMBER: A. V. ROE CANADA LIMITED & THE HAWKER SIDDELEY GROUP

■ A two-stage, solid-propellant rocket capable of reaching 5,000 mph in just two seconds (see cut) was unveiled by the Air Research and Development Command last month. Called the Hypersonic Test Vehicle (HTV), it was developed by Curtiss-Wright in conjunction with ARDC's Wright Air Development Center as a free-flight research tool to gather data at hypersonic speeds.

The rocket's first stage is a booster which raises the second stage to supersonic velocity and then burns out and falls away while the second stage ignites and speeds to the maximum velocity. It is powered by eleven rockets—seven in the first stage and four in the second stage. The HTV first flew almost two years ago, and twenty experimental models have already been fired at ARDC's, Holloman Air Development Center, N. Mex.

■ A Fort Worth, Tex., *Star-Telegram* photographer came up with the hottest aviation picture of the month when he snapped Convair's B-58 Hustler (see cut) as it rolled out to begin its test program. The photo of the supersonic long-range bomber shows it looking like a huge fighter, with its needle nose, high-tapered stabilizer, and swept-back delta wing. The new plane is powered by four General Electric J-79 engines, hung in pods under the wings. Packing probably more than 12,000 pounds of thrust in each engine, the Hustler should fly at more than 1,000 mph. (Its speed has been estimated at anything between 1,000 and 1,400 mph.) The bomber is the first to be built under the weapon system concept which means that Convair is responsible for everything except the power plants. Under the old system, the Hustler airframe would have been built by Convair and then fitted with systems ordered by the AF.

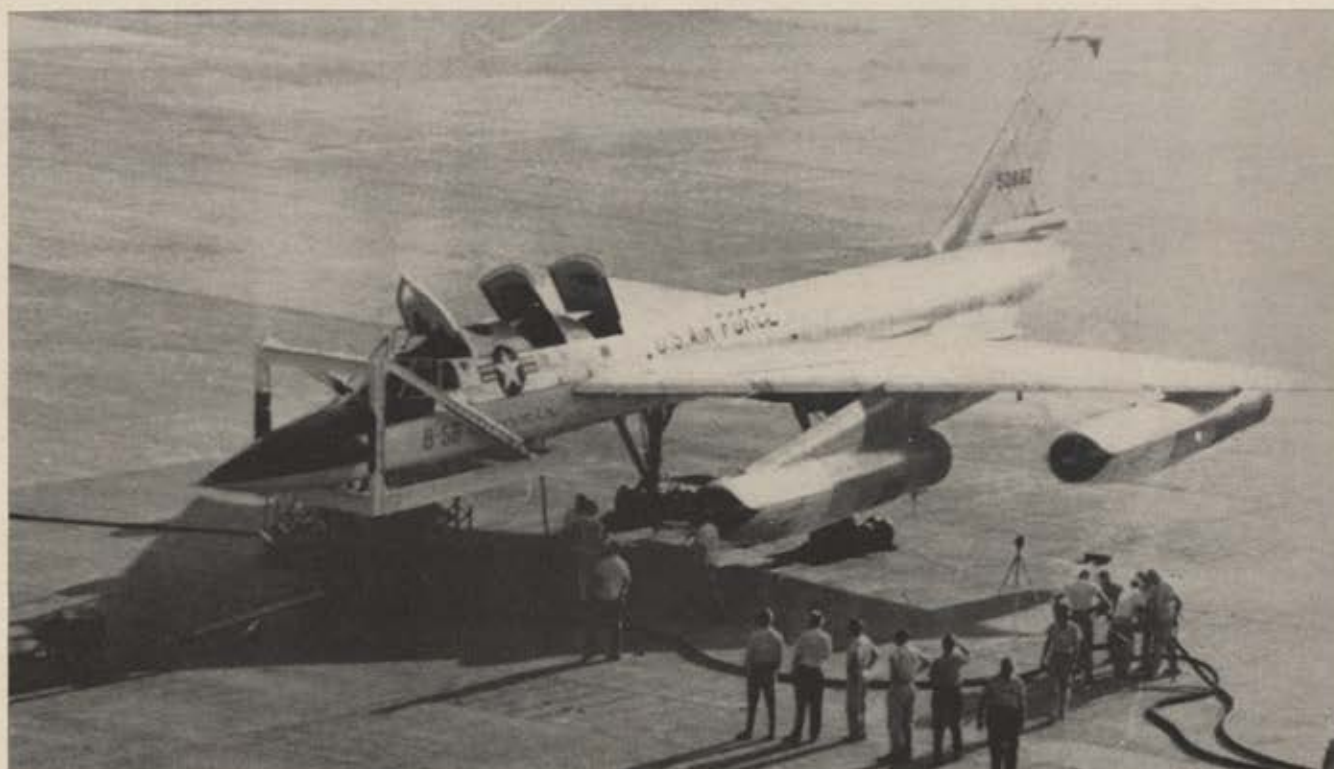
■ Lt. Gen. Joseph H. Atkinson has been named Commander of the Air Defense Command, a position which has been held by Gen. Earle E. Partridge along with his



ARDC's Hypersonic Test Vehicle is readied for launching. It can reach speed of 5,000 mph two seconds after firing.

over-all command of the Continental Air Defense Command. Succeeding General Atkinson as Commander of the Alaskan Air Command is recently promoted Lt. Gen. Frank A. Armstrong. General Partridge continues as head of ConAD.

(Continued on following page)



Wide World Photos, Inc.

Convair B-58 Hustler, about to begin tests, will fly at 1,000 to 1,400 mph. It is powered by four GE J-79 engines.

■ One of the Air Force Association's national directors, Peter J. Schenk, has been named manager of the projects section in TEMPO, new Technical Military Planning Operation being organized in the General Electric Company's Defense Electronics Division. Mr. Schenk, formerly manager of marketing for GE's Light Military Electronic Equipment Department at Utica, N. Y., joined the company in 1954 following Air Force assignments as executive officer to Lt. Gen. James H. Doolittle, technical assistant to the Secretary of the AF, assistant military director of the AF Scientific Advisory Board, and executive officer to the Chief Scientist, USAF. He and his family now reside in Santa Barbara, Calif.

TEMPO, with headquarters in California, will do advanced military planning and study work for the Defense Electronics Division and its military product departments. The new operation will also be responsible for marketing advanced complex military weapon systems.

■ **AIRPOWER NOTES.** . . . The US and Russia have agreed to cooperate in standardizing the instruments that



Peter J. Schenk, a national director of the Air Force Association, has been named manager of the projects section of TEMPO, new Technical Military Planning Operation, being organized in General Electric's Defense Electronics Division. His headquarters will be located in California.

Abilene AFB, Tex., will be renamed Dyess AFB in December in honor of Lt. William E. Dyess who was killed in December 1943 in the crash of a P-38. Before his death, Colonel Dyess saw action in the South Pacific. He was captured by the Japanese but escaped after a year.



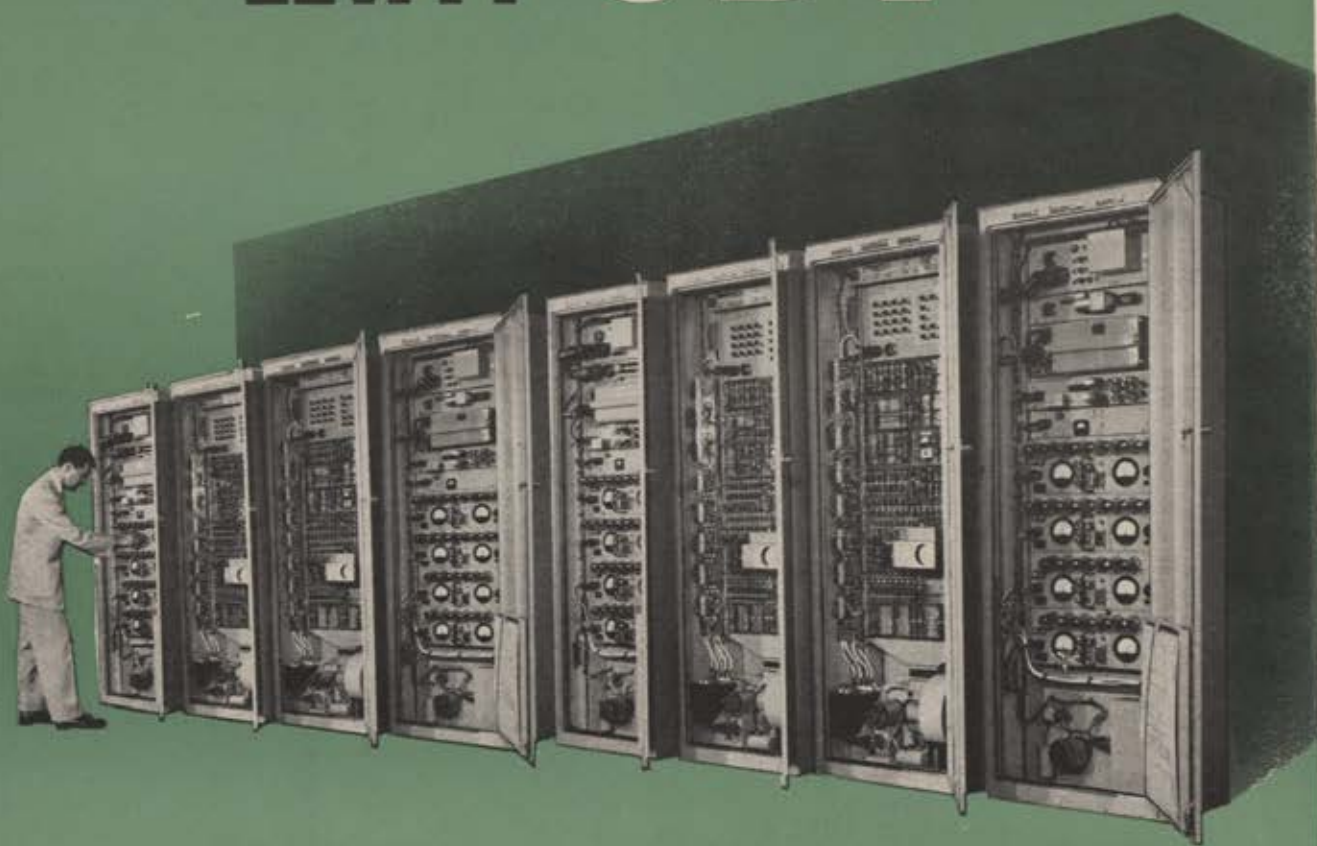
will track the earth satellites both nations intend to launch during the International Geophysical Year (July 1, 1957, to December 31, 1958). . . . For the first time since World War II, German military airmen have made long-range flights over Western Europe. The pilots, members of the new West German Air Force, flew a training mission from Fuerstenfeldbruck, near Munich, to Lisbon, Portugal, and return in T-33 jet trainers, accompanied by their USAF instructors. . . . The AF's second "Texas Tower" radar island, destined for a site in the Atlantic southeast of Nantucket, has been launched at the South Portland, Me., shipyard. . . . An AF KC-97 loaded with scientists and scientific instruments is on a round-the-world flight making studies that should determine more accurately the shape of the earth's magnetic field. The plane will zig-zag back and forth across the equator as it circles the earth's waist.

. . . Test firings of a rocket—similar to the one that will carry the artificial earth satellite into space—will probably begin in November at the AF Missile Test Center, Fla. . . . Starting this fall, US and Canadian scientists will fire rockets from Fort Churchill, Manitoba, to explore the Arctic atmosphere up to 180 miles. . . . Soviet Premier Bulganin's latest letter to President Eisenhower has again rejected the "open skies" inspection plan (see page 49 for more on "open skies"). . . . A device to warn pilots when they are approaching other aircraft will reportedly be available to airlines in about twenty months. . . . An Atomic Energy Commissioner predicts global weather control within decades—leading to the possibility of weather warfare. . . . The Los Alamos atomic laboratory has been working on an atomic-powered rocket for the past year. The research, if successful, could lead to unlimited-range missiles and would also be a big step toward space flight. . . . The first jet fighter plane built in Japan since World War II has made its first test flight with an American pilot at the controls. The plane, an F-86F, was assembled by Mitsubishi Heavy Industries from parts fabricated by North American Aviation, Inc. . . . One of many problems to be solved before flying to Mars (as soon as 1990 according to one expert) is how to purify fouled air in a completely sealed space ship. . . . The innovations division of the Air Research and Development Command is interested in seeing space ship designs, on the theory that out of hundreds of ideas may come a clue that could lead to a breakthrough in space travel.

■ **STAFF CHANGES.** . . . Brig. Gen. Turner C. Rogers will replace Maj. Gen. Matthew K. Deichmann as Commandant of AF-ROTC in October. General Rogers is Commander of the 3600th Combat Crew Training Wing (Fighter). . . . In November, Brig. Gen. John M. Sterling, Air Attaché, England, will be reassigned as a member of the Personnel Council, Office of the Secretary of the Air Force. . . . Brig. Gen. Thomas J. Gent, Jr., Commander of the 314th Air Division, FEAF, has been given additional duty as Deputy Commander of the Fifth AF, advanced. . . . In addition to his duty as Chief, Military Assistance Advisory Group, Spain, Maj. Gen. August W. Kissner has been made Commander of the Sixteenth AF. . . . Brig. Gen. William J. Clinch, Deputy Commander, Fifth AF, FEAF, will return to the US for duty as Deputy Commander for Education at the Air University, in November. He replaces Brig. Gen. James H. Wallace, who will become Deputy Commandant, AF-ROTC, in November. . . . Brig. Gen. Ethelred L. Sykes, Deputy Director of Budget, DCS/Comptroller, Hq., USAF, has been assigned to Hq., SAC, as Assistant to the Director of Plans. . . . Brig. Gen. George F. Schlatter has replaced Brig. Gen. Winslow C. Morse as Assistant Chief of Staff, J-3, Hq., Caribbean Command. General Morse will become Commandant, Air Reserve Records Center, ConAC, in November. . . . Brig. Gen. Charles W. Schott, Commander, 47th Air Division, has assumed Command of the 3d Air Division. . . . Maj. Gen. Dean C. Strother, Commander, Air University, was promoted to lieutenant general in September. . . . Brig. Gen. Elvin S. Ligon, Jr., Deputy Director of Personnel Planning, DCS/Personnel, Hq., USAF, has replaced Maj. Gen. William S. Stone as Director of Personnel Planning. General Stone became Assistant DCS/Personnel, replacing Maj. Gen. John S. Mills, who is new Assistant DCS/Development, Hq., USAF. . . . Brig. Gen. Perry B. Griffith is now Chief of Staff, Hq., Joint Task Force, Washington, D. C., and retains his former position, Deputy for Air, JTF, as an added duty.—END

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CDT*



**Coordinate Data Transmitter System*

The brain that interprets 161,800 radar pulses per second!

In **SAGE** — America's most modern air defense system . . . there's no time for "second guessing" or momentary delays of vital information. Interpretation to headquarters must be instantaneous, dependable, and precise!

Designing and building such complex radar data processing equipment requires engineering imagination and resourcefulness . . . extensive manufacturing and testing facilities.

The Coordinate Data Transmitter System is indicative of Lewyt's ability to develop and produce such equipment. Conceived by the Air Force and developed in close cooperation with M. I. T.'s Lincoln Laboratories, CDT* automatically rejects interference, verifies targets with 99.99% accu-

racy. Capable of processing millions of radar pulses every minute—this unattended digital transmitter screens, interprets and codes radar information for transmission over telephone lines.

Additional projects in the field of data processing and monitoring equipment, utilizing the latest computer techniques, are in advanced stages of development at Lewyt. *Lewyt Manufacturing Corporation, Long Island City 1, New York.*

LEWYT



GETTING THINGS DONE

These days it goes without saying that an aircraft plant must be well equipped to stay in business. The competitive nature of the industry as well as the complexity of the finished product make first-rate plant facilities an essential factor in its success. Where companies do differ is in the way their equipment is used—how they get on with the job—the planning and thinking they do before the wheels are turned.

At Canadair such thinking is reflected in rigid cost control, production planning, schedule controlling, engineering imagination, standards set for close tolerance work and, of course, the broad band of supervision which, from top to bottom of the organization, "gets things done".

Perhaps that is why, aside from having the latest production equipment, we can handle simultaneously such a diversity of contracts . . . Sabre jet fighters, airliners, jet training planes, guided missiles, nuclear research and the largest aircraft ever to be manufactured in Canada—the Canadair CL-28 maritime reconnaissance aircraft.



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CANADAIR HAS PRODUCED MORE JET AIRCRAFT THAN ANY OTHER CANADIAN MANUFACTURER

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 to document the information beyond the fact that the sources are trustworthy.

★ German Missile Scientists

Most German scientists who worked on missiles for the Russians following World War II have returned to either East Germany or the West. However, some forty or more experts on guidance systems still are held in the USSR. They originally were with Telefunken and Askaniya, electronics-communications firms in Germany.

Until recently the Germans were being held in Moscow. However, soon after West Germany reestablished its embassy in Moscow, the German guidance experts were moved to the Black Sea area, and these men now are quartered near Sukhumi.

★ Early Russian Missiles

Russia began its first test flights of German-designed V-2 missiles in 1947. They were designated R-1s, and some of them employed an improved version of the German "Viktoria" guidance system.

The Soviets achieved a range of 528 miles with their early version of the V-2, but never realized the accuracy they wanted—which was to have the missile fall into an area of about seven square miles one time out of four.

An all-out effort was put into the development of missiles based on the V-2 from late 1948 well into 1949. Among other things, Russian engineers, with German help, sought to design a satisfactory multi-stage missile to carry a one-ton warhead a distance of 1,550 miles. Several designs were submitted, but apparently none was built.

In this same period the Soviets designed an R-3 missile with a range of seventy-five miles. Aerodynamically, it was based in part upon data gained from earlier tests of the V-2. Results from the R-3 design, if it was built, are not known.

Then came the R-4 design, which also may or may not have been built. It was a two-stage affair, to be launched vertically. It had a total thrust (two stages combined) of 225,000 lbs. and a combined combustion period of 140 seconds. Maximum range was to be a little less than 2,000 miles.

(Editor's note: This design might well be the 1,500-mile guided missile reported earlier this year by Senator Henry Jackson of Washington.)

Yet another design of the 1948-49 period was a two-stage missile, in which the first stage had a rocket engine that propelled the two units to about 50,000 feet, after which the second stage delta-shaped ramjet-powered section continued on its own.

One of the series designed and built by the Russians after World War II was the R-10, which like earlier models was patterned after the German V-2. It stood about thirty-nine feet high and had an all-up weight of 41,000 pounds. The warhead was 2,205 pounds (one ver-

sion with a warhead made of steel weighed 220 pounds more). Its rocket engine, which was much the same as that in the V-2, used methyl alcohol and oxygen as fuel and developed more than 70,000 pounds of thrust for 100 seconds, giving the missile a maximum speed at cut-off time of 8,200 feet per second. The cut-off altitude was about thirty-five miles, and the maximum range was more than 500 miles.

★ Soviet Anti-Aircraft Missile

The Soviets claim to have an anti-aircraft missile similar to Nike. It was mentioned in *Red Star*, official newspaper of the Soviet armed forces; a jet propulsion unit powers it.

Tomsk, in central Siberia, reputedly is one of the more important centers of Soviet guided missile development. It is believed a delta-winged rocket-powered missile went into production there in the summer of 1954. It is fired from a railway car which carries a ramp.

Not far from Stalingrad, on one of the larger islands in the Volga River, is a fenced-off site from which missiles occasionally are launched and which have been seen from the city. First used in 1953, the site is believed to be a launching point for missiles employed in high-altitude research.

★ Fuel Dump in East Germany

In Germany's Eastern Zone, near Wittenberg-Falkenberg, the Russians have located a large fuel dump. The fuel is methyl alcohol, probably for use in missiles. Tanks are underground in the dump, which is about a half mile wide and over a mile long.

The Russians have been experimenting with a flapping-wing type glider called "Kashuk." It is small, suitable for sports gliding.

★ Russian VTOL Developments

At least two types of VTOL (vertical take-off and landing) aircraft are believed to have been developed in the USSR since 1950. One, a delta carrying the TsAGI designation 446, has been in limited production since mid-1953.

Though the Russians announced at the time of the Tu-104 flight to Zurich, Switzerland, earlier this year that they already had turbojet-powered helicopters, none has been seen by Western observers, so far as is known.

The Ministry of Aircraft Production (MAP) in Moscow recently sent a congratulatory telegram to Valentina Soyaynovskaya, Soviet woman pilot who soloed in 1930. She since has been credited with piloting aircraft a total of 1,875,000 miles.—END



The forthcoming 1957-58 International Geophysical Year is focusing much attention on the launching of the first basketball-sized earth satellite—man's initial step into outer space. Speculation, informed and otherwise, on the coming exploration of space flows in vast quantities. If any one work wraps up and ties together the known facts and problems of tomorrow's space flight with the science of astronautics and the development of rockets and missiles in clear and simple phrases, it is *Satellite*, by Erik Bergaust and William Beller (Hanover House, \$3.95). Here is a book about rocket and satellite science written for the layman and concerned mainly with the utility of space satellites and how they may affect all people on earth. This is an interesting, highly readable account that provides general understanding and interpretation of what lies ahead in man's conquest of the last frontier.

Those particularly interested in astronautics and space flight will find *The Exploration of Mars*, by Willy Ley and Werner von Braun (Viking Press, \$4.95), a palatable follow-up to *Satellite*. For here the authors of *Across the Space Frontier* (1952) and *Conquest of the Moon* (1953) describe an expedition to the orange-colored planet. The first half of the book pieces together known scientific facts into a description of Mars and traces the history of man's association with Mars and his optical exploration of the planet. One fascinating chapter, "Opinions, Hypotheses, and Theories," sums up this section. The second half of the book presents a realistic, exciting account of a proposed rocket-ship voyage to Mars launched from a space station above earth. The nearly-three-year trip includes an indirect course through space to Mars, a year exploring the planet, and an eight-month return trip to earth. The last chapter includes a detailed "log" of the trip. Basing their book on astronomical reality and engineering knowledge available today, the authors might well convince the reader that it already has happened. The volume is illustrated with beautiful color paintings of Martian landscapes by Chesley Bonestell.

For the technical-minded reader, *Rocket Propulsion*, by Eric Burgess (Macmillan, \$6.00), comprises a handy reference on the multiple aspects of rocket science.

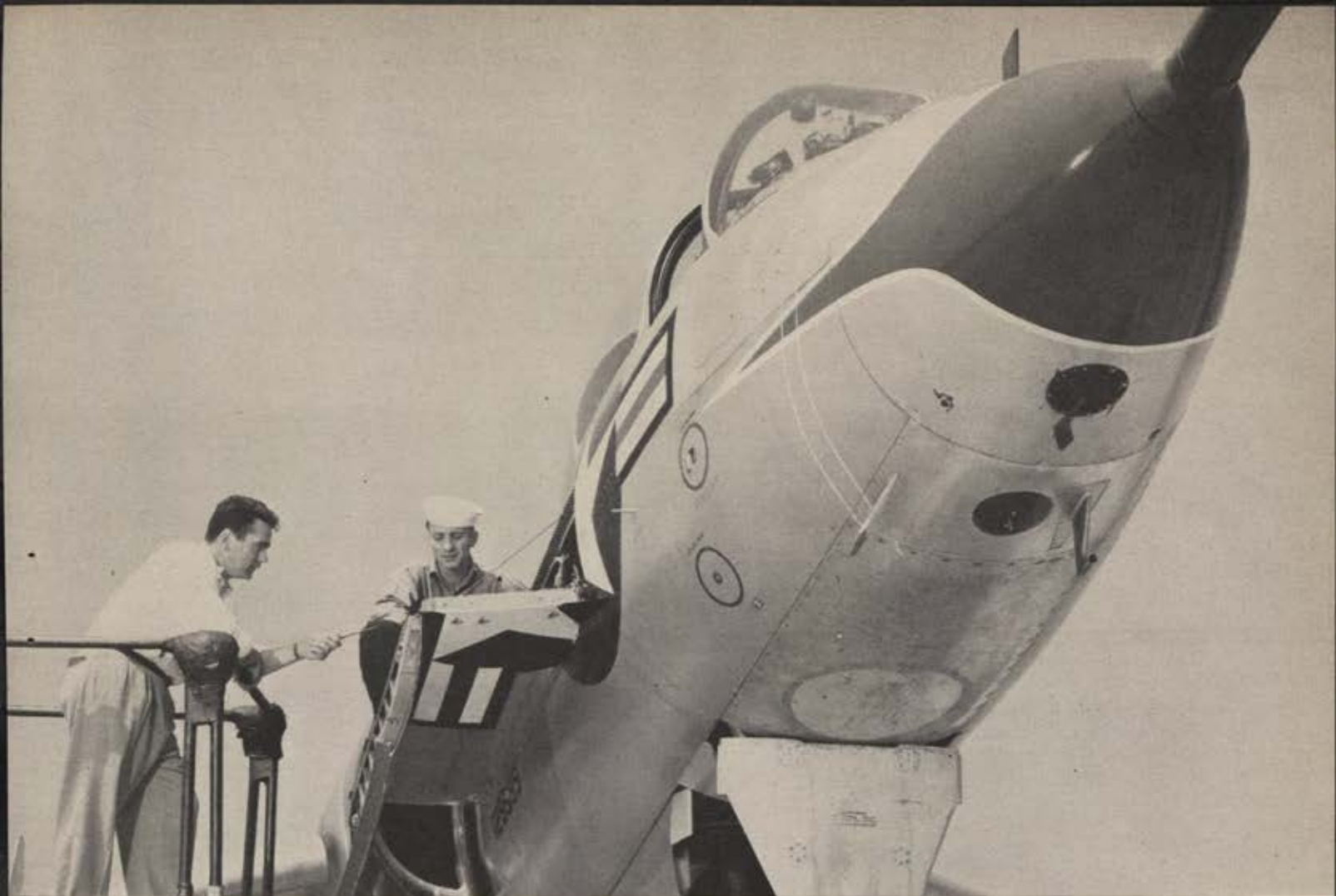
The divided city of Berlin, the Iron Curtain, and Communist East Germany provide the setting for a new novel, *Thunder Above*, by A. J. Wallis and Col. Charles F. Blair, Jr., USAF Res. (Henry Holt, \$3.50). Guided by false radio signals, Captain Kyle's commercial DC-4 suddenly finds itself over Jena, south of the authorized Frankfurt-Berlin air corridor. Pounced upon by two Red MIGs, Kyle is forced down inside the Russian zone where the stewardess, Karina, an East German refugee who is the girl he loves, is whisked away by secret police. Aided by the underground, Kyle eventually locates her, and the Leipzig revolt gives him the cover to manage her rescue from prison. The climax comes in their mad dash for freedom, ironically ending up in East Berlin. To avoid capture Kyle and Karina duck into an underground passageway, stumble for hours through dark water-logged tunnels which finally lead to the British sector and freedom. Wallis, a former airline public relations officer, and Blair, a 5,000,000-mile airline pilot, Air Force consultant, and 1951 Harmon International Trophy winner (for his transpolar F-51 flight from Norway to Fairbanks, Alaska), weave into their exciting but naive story a colorful back-

ground of air operations through the narrow air corridor that keeps Berlin a part of the West and which remains the avenue of hope and comfort for millions behind the Iron Curtain.

Two volumes add new chapters to the World War II record: *Sea War*, by Felix Riesenbergh, Jr., (Rinehart, \$5), is the story of the US Merchant Marine in World War II. For the Navy this one carries an ominous lesson in unpreparedness to conduct a primary mission—anti-submarine warfare; *Miracle of World War II*, by Francis Walton (Macmillan, \$7.90) examines the role played by American industry in winning the war. Both books are success stories but not without bitter and often tragic scenes.

Out of every war inevitably emerge a few incredible tales of individual exploit, adventure, or survival against unbelievable odds. Many of these tales are beyond the bounds of reason, yet can be documented by witnesses or by the turn of subsequent event. Such a story is told in *We Die Alone*, by David Howarth, reviewed here several months ago. Another such book, also reportedly true, is *The Long Walk*, by Slavonir Rawicz as told to Ronald Downing (Harper, \$3.50). Rawicz, a young Polish cavalry officer, accused by the Russians in 1939 of spying, winds up in a Siberian slave labor camp near Yakutsk, south of the Arctic Circle. This young Pole and six companions—three Poles, one Czech, one Lithuanian, and one American—are herded around in the dread Russian winter like animals, tortured, frozen, and starved. They contrive to escape, though the success of such a venture seems almost beyond hope. But they succeed, and the story of their trek to freedom is the story of a magnificent will to live and be free, a story of "the strength the human spirit can give the human body." They know only one direction to go—south—and south they go, living off the land. They wander across the vast Siberian wastelands, stagger across the parched, waterless Gobi desert, through the wild passes at Tibet, and the Himalayas into India and safety. The journey of Rawicz and his companions is possibly unparalleled. Other great feats may subsequently come out of the ultimate history of World War II. But even so, this one should remain an inspiration to all Air Force men whose mission might well some day place them in similar circumstances, which will call for strength and a will to live that is beyond courage.

A new classic that should delight professional military men and especially scholars of World War II is *The Fatal Decisions: The Battles of Britain, Moscow, El Alamein, Stalingrad, France (1944) and the Ardennes*, edited by Seymour Freidin and William Richardson (William Sloane, \$4.00). This book is a detailed account of six major German defeats written by former German generals who planned to carry out the command decisions that led to those defeats. Of greatest interest to the airman is General of the Air Force Werner von Kreipe's account of the Battle of Britain. This was lost, he claims, because the German Supreme Command laid down no clear-cut objective to the German Air Force—devised no clear-cut doctrine for air operations. Further, von Kreipe maintains, from the point of view of German strategy, the Battle of Britain should never have been fought at all. Rather than striking England directly, the full weight of the *Wehrmacht* (including the *Luftwaffe*) should have been thrown against the Middle East and Suez, where "a deadly blow might well have been struck against the whole British Empire," obviating the need for attacking the Island Kingdom itself. He claims further that the experiences gained by the Battle of Britain benefited the British and American leaders "in their determination to make the air arm into their most powerful, and therefore into their final and most decisive, weapon of war." S. L. A. Marshall provides the foreword to this interesting study.—END



NAVY AVIATION ELECTRICIAN and G-E "tech rep" check out flight stabilization system on Chance Vought F7U-3 Cutlass.

How on-the-spot service engineers back up General Electric flight control systems



G-E SERVICE ENGINEER, Willie Jaques, demonstrates the autopilot line maintenance tester to Navy aviation specialists.

G-E field service engineers provide valuable technical assistance to the Armed Forces wherever service is required on General Electric flight control systems. These "tech reps" also conduct classes for pilots and aviation specialists on the operation and maintenance of G-E flight control systems.

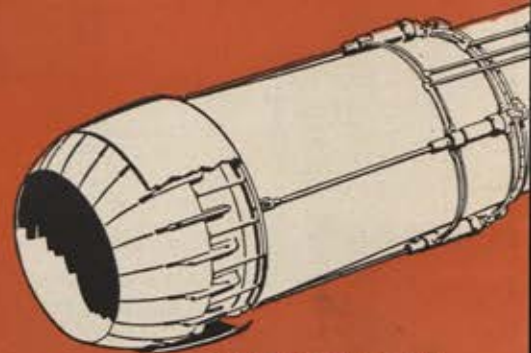
In addition, General Electric service engineers make detailed field operation reports on flight control system performance. These reports provide design engineers with information on system performance on operational aircraft for improving future G-E flight control systems—systems that are now being designed and built for the latest supersonic aircraft.

FOR DETAILED INFORMATION on the flight control systems that General Electric is designing and manufacturing for our Armed Forces, contact your G-E Aviation and Defense Industries Sales Office. Section 221-9, Schenectady 5, New York.

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Typical orifice control system

AFTERBURNER ACTUATORS — the Lockheed F-104A Starfighter, world's fastest fighter plane, has four Aeroproduts actuators on the afterburner for orifice control of its J79 engine. Designed for extremely high temperature operation, these hydraulic actuators are synchronized to co-ordinate in perfect unison, providing instant, positive

control of the afterburner nozzles. This patented feature of mechanical synchronization provides precision positioning by incorporating flexible shafting within the hydraulic tubing to co-ordinate the linear travel of the actuator pistons. Another safety factor is a stroke limiter which prevents the tail cone from closing completely in the event of hydraulic failure.



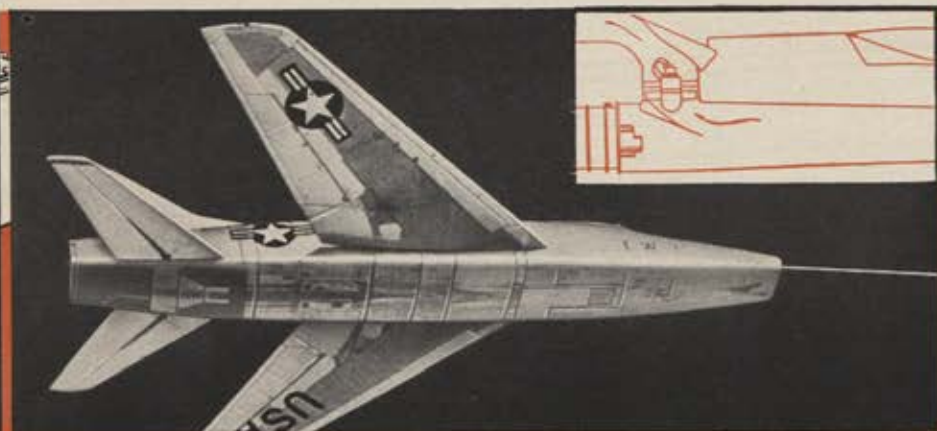
WING INCIDENCE ACTUATORS — the Chance Vought F8U-1 Crusader, world's fastest Navy fighter plane, showing its unique two-position incidence wing in "up" position for take-off. Inset shows normal flight position. First operational plane to incorporate this principle, the F8U-1 has

an Aeroproduts self-locking hydraulic actuator which controls the angle of attack of the wing. Changing the wing angle permits the Crusader to land level with the runway of the carrier deck, giving the pilot better visibility and permitting use of shorter, lighter landing gear.



RAM AIR-DRIVEN GENERATORS—in the Douglas A4D Skyhawk—Aeroproducts emergency air-driven generator is first production application of ram air-driven equipment. Suspended beneath the fuselage, this lightweight unit (22 lbs.) gets up to speed in less than 1/10th second and develops 1.7 KVA @ 12,000 R.P.M. to operate radio, lights, instruments, trim tab and elevators. It has successfully

performed in emergencies and has been dropped out many times on flight tests. Using a simple blade pitch changing mechanism, the unit governs its output frequency within plus 10% and minus 5% over a very wide range of airspeed, altitude and load conditions. This unit also has application in tow targets to generate power for scoring mechanisms.



AIR-DRIVEN HYDRAULIC PUMP—the North American F-100D Super Sabre is equipped with an Aeroproducts air-driven hydraulic pump which produces sufficient hydraulic pressure for flight controls in case of either engine

or hydraulic failure. This lightweight ram air pump is mounted back of the cockpit, where air from engine air inlet ducts can be directed by the pilot to drive the turbine-pump in emergencies.



Precision is the keynote of our work at Aeroproducts. Turbo-propellers and other essential aircraft components are produced by engineers experienced in designing equipment to meet specific requirements of our customers.

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Standard Kearfott servo motors and servo motor-generator combinations are now available for operation with transistorized amplifiers. These units feature center tapped control phase windings rated 40 volts in series and 20 volts in parallel. Fixed phase excitation to size 10 units is 26 volts 400 cps and to size 11, 15 and 18 motors 115 volts 400 cps.

SUMMARY OF CHARACTERISTICS

Size	Stall Torque	No Load Speed	Watts Phase	Weight
10	.28 oz. in.	6500 RPM	3.1	1.5 oz.
11	.63 oz. in.	6700 RPM	3.5	4.5 oz.
15	1.53 oz. in.	5300 RPM	6	7.30 oz.
18	2.4 oz. in.	5300 RPM	9	12.2 oz.

AMPLIFIERS

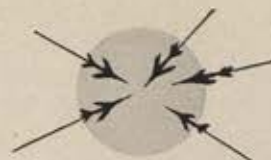
A new transistorized servo amplifier suitable for driving size 10 and 11 servo motors is also available. This amplifier provides a 40 volt, 3 watt output. Designed to meet the requirements of MIL-E-5400 it is rated for operation over the ambient temperature range of -54°C to $+71^{\circ}\text{C}$. A servo type base and a cable with an SM11-20H connector is provided. Dimensions 1 42/64" dia. x 3 25/32" high, weight 8 ozs.

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RENDEZVOUS

Where the Gang gets together

778TH SQDN. REUNION: The 778th Bombardment Squadron, 464th Bomb Group, Fifteenth Air Force in Italy, is holding their reunion in New York City Friday, October 5 to Sunday, October 7. Details as to hotel accommodations, etc., may be obtained either by writing me or to *Telesphore Libuda, Southbridge, Mass. Thomas S. Thomas, III, 23 Market St., Morristown, N. J.*

REUNION IN '57: The 8th Service Group, which saw service in New Guinea, will hold a reunion on January 20, 1957. Former members should get in touch with *Theodore Kaplan, 2031 W. 4th St., Brooklyn 23, N. Y.*

379TH HISTORY: Does anyone know the name of the publishers or distributors of the book *Shades of Kimbolten*, which is a history of the 379th Bomb Group, Eighth Air Force? *C. T. Moore, 2322 S. Evanston St., Tulsa, Okla.*

INQUIRY FROM FRANCE: Does anyone have the address of Major Robison and Captain Taylor, both of whom left Chateauroux AFB, France, in May or June 1956? Major Robison was living in Panama City, Fla., and Captain Taylor in El Paso, Tex. *Peter Henry Raust, 6 General DeGaulle's Ave., Indre et Loire, Loches, France.*

BOEING XB-15: I am compiling material for a book on the Boeing XB-15, later redesignated XC-105 and known as "Grandpappy." Would like to hear from any ex-crew members of this ancient aircraft. *Donald H. Baker, P. O. Box 145, Wethersfield 9, Conn.*

FLYING GOLDFISH: During World II, while stationed in England, and after being picked up in the channel by the British Air Sea Rescue, I and the balance of my crew were made members of the "Flying Goldfish Club." I have since lost touch with these fellows and have worn out the only insignia of the club that I had. I'd like to get in touch with some member who could give me information on the club headquarters and where I could get some new emblems. *T/Sgt. Hal D. Peek, OIS, Det. 507 (Recruiting), 3505th USAF Recruiting Group, 2605 Walnut St., Kansas City 8, Mo.*

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"Little David", a modern slingshot, provides instant action when seconds count...hurling a lethal Goliath-killer into the blue at the snap of a finger.

The "Little David" Catapult is RMI's answer to many launching problems. One of the newest developments of Reaction Motors, Inc. rocket power research, this superior device can be used for a wide variety of launching applications.

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Lockheed scientists in Georgia are designing

WINGS FOR THE ATOM

Domesticating the atom to serve mankind has intrigued science for over a decade. One top priority application, secretly under way for several years at Lockheed: developing a nuclear-powered plane as different from present types as a supersonic jet is from the first stick-and-wire biplane.

IMAGINE A GIANT AIRCRAFT SOARING ALOFT, NOT WITH TONS OF GASOLINE, BUT WITH A URANIUM FUEL SUPPLY NO BIGGER THAN A HANDFUL OF GRAVEL. EVENTUALLY, SUCH A PLANE-OF-THE-FUTURE—WITH THIS SCANT FUEL SUPPLY—WILL GIRDLE THE GLOBE NON-STOP BETWEEN SUNRISE AND SUNSET.

More than a dream, this incredible aircraft is now being developed by Lockheed for the U.S. Air Force despite problems of propulsion, structures and materials, thermodynamics, crew survival, producibility and maintenance unique in aviation. Old concepts are being shelved, traditional solutions rejected. The kind of aeronautical advances that once took a generation of research are now being telescoped into a few months, even weeks.

Soon several hundred nuclear scientists and engineers from Lockheed's Georgia Division will move to the North Georgia mountain country. There, on a vast site—some 40 miles from U.S. Air Force Plant No. 6 at Marietta, operated by Lockheed—will be built the nation's largest facility for the development of atomic-powered aircraft.

The exact status today of the atomic plane is still a military secret. But this much can be said: The first nuclear aircraft to blaze across America's skies may not look essentially different from conventional planes, but functionally it can only be described as revolutionary. And after the nation's military requirements are met, the transports then available to you as a traveler will rank among the truly exciting events of aviation history.

YOU YOURSELF MAY THEN TRAVEL ABOARD A NUCLEAR-POWERED AIRLINER—CROSSING THE COUNTRY IN AN HOUR OR TWO, OR SPANNING THE ATLANTIC IN LESS TIME THAN IT NOW TAKES TO GO FROM CHICAGO TO NEW YORK.

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You sign up and pay an annual premium of only 1/100th of your yearly total flight pay. (Example: Your flight pay is \$1,800 a year. The plan costs you 1/100th of \$1,800, or \$18.)

Then, if you're grounded due to accidental bodily injury or disease, our AFA Plan pays you monthly indemnity for loss of flight pay for up to twenty-four months—after a waiting period of 181 days for military aviation accidents, and after ninety days for other accidents or disease. The insurance payments pick up retroactively where the government left off.

When you go back on flight status, or at the end of twenty-four months, the payments end. But by that time, if you can't requalify for flight status, you should be able to adjust your commitments to conform to your reduced income.

All members of the US Air Force, Air National Guard, Air Reserve, and the other military services, who are on

flight status and who belong to the Air Force Association, are eligible.

NOTE: Of course this protection does not apply in case of war, declared or undeclared, or hostile action, civil war, invasion, or the resulting civil commotions or riots. There are also other exclusions which may never apply to you, but you are entitled to know them. They are as follows:

Plan does not cover losses due to criminal act of the AFA member; or from bodily injury occurring while in a state of insanity (temporary or otherwise); or from officially certified "fear of flying"; or caused by intentional self-injury, attempted suicide, criminal assault committed by the Member, or fighting, except in self-defense; or from failure to meet flying proficiency standards unless caused by or aggravated by or attributed to disease or accident; or accidents caused while riding or driving in any kind of race; or by alcohol, drugs, venereal

disease, arrest or confinement; or willful violation of flying regulations resulting in suspension from flying as a punitive measure; or 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 accident or disease or voluntary suspension. Loss of life shall not be deemed as loss for purposes of this plan.

In the event you receive the total limit of twenty-four (24) months' indemnity, your coverage is automatically terminated. You may thereafter reapply for insurance coverage in the same manner as a new Member. Coverage also ends with termination of membership in AFA, or with resignation, retirement, or pensioning from the service, or at age sixty.

This insurance is renewable at the option of the Company.

Policy Form No. 1-620-3A.

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NAME, RANK, SER. NO., COMPONENT (USAF, ANG, ETC.)

MAILING ADDRESS

AMOUNT OF MONTHLY FLIGHT PAY

I certify that I am currently on flying status.

SIGNATURE

DATE

The annual premium charge is 1% of annual flight pay.

APPLICATION MUST BE ACCOMPANIED BY CHECK OR MONEY ORDER FOR ANNUAL PREMIUM.

NON-MEMBERS

☐ I enclose an additional \$5 membership dues. Enroll me as a member of Air Force Association.



SHOOTING THE BREEZE

WITH THE EDITORS OF AIR FORCE MAGAZINE

Both the Air Force and the Navy are investing heavily in bases in Spain. But the Navy base being built at Rota, on the Atlantic coast of southern Spain, will cost more than any of the AF bases being constructed in that country. Its price tag is \$120 million, more than a quarter of all the money to be spent on Spanish bases. When completed, it will be able to handle supercarriers of the *Forrestal* class and will be the only naval air base in Europe where carrier planes can be landed and serviced. The main runway will be almost 12,000 feet long.

The carrier forces which this huge base is designed to service were recently described by Assistant Secretary of the Navy for Air Garrison Norton. Mr. Norton said:

"These carrier forces, widely dispersed, highly mobile, well defended by missile and fighter cover, are hard to track, hard to locate, and hard to hit. They move in a medium where fall-out problems are at a minimum, and decontamination is definitely not a problem. They can operate on seventy percent of the earth's surface, *yet they develop for the United States no touchy problems of sovereignty, such as arise when we attempt to base on other people's real estate.*" (Italics added.)



Delegates who forked over \$20 for the registration fee at AFA's New Orleans convention got a bargain. A check of the final figures showed that AFA paid out exactly \$19.60 from each registration for the cost of food and beverage at convention events covered by the \$20, leaving only forty cents to cover overhead.



The Wright Brothers can rest easy once again. The Russians have reneged on a former boast that their Alexander Fedorovich Mozhaisky actually invented the airplane. In an article in the Red magazine *Problems of History*, past Soviet historians were accused of attempting to "ascribe to our country discoveries and inventions

that were in reality made abroad." The Russian magazine said that letters from Mozhaisky describing his "flight" were faked, that weather records show that on July 20, 1882—the date of the alleged flight—there was such a bad storm that a primitive airplane could not have left the ground, and furthermore, that the "inventor" was actually abroad at the time he supposedly was building his airplane in Russia.



If any would-be military authors get all fired up by Sergeant Clifford's article in this issue (see page 77), they will have their own trade association to help them get started. We just received a notice that the Armed Forces Writers' League (started in Hawaii two years ago) is trying to set up branches in major military areas here and overseas. The League's stated mission is to promote writing and illustrating for publication by members of the armed forces. Activities include writers' workshops, manuscript criticism, meetings with prominent authors as guest speakers, and a monthly bulletin. For information, write Armed Forces Writers' League, 3542 N. Utah Street, Arlington 7, Va.



There's a staff sergeant at Bolling Air Force Base with a hole in his head. Numerous lower-ranking enlisted men would say this is not an uncommon phenomenon. But S/Sgt. Richard Webb, twenty-four, acquired his scar in an honorable and extraordinary way. Captured in Korea while serving in a tactical air control party, Sergeant Webb was shot in the head at point-blank range by a North Korean officer. Abandoned for dead, he eventually made his way back to UN lines. He thanks a childhood accident for the fact that he is alive and back on active duty. To replace a chipped piece of skull, years ago a silver-dollar-sized metal plate was placed in the sergeant's
(Continued on following page)



Act Two of an Air Force version of the balcony scene from "Romeo and Juliet?" No, it's a sample of the gallantry of the men of the US Air Force. In this case they're the men of the 327th Fighter-Interceptor Squadron, based at George Air Force Base, near Victorville, Calif. And the object of their gallantry, the young lady who's getting an assist into the cockpit of the waiting fighter, is Miss Barbara Lang, a Hollywood starlet and our "Breezecake" girl for October. Miss Lang, who's under contract to M-G-M, is described as "a brown-eyed, blond beauty." The release accompanying the photo also described Miss Lang as "air-minded," which we always like to see. Miss Lang served as queen and official hostess for the Air Defense Pageant and Public Open House held last month at George AFB. These airmen always lend such a lady a helping hand.

forehead. The North Korean bullet had glanced off the plate and come out along the left side of his head, leaving only a deep, four-inch gash.



A new development could end the flapping, flying necktie. It looks like a conventional four-in-hand except that the large end has a small loop sewn to the backside about halfway down. The small end of the tie has three button holes near the point. Once the tie is tied, you slip the small end through the loop and button it to a shirt button. It's called the "Button-Down" tie, and in an AF-blue version has been authorized for distribution in Air Force exchanges.



We just came across a clipping, evidently misplaced in the pre-convention shuffle. A few months ago, James L. Anast, technical advisor to Edward P. Curtis, Special Assistant to the President for Aviation Facilities Planning, gloomily assessed the air safety picture and concluded, "I wouldn't be surprised if accidents occur more frequently in the future." His remarks were made, non-coincidentally, at an Optimist Club luncheon.



In our August issue we told of the reconstruction of historic St. Clement Danes Church in London. Destroyed by Nazi bombs, the church is being rebuilt as the official church of the RAF. Maj. Gen. Roscoe C. Wilson, Commander of the Third Air Force in England, is spearheading a drive to raise \$75,000 to pay for an organ for the church, the organ to serve as a memorial to USAF airmen who died while serving in Britain. In response to our plea we have received and forwarded, from individuals and organizations, a total of \$183. Again we say, pass along the word and send your donations to: St. Clement Danes Fund, Air Force Association, Mills Building, Washington 6, D. C.



We think a letter to the editor written by Mrs. Wallace Wood, Ft. Pierre, S. D., is worth repeating here. She writes: "What is the matter with the American people that they can't stand the noise of their planes? I think planes and the flyers who do their best to protect us are wonderful and I'd rather hear their noise day and

night than be afraid we would not have anyone around ready to protect us. I am from Europe, and I know what it is to sit day or night in a bomb shelter and hear bombs explode. I thank the flyers for the wonderful job they are doing."



Two ten-year-old boys walked purposefully into our office last month, wanting to know who made the X-2. "Bell," we said and the boys turned to leave. Wishing to be helpful we added, "That's Bell Aircraft at Buffalo." One of the boys, with more than a trace of scorn, said, "We know" and continued through the door.



Lighter than Air

Did you hear the one about the aviation cadet who made a beautiful landing on the runway, wheels-up? When asked why he didn't answer the frantic calls from the control tower to pull up, he replied: "Couldn't hear the radio—the warning horn was making too much noise."

During World War II, a group of Thunderbolts, flying toward Germany, entered a flak belt and were fired upon. The bursts must have shook one of the pilots because he tightened his grip on the throttle and inadvertently mashed his transmitter button, transmitting his labored breathing. As his breath rasped against the microphone in his oxygen mask, the other pilots in the flight began to clutter the channel with, "Get off the air," "Who's transmitting?", "Let go of that button," and "You're on the air." The final query, "Who's breathing?", brought the prompt reply, "We all are."

This is by way of introducing a new chuckle-and-snort corner devoted to anecdotes about Air Force life. Send us yours. There's a fat five dollars waiting for each one we publish. Anecdotes must be true, unpublished stories based on your own experiences. The published gems become our property.



Word from Continental Air Defense Command says this was bound to happen sooner or later. "Phonetic Phun," they call it.

Alfa said, "Bravo, Charlie, it's a good idea. Let's spend the weekend at the Delta. We can listen to the Echo, dance the Foxtrot and play Golf at the Hotel India. We'd better take Juliet with us or she'll get into trouble. She'd fly thousands of Kilos right now, even to Lima, to see Mike, in spite of the fact he left her in November and Oscar, her Papa, took off for Quebec while she and Romeo were at the Sierra doing the Tango."

"Okay, but we'd better get out of Uniform and tell Victor to get us some decent Whiskey. That triple X-ray stuff they serve would turn any normal Yankee into a Zulu."

Whatever happened to "Able," said the Baker, "Charlie and his Dog might have had an Easy time of it if that Fox George brought . . ."—END



SYNCHRONIZED — Like a fine watch, Northrop Aircraft is synchronized for dependable performance. A precise balance between long-range planning and economical production insures the continued development of the nation's most advanced weapon systems. Effective thinking and doing have produced such recognized achievements as the Northrop Scorpion F-89 interceptors, far-reaching defenders of our heartland; Northrop Snark SM-62s, unmanned intercontinental A-bomb carriers; and Radioplane Company's pilotless drones and missiles. New weapons of the future are now being designed. Their punctual delivery is guaranteed by synchronized management, engineering and production at Northrop.



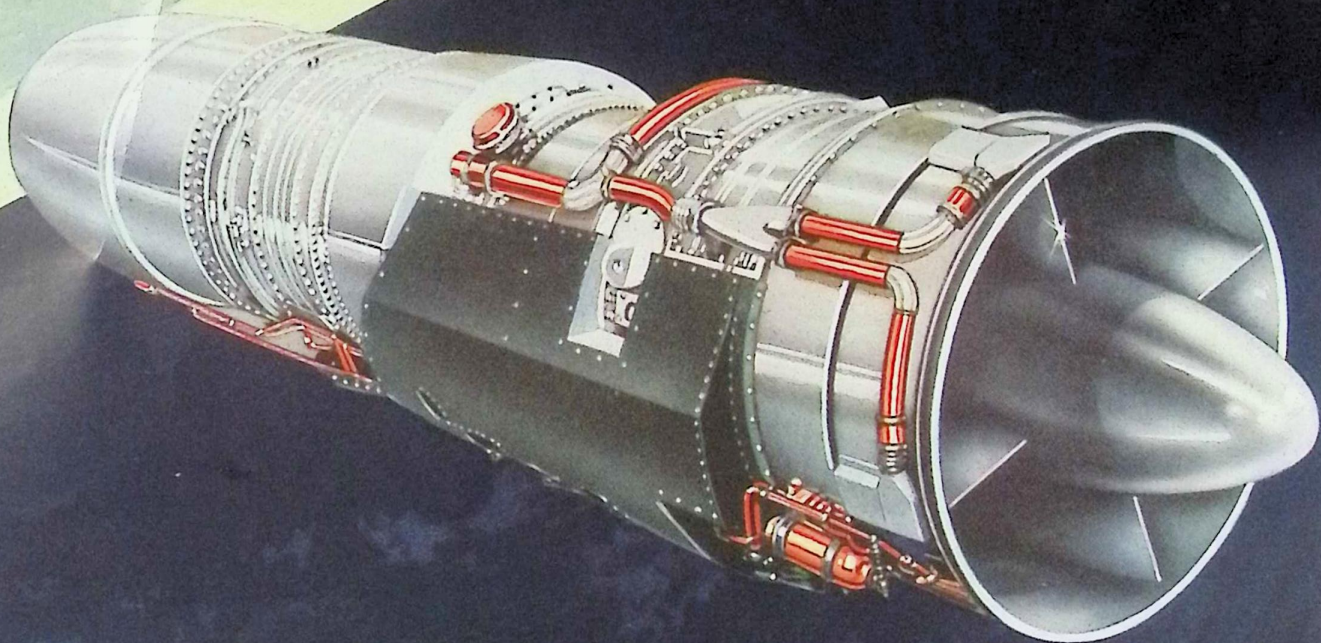
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No 'New Look' This Year

A Staff Report

IN A REPORT last month to the American Legion National Security Commission, Air Force Under Secretary James Douglas said: "There have seldom been more difficult problems for military judgment than that of phasing new missile systems into a modern Air Force."

Mr. Douglas went on to specify the difficulties that add to this problem: "The introduction of atomic weapons brought on a revolution in American thinking and strategy. That revolution is now being further complicated by rapid progress in the development of guided missiles suitable for air defense, tactical support, and the long-range strategic mission."

"This progress in missiles raises two very tough problems. The first is to keep the Air Force budget within reasonable bounds during the period of introducing new missile systems while continuing adequate strength in manned-aircraft units. And the second is to avoid wasteful controversy and an unnecessary overlapping of missile systems between the services."

"As to the Air Force budget problem, such progress is being made both in air defense and long-range strategic missiles that we are at the point of planning an operational capability in these new missile systems. Among other things, this means new problems of design and construction of new types of bases at home and overseas. Our difficulty is one of creating a missile force and at the same time continuing the modernization of the manned-aircraft force, and its strengthening through better dispersal of our heavy bomber squadrons."

"It seems clear that we should not try to add a substantial missile force on top of 137 wings of manned aircraft. At the same time we must be very cautious in substituting missile units for interceptor squadrons or long-range missiles for bombardment aircraft. We must see to it that any substitution in no way weakens our posture. We must be highly selective in carrying development of particular missiles into operational systems. We must plan follow-on manned aircraft development in the light of missile capabilities. We must determine upon the most effective missile organization and deployment."

This problem of planning for the organization and employment of new weapons is by no means confined to the Air Force. The need for decisions in these self-same problems extends to all the military services. And it has presented the defense establishment as a whole with a king-size dilemma. New weapons, with all their implications as to strategy, roles, missions, and budgets are at the top of the Defense Department problem agenda.

Yet, aside from Mr. Douglas's well-reasoned assessment of the new weapons headaches facing the Air Force, and an occasional press hand-out on routine matters, the Pentagon last month was undergoing an unprecedented "silent session." The Coolidge Committee, established for the purpose of tightening the release of news on our defense establishment, coupled with the nearness of the upcoming general election, combined to put a tight clamp on any news of real significance. Secretary of Defense Charles E. Wilson, who has become practically the sole official spokesman on defense matters, has held only two press conferences since June. At the latest of these, reporters pressed for information on the new budget and long-term planning, but without success.

Asked a direct question on the status of the Fiscal Year 1957 budget, Mr. Wilson's response was, "It is in limbo."

The Secretary of Defense has long been known as a man better versed in mechanics than semantics, but his choice of words in this case may well have proved more apt. Webster defines "limbo" as "a place of restraint or confinement, a place or condition of neglect or oblivion."

However, lack of news was no indication of what was really going on in the Defense Department last month.

Behind the screen of prevailing quiet, defense officials, both civilian and military, were busily engaged in the most important sessions since the 1953 New Look. In December of last year, Secretary Wilson directed the Joint Chiefs of Staff first to study and then to make the basic decisions and recommendations on the force levels and composition of the services for the period 1958 through 1960. This assessment was to serve as a basis for the Fiscal Year 1958 budget and for the years to follow.

These are difficult and perhaps painful decisions. And there are at least two indications that these matters will be fought over more fiercely than any made by the Joint Chiefs since they hammered out the present strategy and force levels in the 1953 sessions.

The first of these indicators was the bitter interservice controversy that came to light in early summer—conflicts sharp enough to prompt Mr. Wilson to call for a full-scale public session of the Secretaries and Chiefs to discuss their differences before reporters.

The second indicator was a discussion by Mr. Wilson himself, who admitted that although the Chiefs had been working away at this strategy-structure-budget problem for several months, there were still wide differences, not only among the services but between certain military views and those held by top civilian defense authorities. To illustrate, Mr. Wilson cited two viewpoints, characterizing both of these as "extreme."

One was the preliminary service budget estimates for Fiscal Year 1958 totaling \$48.6 billion, a whopping forty percent increase over the \$34.6 billion finally voted by Congress in Fiscal Year 1957.

The other extreme discussed by the Defense Chief was the reported but unconfirmed plan, attributed to Admiral Radford, Chairman of the Joint Chiefs, to cut the military manpower of the services by some 800,000 men.

Taking these in turn, Mr. Wilson said he rejected the flash estimate of \$48.6 billion as "unrealistic" and "completely out of trend with the requirements of the nation." On the alleged near-million cut in manpower he was equally adamant and denied that any "responsible person" was advocating any such reduction.

In selecting these "extremes," Mr. Wilson pointed up the ever-increasing trend toward measuring our military posture primarily in terms of two factors—money and men.

While these two elements are important, and are probably the main practical factors bearing on the recommendations and decisions of the Joint Chiefs of Staff, they are but a part of the political and military ground rules that must be considered in the ultimate JCS decision.

Imbedded in this New Look problem are a number of equally vexing questions which must be resolved before there can be a firm new foundation for any judgment on the size of the armed forces next year and in 1960, on the amount of the 1958 budget, and the split of the defense dollar among the services.

The first of these is the problem of roles and missions
(Continued on following page)

(see "The Roles and Missions Muddle," *AIR FORCE Magazine*, July '56). This in turn involves the series of questions on new weapons raised by Mr. Douglas. Which service will develop them, which service will use them, how will they be integrated into the existing structure, and how will they be financed without jeopardizing the strength of the existing structure?

The operational planning of all the services is converging toward the same weapon systems, and it is no longer possible to catalogue stated service needs on the basis of ground weapons for Army, sea weapons for Navy, and air weapons for Air Forces. Then, too, this is more than a long-range problem that can be postponed for future reference, as so often has been the case in the past. There must be at least a partial solution to it at this time—before there can be a decision on the budget that is in the works right now. And there is this added difficulty. As time passes the problem gets more difficult, because new weapons, particularly new missiles, are moving rapidly from the development stage into readiness for operational use.

This leads to the more inclusive question of what *strategic* concept will serve best in the 1958-60 period. New weapons are geared to nuclear munitions, and the question of how much we can continue to depend on conventional weapons and conventional forces for the possible limited war will also have to be worked out.

All of these problems have been hanging over the heads of the present Joint Chiefs ever since they took office. The apparent inability to solve them in the past eighteen to twenty months would indicate that there is little likelihood of solutions now, simply because a Secretary of Defense edict and a budget deadline hang over the same heads.

This inability of the JCS to reach agreement has forced defense officials into new methods of achieving solution. There have been a few arbitrary decisions by the Secretary of Defense. More often than not, however, a problem is referred to committee, like the one, headed by missile chief Eger V. Murphree, which is now engaged in sorting out the Nike-Talos problem.

But these decisions and committee recommendations, however necessary in the interest of getting on with the job, inevitably approach the over-all problem on a "piece-meal" basis. Let's project Secretary Douglas's advice into this wider picture. If it is clear that the Air Force should not "try to add a substantial missile force on top of 137 wings of manned aircraft," so also must the Defense Department avoid piling new weapon systems on top of the existing weapons of all the services. Yet this is bound to happen, unless there is an over-all solution to our strategy problem and the forces and weapons needed to carry it out.

Unhappily for the taxpayer, there is little prospect at present that such a solution can possibly be achieved in time to use it as a basis for the Fiscal Year 1958 budget. Service budgets are being put together right now, and the entire defense budget will have to be firmed up by the end of November. This will mean that FY 1958, the first year step in the 1958-60 period, will probably see continuation of the 1953 force goals and the 1953 strategy. To be sure, some modifications can be made, and some already have been made. In the case of the Air Force, there have been changes in the composition of the 137 wing force. Fighter wings have been dropped, tactical bomb wings added, and a proposal to "up" the number of heavy bomber B-52 wings from eleven to seventeen is presumably still under consideration. But it is doubtful if there will be change enough either in the Air Force, or in the Army and Navy, to warrant a new-look label. It is a sure bet that a whole new plan will not be readied this year.

Therefore, in the absence of a new strategy and struc-

ture, it is inevitable that men and money will remain the denominators of decision. What does this mean to the AF?

The Air Force portion of the \$48.6 billion Fiscal Year '58 estimate that Mr. Wilson tabbed "unrealistic" and turned back to Secretary Quarles was \$23.6. This year's Air Force budget of \$16.8 billion was deemed "austere" by Secretary Quarles and Chief of Staff Twining. And for seemingly good cause. For the \$16.8 billion obtained was substantially below the \$20 billion estimated by the Air Force as the minimum required for its needs this year.

Both Secretary Quarles and General Twining have warned repeatedly that a sizeable increase would be needed for Fiscal Year 1958. But few seasoned Pentagon observers believe an increase of nearly \$7 billion is a realistic prospect this year.

In fact, there is little doubt that the 137-wing Air Force will be cut in size this year. Secretary Wilson left this distinct impression at a recent press conference when he said a reduction was "under consideration." Secretary Quarles also has publicly discussed the possibility of a reduction in the number of combat wings programmed.

This, in itself, should not necessarily be cause for alarm. As has been stated before, there is nothing sacrosanct or magic in 137, or in any other number. At its last convention, the Air Force Association recognized that 137 combat-ready wings were an unrealistic goal under the present funding policies, and urged that the force goal be revised downward, or its funding basis revised upward. This was an implicit appeal to bring more realism into the defense posture displayed to the public, and a denunciation of the "paper-wing" structure of the present program.

Certainly, the real answer to our Air Force strength cannot be measured simply in terms of men and money—or even number of units. The true test must be effectiveness—effectiveness measured against the might of an enemy.

Evaluation of the advantages which new weapons bring to surprise aggression has led to repeated warnings that fifty to 100 enemy bombs could bring our nation to its knees. Predictions such as this have not been refuted by the knowledge that we could strike back effectively.

Nor do our budget-makers seem to be heeding the evidence that striking back is no longer the easy task that it might have been in the past. As each month goes by, and Soviet defenses improve, the ability to get through these defenses is diminished. And the hundreds of all-weather fighters that have already rolled off Soviet production lines have stilled the talk about how easy it would be to go in at night or in bad weather.

No longer can our policy-makers discount the giant strides of the USSR in modernizing her military strength. While we consider men and money the main denominators, there is no evidence that the Soviets view these as limiting factors in their defense programs. As we apply restricting rules and regulations to our defense posture, Messrs. Khrushchev and Bulganin go their own way.

Meanwhile, our marked inability to decide on a new and more effective strategy and structure, may result in a defense establishment weakened before it has become strong.

Relieved of the pressures, political and otherwise, that beset him when he was first Chairman of the Joint Chiefs of Staff, Gen. Omar Bradley looked back and said we had started coasting "before we got to the top of the hill." That was an error in speed and altitude.

Today, with the penalties for weakness greater than ever before, we seem intent on committing the gravest error in navigation—taking off 180 degrees in the wrong direction—starting downhill in the belief we have reached the top.—END

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IN THE MEDITERRANEAN SEA—Participating in amphibious exercises of the U. S. Navy in the Mediterranean area are Sikorsky HRS helicopters of the Marine Corps. They are shown above with the escort carrier *Siboney*, which carried 15 helicopters from their home base at New River, North Carolina. The training exercises featured helicopter vertical envelopment tactics.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS



SAVED—A DANISH SEAMAN—A Sikorsky HO4S helicopter from the U. S. Coast Guard Station at Salem, Mass., takes a Danish sailor from the merchant ship *Paula Dan* 25 miles off Block Island. The sailor, stricken with acute appendicitis, was lifted in the basket visible below the helicopter and was flown to a hospital ashore for surgery.



SAVED—A U. S. COASTGUARDSMAN—Two days later the same HO4S helicopter picked up a U. S. Coastguardsman from the Nantucket Lightship. Also a victim of acute appendicitis, the man was quickly and safely taken to the same shore hospital. Helicopters have rescued more than 10,000 people in all parts of the world.



HELICOPTER HISTORY



FIRST SCHEDULED HELICOPTER SERVICE

On October 1, 1947, the world's first scheduled helicopter service was started by Los Angeles Airways, carrying air mail. One of the line's original Sikorsky S-51s, above, is still operating and has flown 10,000 hours. Los Angeles Airways was a pioneer in night operation and instrument flying, and carried over 10 million pounds of air mail in its first three years. The line now carries passengers as well as mail and express in its fleet of Sikorsky S-55s.

LARGER S-58s FOR NEW YORK AIRWAYS—The first of a new fleet of 12-passenger Sikorsky S-58s has been delivered to New York Airways, the helicopter airline serving Greater New York and nearby communities in three states. Sabena Belgian World Airlines has ordered eight for its European helicopter service. Both lines currently use Sikorsky S-55s. The S-58s will be the largest helicopters to be in regular airline service anywhere in the world.



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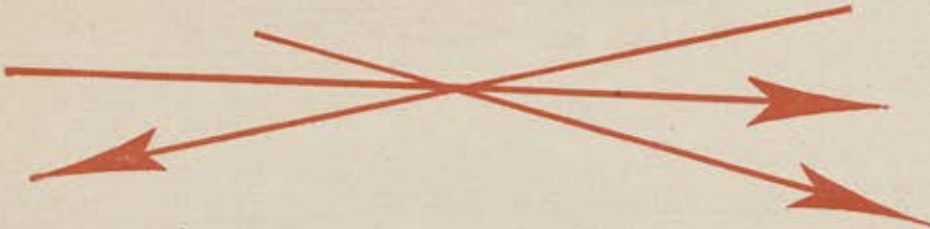
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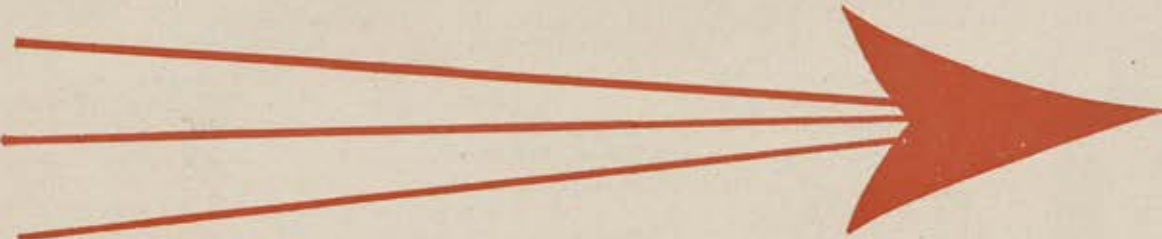
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rutted, ungraded, or sandy grounds are taken in stride by this rugged ship. And sophisticated aerodynamic design makes possible a landing run of only 700 feet - a takeoff run only a little longer.

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UNIFICATION— The Next Step



By Maj. Margaret V. Berry

THE compromises that produced the National Security Act of 1947 after two years of controversial and often embittered Congressional hearings have been as effective as most compromises but no more so. That is, they got the Act passed, with at least surface concurrence from all services. But they left an obviously incomplete form of service integration that has already required major amendments in 1949 and 1953.

Dissatisfaction with the existing organization is widespread enough to suggest that a next step is inevitable, though how big a step and when it will be taken remain to be seen. It would be presumptuous for a field-grade officer, especially a woman, to be dogmatic about existing organization or current proposals, but perhaps she can usefully state the alternatives and try to forecast objections that will be raised.

First, let us consider who is proposing what.

In October 1955, Field Marshal Viscount Mont-

gomery of Alamein, in one of his characteristically explosive lectures before the Royal United Services Institution (see "Tradition vs. Progress," *AIR FORCE*, November '55), stated his considered opinion that a Chief of Staff of the armed forces is presently essential, displacing the Joint Chiefs of Staff (British equivalent: Chiefs of Staff Committee), and that a single-service, one-uniform organization is a probable future development. Lt. Gen. Sir Ian Jacob, an officer upon whose judgment Churchill has long heavily relied, holds similar views. Vice Admiral Hughes-Hallet, R.N., a Conservative member of Parliament for Croydon, does not go quite so far. In a speech in the House of Commons on March 1, 1955, he recommended a merger of the Royal Air Force and the Royal Navy, leaving the Army "outside." This was similar to a proposal made about two years ago in *Collier's* magazine by former Secretary of the Air Force Thomas K. Finletter.

(Continued on following page)



British leaders have been talking unification for some time, with Field Marshal Montgomery as chief proponent.

Former AF Secretary Thomas K. Finletter, veteran of Pentagon frustrations, sees no alternative to single service.



AFA's Gill Robb Wilson editorialized in favor of single promotion list. Association backed him in Statement of Policy.

Air Force leaders, like Gen. Thomas D. White, Vice Chief of Staff, have taken leadership in single-service thinking.



On the other hand Marshal of the Royal Air Force Sir John Slessor, in his recent book *The Central Blue*, expresses the conviction that at least in England even the addition of a Chairman to the British Chiefs of Staff Committee (and it should be remembered that the first appointee was an airman—Marshal of the Royal Air Force Sir William Dickson) is an unsound departure from what he considers the smoothly working English committee system. I mention these four British names to indicate that proposals for tighter unification are neither an American phenomenon nor an AF project, much less an AF monopoly.

American Proposals and Line-Up

The first of the current spate of recommendations, in a N. Y. *Herald Tribune* article by former Air Secretary Finletter, offered the full treatment—one armed service, all in one uniform, with a single Chief of Staff and an Armed Forces General Staff. This is a significant development in the thinking of this thoughtful student of our defense structure, for Mr. Finletter had earlier opposed what he used to call a "monolithic" structure and had proposed the new two-service structure, the Air Force and Navy in one service and the Army in the other—a scheme that was given the silent treatment by the sailors and airmen whose marriage was thus recommended. Mr. Finletter's *Herald Tribune* article indicates that the Pentagon frustrations with which he was familiar while in office, plus those he has vicariously experienced since 1953, have finally led him to the conclusion that there is no alternative to an ultimate single-service solution.

Air Force Association President Gill Robb Wilson, in the July '56 issue of *AIR FORCE Magazine* (see "The Roles and Missions Muddle") proposed a single service, "with military organizations based on missions rather than on the color of the suit." Mr. Wilson proposed a single promotion list and freedom of transfer, but not necessarily one uniform. The following month, at the Association's 1956 Convention in New Orleans, delegates unanimously adopted a Statement of Policy that called for freedom of transfer among the services as the first step toward a single service (see *AIR FORCE*, September '56, page 38).

Gen. Thomas D. White, Vice Chief of Staff of the Air Force, has indicated receptivity to similar proposals in a public speech, and it is difficult to believe that this could have been done without at least the tacit concurrence of Air Force Chief of Staff Gen. Nathan F. Twining. Thus, in the United States the initiative for one service, full treatment, seems to have come from the Air Force, as, indeed, did the movement for unification in the period from 1945 to 1947.

The skeptic will wonder whether or not this apparent Air Force party line is adopted out of belief that some selfish Air Force interest will be furthered. But it is difficult to see how this is so. The Air Force now gets the lion's share of the appropriations and has the major responsibilities for D-Day missions—which in turn require expansion of the Air Force and generate requirements for even larger appropriations. There is nothing in recent history to indicate that, in a fully integrated military establishment, airmen would play a dominant role in competition with their senior brother officers from the ground and naval forces. An airman is yet to achieve chairmanship of the Joint Chiefs of Staff, and only the designation of Gen. Lauris Norstad as Supreme Allied Commander, Europe, is an exception to the existing monopoly of the Army and Navy in the leadership of the major joint commands. So it will be difficult to convince the objective analyst that service motives lie behind Air Force sponsorship of full military integration.

What of the Army? The late Anthony Leviero of the *New York Times*, who had developed some rather unusual pipelines into the files of the Pentagon, wrote of an "Army Staff Paper," which, after considering a half-dozen possible organizational changes, plumped for a single Chief of Staff in place of the Joint Chiefs of Staff while still retaining the three-service structure and their uniforms—roughly the same proposal as that of retired Air Force Gen. Carl A. Spaatz, in *Newsweek*. But this is only the
(Continued on page 46)

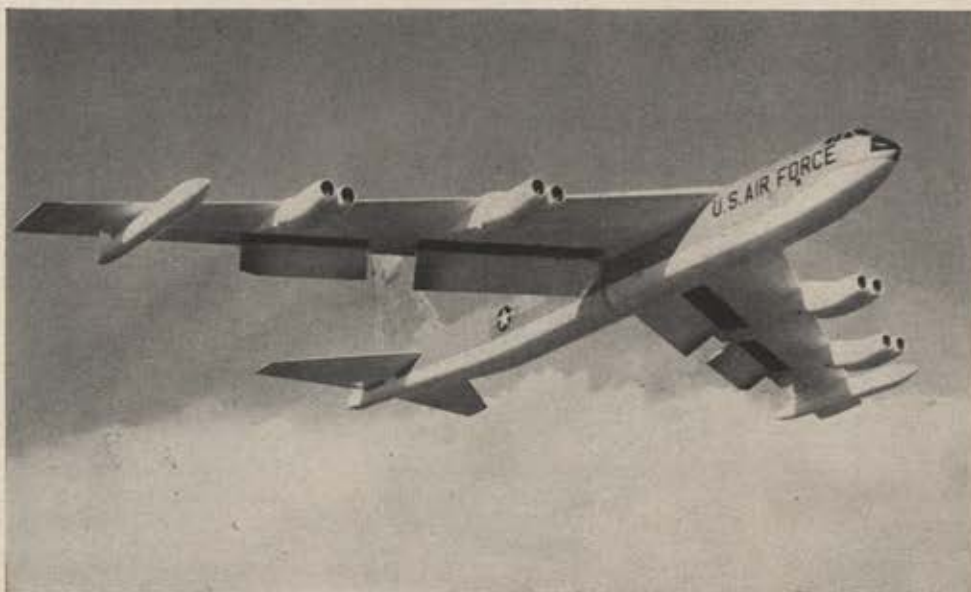
M-47 tank.
Army wants
single chief,
retaining
three separate
services.



Nautilus atomic
sub. Navy
opposition to
original uni-
fication plan
resulted in
present
compromise.



B-52. Air Force,
with the most
to lose, least
to gain, is
most receptive
to single-
service idea.





The Joint Chiefs, from left, Adm. Arleigh A. Burke, Navy; Gen. Nathan F. Twining, Air Force; Adm. Arthur W. Radford, Chairman of the Joint Chiefs of Staff; Gen. Maxwell D. Taylor, Army; and Gen. Randolph M. Pate, Marine Corps.

professional Army, for Army Secretary Wilber M. Brucker has publicly opposed the conclusions of this paper, as has his superior, Secretary of Defense Charles E. Wilson. Army Chief of Staff Gen. Maxwell D. Taylor and his usually vocal Chief of Research and Development, Lt. Gen. James M. Gavin, Jr., have maintained a discreet silence, but significantly have not disclaimed the "Army Staff Paper" reported on by Mr. Leviero.

And the Navy? Chief of Naval Operations Adm. Arleigh A. Burke has stated that he would want to examine very carefully the details of any proposal. Lest the proposers of change be unduly optimistic as to Navy support, be it remembered that this was the attitude of the late James V. Forrestal when he was Secretary of the Navy, and of senior Navy officers in the 1944 hearings on unification; this did not preclude later full-scale Navy opposition to all proposals for unification. The Navy's insistence on its own individuality and its own way of doing things has been traditional. Things may be different now but if they are it will be news, and good news too.

Advantages and Objections

Since the substitution of an Armed Forces Chief of Staff for the Joint Chiefs of Staff, and a General Staff for the Joint Staff, is a feature of many of the current proposals, it is worth while to consider first this limited reform.

Principal Advantage: The ultimate military advice to civilian superiors in the executive establishment would come from a single responsible source instead of from the babel of conflicting voices with which the Joint Chiefs of Staff too often speak. Let two things be quickly stated: First, it is not suggested that the President, the Secretary of Defense, or the Congress should hear only from the Chief of Staff, any more than the equivalent is now true

within the current military departments. It is standing operating procedure for the Secretary of the Army, Navy, or Air Force to get the individual views of many senior staff officers and major commanders on important issues. But after all of these have been heard, under a single-chief-of-staff system, civilians in the executive establishment and in Congress would have the benefit of the responsible views of one man to assist them in exercising the civilian control inherent in our constitutional system. And second, the conclusions of the Armed Forces Chief of Staff will, of course, be reached on the basis of careful, detailed staff work by officers with a composite background as broad as the problem itself. It will not be an arbitrary snap judgment any more than are the current decisions by the present military Chiefs of the Army, the Navy, and the Air Force.

Objection: *That the Armed Forces Chief of Staff will become a Man-on-a-White-Horse, threatening civilian control.* This objection has consistently been raised in opposition to every proposal for tightening the military structure, beginning with Secretary of War Elihu Root's proposal for an Army General Staff. This bogey was a principal talking point in opposition to the National Security Act of 1947 and each of its amendments. The answer, heretofore, clearly endorsed by experience, is that the security of the American republic from military domination rests upon the ingrained revulsion of the American people, including the professional military, to any form of military dictatorship. Were there a real risk, this country would long ago have fallen a victim during those extended periods when six victorious generals (Washington, Jackson, Harrison, Taylor, Grant, and Eisenhower—not to mention the ebullient amateur, Teddy Roosevelt, who was perhaps more militaristic than any of the foregoing six) have been Presidents and constitutional Commanders-in-Chief of the armed services.

Objection: *That no one man can have the breadth of*

experience needed to pass upon the problems of land, sea, and air forces. Since it is more than likely that this objection will be raised by men in dark blue uniforms, it is well to recall that all Chiefs of Naval Operations have to pass upon military problems involving carrier-based air, land-based naval air, battleships, cruisers, submarines, marine ground forces, tactical marine air wings, and a few more. There was a good deal of implicit wisdom in Admiral "Bull" Halsey's remark to General "Hap" Arnold during the unification controversy: "Just bring your strategic bombers into the Navy and we'll have the whole show anyway, with built-in unification." Since the recent excursion of the big carriers into the strategic bombing field the Navy would seem now to have an across-the-board variety of missions. Of course, the Chief of Naval Operations, like the proposed Armed Forces Chief of Staff, cannot have personal experience in this wide variety of weapon systems. Yet he operates, and there seems little reason to believe that the larger quantitative responsibilities of an Armed Forces Chief of Staff would be beyond the capabilities of our most competent and experienced officers of whatever weapon-system background.

Objection: That an Armed Forces Chief of Staff would be bound to favor the weapon system in which he is



Gen. Carl A. Spaatz. His proposal in his *Newsweek* column suggested a single Chief of Staff in place of the Joint Chiefs of Staff, while still retaining the three-service structure and separate uniforms.

trained to the detriment of those in which he has less experience. This might have been plausible before the days when senior officers of all services held field commands of ground, sea, and air forces; but the reality of the objection is denied by the documented performance of such joint and combined commanders as Eisenhower, Nimitz, MacArthur, and Gruenther. And there is no reason to expect any different conclusion when the performance of General Norstad as SACEUR passes into history. As Army officers contemplate what has happened to their military personnel strength since 1953, it will be difficult to convince them that the Army general who now occupies the White House has shown undue preference for his service of origin.

Objection: That the Germans had an Armed Forces Chief of Staff and General Staff, and they lost two wars. We didn't, and won two wars—so why shift? This also is a vintage chestnut. The following colloquy between Senator Hill and Admiral King in the unification hearings of 1945 is illuminating:

Senator Hill: Admiral, you spoke about Germany and her system. Germany had one department, a single department, did she not?

Admiral King: Yes.

Senator Hill: Well, Japan had two departments, did she not?

Admiral King: Yes.

Senator Hill: And Italy had three departments, did she not?

Admiral King: Yes.

Senator Hill: And all three of those nations were defeated?

Admiral King: Yes.

More recently, and in less facetious vein, General Spaatz has answered this objection in his *Newsweek* column: "The stock argument against a general staff is that it was tried by the Germans and lost them two wars. The fact is that the Germans lost two wars not because of their general staff but in spite of it. In both cases, they were overwhelmed by superior military and economic strength. Considering their resources, they did remarkably well."

There doubtless will be other objections raised, probably along lines that became familiar by repetition in the several series of hearings that preceded the passage of the National Security Act of 1947. (An unclassified "Analytical Digest of Testimony Before the Senate Military Affairs Committee, October 17 to December 17, 1945," still available in Air Force files, provides a key to some thirty-seven objections then raised with answers given in testimony). The studious reader would be well advised to examine



Secretary of Defense Charles E. Wilson opposed the conclusions of an Army Staff Paper, leaked to the *New York Times*, which plumped for a single Chief of Staff similar to Spaatz's plan.

these hearings (or the "Analytical Digest") and then compare the gloomy predictions with what has actually happened in the last nine years; he will get not only enlightenment but amusement.

The Full Treatment

It goes without saying that the single-service proposal includes an Armed Forces Chief of Staff and General Staff. So the advantages of, and objections to, the more limited proposal apply to the full treatment.

But it would appear that there are additional advantages to the full treatment, and there will certainly be additional objections.

Additional Advantage: With all the armed forces in a single service, there will be no jurisdictional lines between services and, therefore, squabbles over roles and missions will be no more frequent than they now are within the multi-weapon-systems structure of the present Navy. This is not to say that all professional differences of military opinion will be eliminated, nor would this be desirable, but that the petty, futile, and paralyzing type of dispute which, like certain types of labor conflicts, concern only the question of who is going to do what

(Continued on following page)

task would almost certainly be eliminated as a major factor of controversy.

Additional Advantage: With all military personnel in one uniform, there would be a free flow of trained officers and men away from obsolescent weapon systems in the direction of weapon systems which technological advances increase in importance. Officers and men from the highest to the lowest rank would be capable of transfer as freely as occurred after Pearl Harbor when it became apparent that the naval war in the Pacific would be dominated by the carriers and not by battleships and cruisers, thus causing naval personnel strength from admiral on down to transfer from the dreadnaught battle line to carrier operations.

Never again would the nation be faced with the absurdity of 1950 when it proved impossible to man the Air Defense Command with naval fighter pilots highly experienced in air defense, thus requiring the Air Force to recruit and train fighter pilots while naval and marine officers for whose training the taxpayer had already paid were let go through reductions in force.

The rapid advance of military technology will cause now-dominant weapon systems to become obsolete and will bring into decisive importance new weapon systems now observable on the horizon and some that still defy the imagination. Organization should permit a flow of personnel from the vanishing to the ascendant mission. The priceless asset of experienced personnel must have organizational flexibility adequate to keep pace with the ingenuity of our scientists and engineers.

As President James R. Killian of MIT testified before the Symington Subcommittee on Airpower, "The military task no longer divides up into three mission areas, defined by the vehicle the fighting man rides in. . . . One of the most urgent needs in our whole defense organization is for men, whether they be in uniform or out, who understand the integration of [weapon] systems and the organizational implications inherent in our new-weapon technology."

Objection: *That placing all military personnel in one uniform would destroy the priceless ingredient of morale and esprit de corps.* This raises the question, "What is the corps to which esprit attaches?" All members of the US armed forces are now, and will continue to be, Americans. This is a basic loyalty, a very big corps in which the esprit is unquestionable. What lesser corps demand esprit in the national interest is a question of judgment.

Take the first example that comes to mind—the Marines. They already have land and air units. Suppose ship units were added. Would that make a difference? And if it didn't, is it likely that the only sensible solution is to put everyone in the Marines? Is a separate uniform necessary to esprit de corps? Consider the submariners—or the paratroopers, who, in the person of the present Chief of Staff of the Army and his predecessor, not to mention the present Chief of Research and Development, seem to be

doing all right in the Army. Was a separate uniform necessary to give coherence to the Army Air Corps, or the Army Air Forces in World War II? Any reader of Cecil Woodham Smith's fascinating volume *The Reason Why* will get a sense of the attachment of British regiments of the Nineteenth Century to their "regimentals"; but the Tommies of the Old Contemptibles in World War I, the Desert Rats of Montgomery's Eighth Army, and the Gloucestershire Battalion in Korea suggest that "regimentals" were not all that important. Is it not a fact that apart from national loyalty, the *esprit de corps* that counts is that of the combat unit to which the soldier, sailor, or airman is attached? Arleigh Burke's DESRON 23, Curtis LeMay's Twentieth Air Force, and Merrill's Marauders needed no separate uniforms.

Experience would seem to indicate that that type of morale so vividly expressed in the Navy expressions "taut ship" and "happy ship" is the morale of a fighting unit and not of an administrative organization.

Objection: *That free transfer of personnel between functions can be obtained by a simple act of Congress permitting such transfer; no single uniform or single service is required.* Legally this is true, psychologically probably not. Men do not like to change political parties, nor young men from one college to another. Few who wear a service uniform would feel quite comfortable in severing the emotional and social relationships inherent in that uniform and taking on the uniform of a service that has to some extent been considered a rival. Where institutions have loyalties attached to them, here is a human reluctance to shift. So it is at least a possibility that putting all American military personnel in one uniform would make it as easy to shift from carrier-based air operations to air defense as it now is to shift from the Tactical Air Command to the Air Defense Command, from a cruiser division to the "cans," and from the infantry to a Nike battalion.

Economy? Whether any organizational change now proposed would make it cheaper for the taxpayer is something which the business experts, certainly not I, must discuss. Yet perhaps it would not be presumptuous for me to ask a couple of questions. If the free flow of personnel should bring it about that no officer or man felt that his career was tied to a particular weapon system, would it not be likely that obsolescent weapon systems would be more quickly abandoned and the weapon systems of the next war more quickly adopted? If it should prove that a single service in one uniform would permit the nation to make better use of its resources of expensively trained personnel, would that not in itself produce substantial economies?

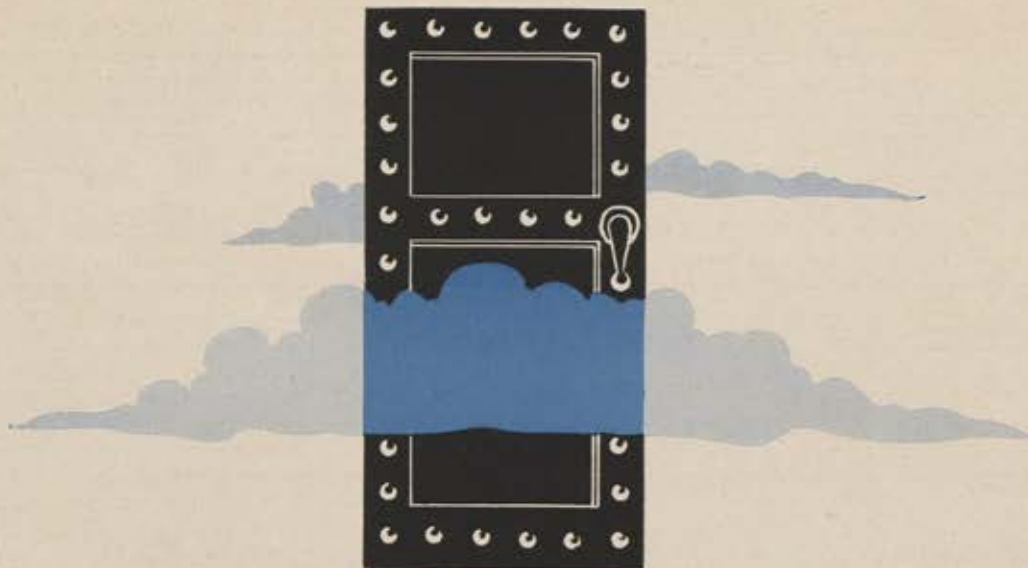
If an experiment is to be made in major organizational change, is not the moment propitious when international tensions are at least temporarily eased and no shooting war is going on? Also, is it not likely that this type of reform can best be put into effect under the leadership of a President in whose military wisdom and experience the nation justly has confidence?—END



About the Author

Maj. Margaret V. Berry, who's now at Headquarters USAF, was a member of the first WAC class at Des Moines. She got her baptism of fire in interservice matters as a member of the B-36 Task Force in 1949. Later she was chosen to head the Paris administrative staff

of the Four Chiefs of Air Staff Conference (US, United Kingdom, Canada, and France) in 1951, and served on other overseas missions, including the Joint Military Survey Group to Spain and two check-ups on the defensibility of SAC bases in Britain. For several years she headed the staff of the AF Secretary's Special Consultants, and among other things worked on the Korean Evaluation Project and the amendments to the National Security Act of 1947. Before leaving for her current assignment, she'd been Special Assistant to the Commander of the First Air Force.



OPEN SKIES

VS.

CLOSED DOORS

For ten years,
airpower has been
deterring war.

A proposed new mis-
sion—banishing
war—is far
tougher, maybe
even impossible

By William R. Frye

DRAWINGS BY EMIL WEISS

MOST Americans would define the future of airpower in terms of jet planes, missiles, space satellites, and interplanetary travel. They would be right—at least, half right. But if the United States has its way, airpower will soon be given an entirely new role in world history—an entirely new mission, not just new equipment with which to carry out the old mission. It will be given the job of banishing war from the face of the globe.

For ten years, airpower has been deterring war. This is not the same thing as banishing war; it is different in kind and in degree. The new mission is far tougher—indeed, it may be impossible. It has always been impossible before, throughout world history. But if it can be done, airpower will do it. And American airpower is offering to show the way.

The process of banishing war has traditionally been described as “disarmament.” This is still the word used,

but it no longer has the same meaning. It no longer means simply scrapping planes and sinking battleships and tossing M-1 rifles onto a scrap heap. In fact, it does not mean this at all, at least not in the first instance. American diplomats today think of disarmament as a result, not a cause. The word is used at the United Nations, in the State Department, and in Presidential Assistant Harold E. Stassen’s office to mean almost any course of action which increases national security by non-military means, and thus makes possible a reduction of arms and armed forces.

The reasoning is that if our homes, our families, and our country could be made safe—really safe—through an international treaty with provision for enforcement, then we would all be delighted not to have to spend money on so many expensive weapons. We would want to be positive we were not falling into a trap. But we would
(Continued on following page)

OPEN SKIES VS. CLOSED DOORS

not wish to say in advance that there could *never* be a set of circumstances under which we would be satisfied with a smaller defense establishment. There have been some diplomats in the past who approached disarmament from this angle, but not many. The prevailing view has always been that you simply gave up your arms, and thereby automatically got more security. Even among those who favored security first, there was none who was ever able to devise a disarmament treaty (a) that would make the participants really safe, (b) that could be enforced, and (c) that would be politically acceptable to all the countries affected.

For what is almost certainly the first time in recorded history, diplomats now believe they have accomplished "a" and "b." A treaty, or outline of a treaty, has been devised—largely in Washington but with important contributions by other countries—which would make the world as nearly safe from major atomic war as is reasonable and sensible to expect—so nearly safe that the chances of war on a big scale would probably be one in tens of thousands. This treaty could be enforced; airpower (alone of the armed services), science, and skilled manpower would be the principal tools for enforcement. What remains to be done is to make the scheme politically

acceptable to all countries, and particularly to the Russians.

The ideas behind this treaty have been outlined bit by bit at the United Nations over the past year, but they are only now being put together into an understandable whole. The principal object of the treaty would be to remove surprise from modern warfare. Why? Because no aggressor in his right mind would launch atomic war unless he thought he could achieve surprise; surprise would be essential to knock out the enemy's capacity for retaliation. Even with surprise, he might not score a knockout. Without it, he would be a fool to try. Remove surprise, therefore, and you remove all rational motive for major war. So the thesis goes.

How to eliminate surprise? Station someone, or some instrument, in a position to watch every weapon and every weapon carrier which could be used in a massive surprise blow. That means watching planes, missiles, missile-launching platforms (if and when built), submarines, navy carriers, and every equivalent. That would be a formidable task; but with modern electronic equipment—radar, TV, sonar, etc.—plus aerial reconnaissance and an elaborate communications network, it could be done. It could, that is, on two conditions: First, that all such weapons and weapon-delivery sys-

tems were identified and located at the outset; and second, that there were assurances that no new ones in significant numbers were going to be built in secret.

For this task, aerial photographs would be absolutely essential. It would not be enough by itself, but it would have to be included as part of the inspection process. How else, for example, to be sure no new airfields were being constructed? Or any new ICBM launching platforms being installed? How else to detect secret atomic factories easily and quickly? Radiation on photographic plates is a dead giveaway, and cannot be shielded well enough to escape detection from the air. How else, except by aerial photographs, to keep constant track of troop movements and mobile weapon installations? Air Force men are the first to acknowledge that aerial photography has its limitations, but they also know its extraordinary capabilities. And there are recurrent reports of remarkable new developments—for example, in the realm of X-ray photography from the air.

Aerial inspection being vital to any workable early-warning system, the United States somehow must sell the idea to the Russians. In the past, Moscow has thrown up its hands in horror at the idea. The plan has been presented to the Russians repeatedly since 1945; President Eisenhower by no means invented it. What the President has done is to play an intense world spotlight on it, and propose that it be used for a different purpose—for guarding against surprise attack, instead of for verifying weapon prohibitions and reductions.

The American purpose in focusing attention on aerial inspection is to bring maximum moral pressure on the Russians. This tactic has worked well in another highly important field, atoms for peace. In 1953 the President proposed an atomic pool under the aegis of the United Nations to assist underdeveloped countries. Moscow's first reaction was violent and abusive; but the idea caught on so well throughout most of the world that the Russians eventually felt obliged to come around, and the atomic pool is now about to be established. The campaign took nearly three years, but it has worked.

Similarly President Eisenhower's name and prestige were attached to the "open skies" plan. The President presented it in the most dramatic circumstances possible—directly to Marshal Nikolai Bulganin at the 1955 "summit" conference. The idea was





Meeting of the United Nations General Assembly. The US and its allies do not see eye to eye on "open skies."

given a world-wide publicity buildup such as few other ideas have ever had. Unfortunately, however, it has never really caught on. The Russians not only have shown no signs of being under pressure; they actually have become progressively more hostile as the months have gone by. At one point, in the beginning, they agreed to make aerial reconnaissance a part of the disarmament process, though a remote part; now they say it has "nothing whatsoever to do" with disarmament. Meanwhile our deep commitment to the idea has boomeranged on us; it has become a handicap in the process of negotiation. It has given the Russians a valuable bargaining asset.

Here is how it happened. The "open skies" plan was presented to the Geneva "summit" conference on July 21, 1955. Marshal Bulganin indicated he was favorably impressed by the President's sincerity, but he said nothing in public about the idea itself until August 4, when he made a speech to the Supreme Soviet.

"The real effectiveness of such measures [exchange of military blue-

prints and aerial reconnaissance] would not be great," he contended. "During unofficial talks with the leaders of the United States government, we straightforwardly declared that aerophotography cannot give the expected results, because both countries stretch over vast territories in which, if desired, one can conceal anything. One must also take into consideration the fact that the proposed plan touches only the territories belonging to the two countries, leaving out the armed forces and military constructions situated in the territories of other states." This was a rejection, but in the language of diplomacy, it was not at all conclusive. The objections were not really basic. The argument that the territories involved were too big could be shown to be false (assuming that sufficient personnel was available to sort out and interpret the photographic negatives); and the objection that other countries would have to be added—an argument that was to some extent inconsistent with the first—could be met. It was in fact met later that month in the five-nation UN Disarmament Subcommittee, when the United States broadened the plan to cover all overseas bases of both the Soviet Union and the United States.

We have no way of reading the Russians' mind, but we nevertheless do not have to look very far to find

the real reason for their resistance to "open skies." It would not be an equal bargain; we would stand to gain a lot more intelligence information about the Soviet Union than they would about the United States. Aerial photographs of ninety-nine percent of our territory can be taken, without too much risk, simply by hiring a private airplane—and we can be sure the Russians have long since done it. Our photography of the Soviet Union, however, has been spotty and incomplete. Reconnaissance planes cannot penetrate very far beyond the Soviet frontiers without being shot down, and "weather" balloons equipped with cameras depend too heavily on wind currents.

There also must have been a political reason why aerial photography was unattractive to the Russians. On the photographic plates would be detailed evidence of their slave-labor system which we could use with devastating effect if we chose. In the year that has followed the "summit" conference, there have been reports that the slave-labor camps were being broken up; but in 1955, at least, this must have been a powerful reason for rejecting the idea of "open skies."

Such being the case, it is perhaps surprising that Marshal Bulganin was as mild as he was in rejecting the Eis-

(Continued on following page)



Eisenhower



At UN, from left: Paul Martin, Jules Moch, Dragoslav Protitch, Arkady A. Sobolev, Sir Anthony Nutting, Mr. Lodge.

OPEN SKIES VS. CLOSED DOORS

CONTINUED

enhower plan. As of mid-summer 1955 the Russians were acting like people who thought they might eventually have to come around, or at least, like people who were afraid to affront world opinion by appearing too rigid.

The basic idea of an early-warning system could not have been abhorrent to them. It was, in fact, their own; they had been the first to present it. For months their armed services newspapers had been printing stories about the danger of surprise attack in the atomic age. In May 1955 they had come forward with what they said was a way of eliminating the danger—station ground "control posts" at key rail, road, sea, and air junctions to watch for mobilization of men and conventional weapons in numbers sufficient to launch and follow up a surprise aerial assault. Bulganin repeated the idea at the "summit" on the same day President Eisenhower spoke. The main difficulty with the plan—it has come to be called the "Bulganin plan"—is that a saturation blow, by planes or missiles, or both, might come first, and mobilization of manpower follow. Also, the Russians never made clear whether the "control posts" would be mobile or not, and whether they would be equipped with adequate instruments and communications facilities. We have incorporated the idea of ground control posts, with instrumentation and mobility, into our early-warning system.

The first, comparatively mild Russian rejection of the "open skies" plan gradually hardened. Whereas in August it had been "ineffective," in the fall and winter it came to be a "menace." It would simply provide the Air Force with target identification, they said. The Russians appreciated the President's "good intentions," they said, but complained that his plan was not disarmament—it was just inspec-

tion. Link it to disarmament, declared the then Foreign Minister Vyacheslav M. Molotov in November (at the Foreign Ministers' conference) and "with this proviso, the Soviet government is prepared to consider the above-mentioned [Eisenhower] proposal favorably, taking into account that the question of aerial photographs, as one of the forms of control, will be considered in connection with the establishment of control over the implementation of the respective international agreement in the final stage of carrying out measures directed toward the reduction of armaments and the prohibition of atomic weapons." This sentence must have been a mouthful, even for Molotov. It was, of course, a conditional acceptance; but the condition was so severe as to make it in fact a rejection. The "final stage" of disarmament, during which aerial inspection was to be "one of the forms of control," was the stage in which atomic weapons theoretically were going to be eliminated. Actually, both the Soviet Union and the United States had admitted that no such step could be enforced, and it was perfectly clear that neither one had the slightest intention of ever doing it. Molotov's "final stage" would never have arrived, and he knew it.

Why did the Russians now dare to toss monkey wrenches, whereas previously they had tiptoed? Because they had discovered that the idea was not as popular with world opinion as they had feared it might be. Unlike the atoms-for-peace plan, it had not caught on. Even among the United States's allies, it had not gone over—in fact, it had caused a deep and serious split between them and Washington. So Moscow, relieved of pressure, could simply sit back and enjoy the fun.

The split between the United States and its allies first showed up

in the UN Disarmament Subcommittee, which consists of Britain, France, and Canada in addition to Russia and the United States. After long, patient efforts in this subcommittee, Britain and France—particularly France—had narrowed the gap between East and West on old-style disarmament, that is, the kind of disarmament that would begin with the reduction of weapons, under inspection, and produce greater security, at least in theory, as a result. Here was the United States' tossing this idea wholly out of the window, and asking for security first. To be exact, the United States was asking for aerial inspection first, which we said would produce security, when combined with the Bulganin plan; and in the atmosphere of international confidence thus produced, we would negotiate arms reductions. These negotiations would be easy, we said, because the weapons would not be so badly needed. Thus the "open skies" plan was the "gateway to disarmament." We "placed a reservation" on all other disarmament positions we had taken in the past—that is, we shelved them. For a while, in the subcommittee session of August-September 1955, Stassen practically refused to talk about anything but the Eisenhower plan. He dwelt on it so persistently he began to sound like a broken record.

The Russians accused us of wanting "control without disarmament." They scoffed at our assurances that disarmament would follow. They wanted to see in black and white what "lay beyond the gateway." These tactics hit home with our allies. It was very close to what they thought, but hesitated to say. They had to convince their people that they were making progress toward actual arms reduction; disarmament is politically popular in Europe. No opposition party in

(Continued on page 55)



Rascal the strike from "nowhere"

Bell Aircraft's GAM-63 Rascal is an air-launched guided missile designed to carry out bombardment of strategic military targets—*without the need of bombing runs on the target.*

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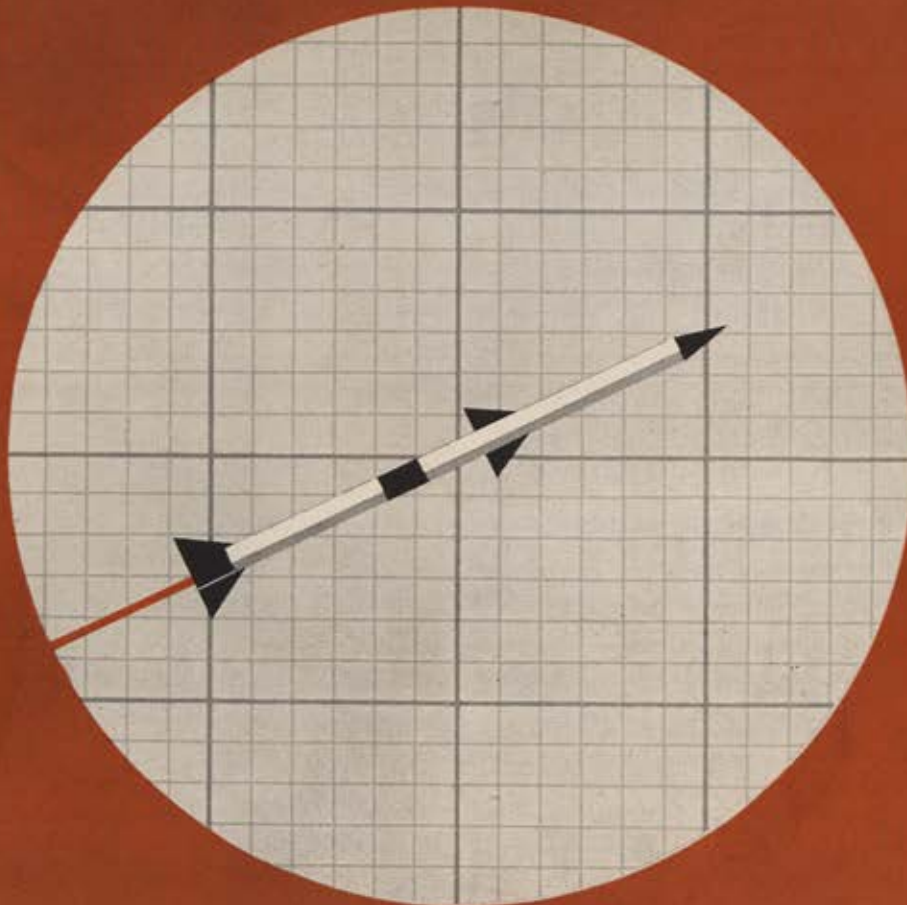
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Stassen



Gromyko

the world, except the Democratic Party in the United States, is in a position to win votes by charging that the party in power is not spending *enough* on armament. The governments of Britain and France simply could not go along with the United States on anything that could be made to look like "inspection without disarmament." In France, there was a real danger that the Communist Party, already able to poll 5,000,000 votes, would make hay with the issue.

The sensible thing for the United States to have done would have been to have spelled out what did lie beyond the gateway. But we ourselves did not know. The Pentagon, the State Department, and Stassen's office could not agree on it; within the Pentagon, there were serious Air Force-Army differences. To what level would armed forces ultimately be cut? This issue raised the whole, difficult problem of what kind of a war we wanted to be prepared to fight.

In 1952, when the Russians were married to a huge land army, we had confidently proposed a manpower ceiling of 1,000,000 to 1,500,000 men for the United States, the Soviet Union, and China, knowing—or thinking that we knew—the Communists never would agree. We could reap the benefit of being for disarmament without any danger of having to disarm, at a time and under circumstances when disarmament would have been folly.

But in May 1955 the Russians did agree. Apparently having gone through a military "new look," and having down-graded the importance of manpower, they bought the 1,500,000-man force level. We gulped and took another look at the deal. For us to go through with it would have been to

abandon, or skeletonize, our overseas bases, including NATO, before the world's major political problems—such as the unification of Germany—had been solved. We would have had to cut even more drastically than Adm. Arthur W. Radford later proposed (i.e., to 2,000,000 men by 1960) with such pyrotechnic impact. No wonder we had to "place a reservation" on our previous positions, including the 1952 force level.

The Russians refused to negotiate on the early-warning system, including as a first step the "open skies" plan, until we settled upon a force level. This, it developed, was their price; if we wanted the intelligence advantages of aerial reconnaissance, we would have to give them the strategic advantage of a break-up, or skeletonization, of our overseas base system. There were other elements in the deal, but this was the heart of it.

It was a very high price tag which the Russians had put on aerial reconnaissance. But we ourselves were partly responsible for the fact that we were trapped. We had played up the "open skies" idea to huge proportions; we ourselves had placed great value on it. We had even committed the prestige of our President to it. We were in the position of a man who had gone to the only automobile dealer who had a certain sports car for sale, and had told him we absolutely had to have the car; without it our wife would divorce us; our mother-in-law could not be taken to the hospital; our golf club would cancel our membership . . . and so on. Being an unprincipled dealer, the salesman had doubled the price with every sentence we spoke—and there was little we could do about it. We could go to the Better Business Bureau, but

they would tell us we did not need a sports car, that we could get along with a used sedan.

The United States did go to the international Better Business Bureau, the United Nations, and did complain about the exorbitant Soviet price. We got a certain amount of satisfaction, but not enough to bring any effective moral pressure on Moscow. The UN's verdict (in December 1955) was that "open skies" was a fine idea, but that it was also important to put into effect "all such measures of adequately safeguarded disarmament as are now feasible." In other words, the United States should spell out what lay beyond the gateway, and commit itself to pass through. There were times in the UN General Assembly debate in 1955 when it seemed that as much moral pressure was being brought to bear on the United States as on the Soviet Union.

Moscow trimmed its sails to the prevailing wind. In a letter to President Eisenhower in February 1956, Bulganin dropped Molotov's reference to the "final" stage of the disarmament process as the time when aerial reconnaissance could take place, and said instead that "appropriate [aerial] control, the methods of which could be agreed upon, would be justified and

(Continued on following page)



Lodge



Moch



Nutting

necessary." When the Disarmament Subcommittee reconvened in March, the Russians put forward a plan which provided that "at a specified stage (which in fact they did not specify) of the executive of the general disarmament program, when confidence among states has been strengthened, the countries concerned shall consider the possibility of using aerial photographs as a method of control."

The United States, too, made a bow in the direction of the UN resolution and of our allies' feelings. We spelled out to some extent what would lie beyond the "gateway." We offered a cut of about fourteen percent in our manpower, down to 2,500,000 men, along with other steps which would have curbed nuclear weapons. We persuaded the British and French (not without some difficulty) to drop the 1,500,000-man force level from their joint plan. When the Russians discovered this, they were furious, and the meetings became so fruitless that at one point the French delegate, Jules Moch, asked "Why?" when it was proposed that the group meet.

That was this spring. This summer, when the whole subject was debated in public at the UN, Russia's Andrei Gromyko had so hardened his attitude on "open skies" as to refer to the idea as "notorious." "Those notorious photo-reconnaissance flights," he said, "have no relation whatever to the problem of disarmament or to control." An extraordinary thing to say in the light of the Soviets' own March plan, calling aerial photography "one of the methods of control!" And Gromyko added: "We do not consider that the consideration of this question in the Disarmament Commission will do any good to anybody or for the cause." He seemed to be particularly incensed

by the abandonment of the 1,500,000-man force level and by the fact that aerial reconnaissance was still a precondition, a first step on which all else in the disarmament process would depend.

At this, M. Moch, dismayed by the breakdown of the bargaining process, abandoned the public appearance of western unity, and belittled aerial reconnaissance, saying: "It is, in some cases, a convenient method of investigation; but in others, its value is slight." It would not detect rocket-launching platforms, he said, once they had been "properly camouflaged." Both he and Anthony Nutting of Britain also split openly with the United States on the 1,500,000-man force level, reaffirming that they were prepared, as in 1952 and 1954, to set that as the final goal.

In the face of this deterioration of the American position, Henry Cabot Lodge, Jr., had to act. He lowered the United States's asking price for disarmament in two respects: he made aerial inspection an "integral part" of disarmament instead of a first step, a precondition; and he hinted broadly

that we were willing to begin by photographing just a token portion of the Soviet Union, in return for a similar limited trial exercise in the United States. What he was saying, in effect, was that if we could get aerial reconnaissance eventually, that would be enough. It would no longer have to be the "gateway" to disarmament; it could accompany and even follow some steps in the disarmament process. Gromyko made no direct response.

Where does this leave the "open skies" plan today? If we had made this kind of concession six months ago, it would have put us very close to what the Russians were then saying; but since then, the Kremlin has backed away, and there is no assurance now that we can get even this much. Moreover, the Russians still want us to cut down to 1,500,000 men as the price of a full-scale disarmament agreement, and not everyone in Washington agrees that the kind of security we would get from an early-warning system and from nuclear curbs would be good enough to justify the abandonment or skeletonization of our overseas bases.

The Army, of course, is strongly opposed to any manpower reductions, arguing that present force levels are needed to stamp out "brush-fire" wars, the kind which (they say) airpower does not deter. Until this dispute is resolved, there cannot be any over-all disarmament agreement with the Russians. We could have a reduction to 2,500,000 men, with ground inspection, if we wanted it; Gromyko offered to come that far to meet us last July. But that would create a roseate glow, an appearance of agreement, without providing the substance.

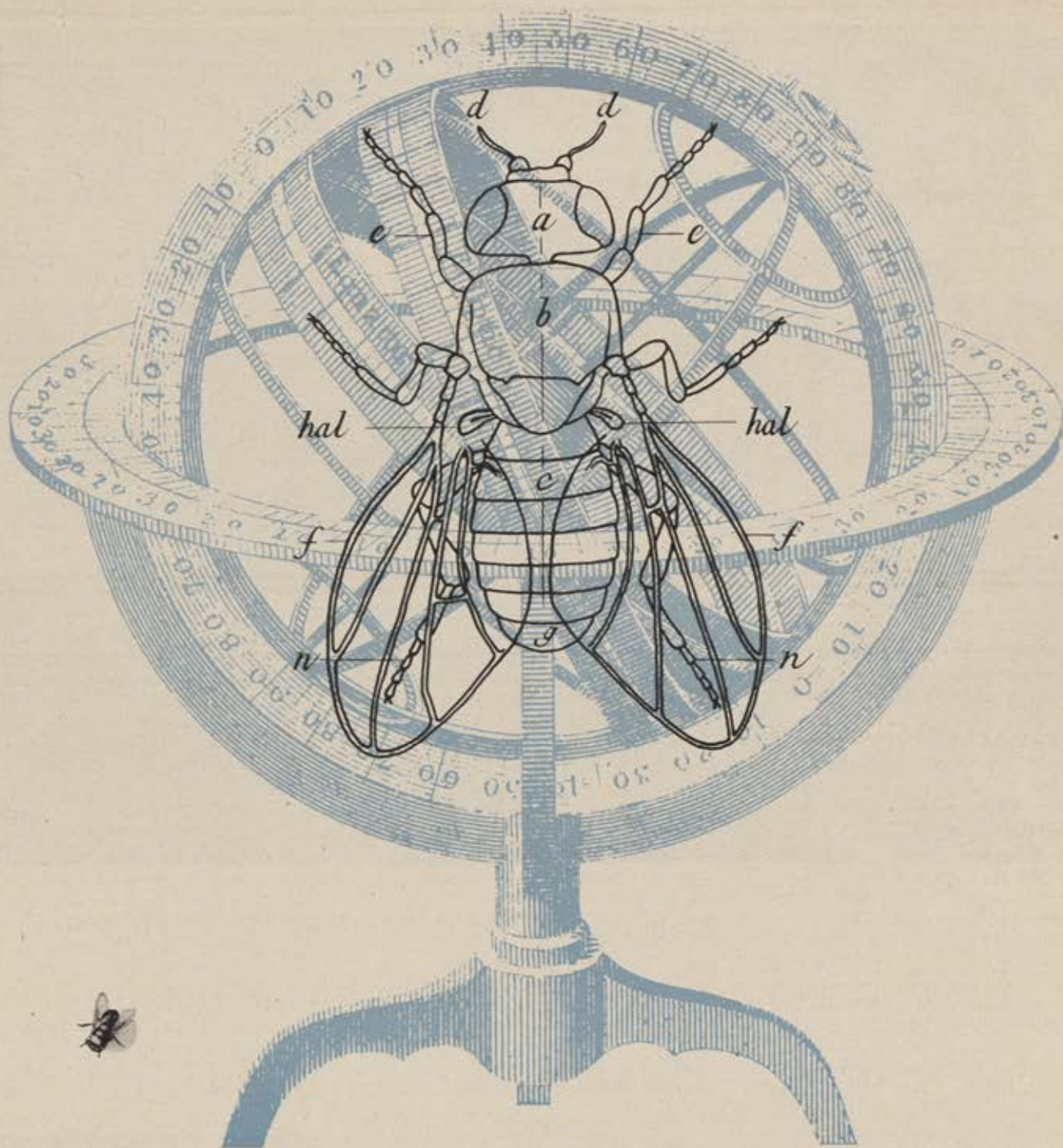
Not until airpower is harnessed to make atomic war impracticable—that is, not until the American early-warning system, including "open skies," is sold to the Russians—will the basic problem of safety in the atomic age be on the way to solution.—END



About the Author

William R. Frye has been the UN correspondent for The Christian Science Monitor since 1950. A 1940 graduate of Harvard, he has been a writer, lec-

turer, and radio and TV commentator for fifteen years. He has made an intensive ten-year study of the problem of disarmament, and is also a specialist on the diplomacy of atoms-for peace. He is author of the booklet *Disarmament: Atoms Into Ploughshares?* and co-author of *The United States' Stake in the UN: Problems of UN Charter Review*. He received a certificate from the Overseas Press Club in 1955 for "Best reporting originating in the US or UN on world affairs." When asked whether or not he was married, he answered, "definitely."



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Lightweight structural metals with high strength, stiffness and elasticity at elevated temperatures! A new group of Dow magnesium alloys offers a great combination of these properties without the fabricating difficulties normally experienced with other high temperature materials.

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WHAT THEY'RE SAYING

*Highlights and sidelights
on the airpower scene
from some experts*

OF LATE there has been a wealth of visible evidence that the mightiest of all potential aggressors is determined to surpass the technology in general of the United States, and our airpower in particular. I needed no trip to Moscow to convince me of this.

Nor did I need that trip to make me realize that the Communists are racing through generation after generation of new weapons at a pace never exceeded in history. Not even the Nazis bent on aggression and avowed domination, and backed by a technical and industrial complex, geared to their own chosen D-Day, made progress at as fast a rate as the Communists are presently achieving.

The evidence can be seen in the form of big jet bombers and swift jet fighters which wing their way in ever increasing numbers through Soviet skies. The evidence can be heard in the reports of atomic explosions originating deep within the Soviet land mass.

Though this kind of evidence is disturbing, I think the Soviet efforts to meet the demands of their own technology for highly skilled professional men and technicians is even more ominous in the long run.

More than anything else during my trip to Moscow, I was impressed by their determination to erect a tremendous technological base, backed up by a huge educational system, and fed by vast numbers of youths who have little choice in the matter. As a matter of fact, the engineer, the physicist, the chemist, and so on, rank so high in the Communist system that those kinds of professional careers are coveted. The Soviet problem is not to encourage more young men and women into technical careers. It is more to weed out the less adept and select the best for further education and more productive careers.

—Gen. Nathan F. Twining, USAF Chief of Staff, before the National Security Industrial Association, Washington, D. C., September 13, 1956.

While the principal mission of a military medical service is care of uniformed personnel and the medical aspects of combat readiness, I believe it would be interesting to mention the extent of medical care provided for families of those in uniform.

Exclusive of military patients, we had between six and seven million outpatient visits to our clinics last year by family members. This constituted approximately one-third of the total outpatient visits. Some 163,000 of these were admitted to our hospitals, contributing a daily average bed occupancy of 2,580. This number does not include newborn infants which totaled approximately 70,000 last

year. In 1955, a baby was born in one of our Air Force hospitals every seven minutes, night and day, with no time off for Sundays or holidays.

—Maj. Gen. Dan C. Ogle, USAF Surgeon General, at the dedication of the new base hospital at Wright-Patterson AFB, Ohio, September 21, 1956.

Progress in aviation is no longer possible, by making advancements in only one of the engineering areas involved. Commensurate progress in all fields is necessary to attain successively higher plateaus. Today's aircraft are closely integrated systems, rather than haphazard combinations of loosely connected components, as they were not so long ago. For example, evolution of the jet engine did not in itself give us combat-worthy jet aircraft. There had to be commensurate progress in aerodynamics, electronics, structures, controls, instrumentation, and ground facilities, before jet aircraft could be employed effectively in routine operations. Continued advances in propulsion capability cannot be exploited, unless similar advances, in aircraft design, permit the effective utilization of the new engines.

—Lt. Gen. Clarence S. Irvine, USAF Deputy Chief of Staff for Materiel, before the American Society for Testing Materials, Los Angeles, Calif., September 19, 1956.

I am sure you all wish you could go directly into combat aircraft in hot combat units. That's good. Every pilot worth his salt feels that way throughout his career. Later on, many of you will be flying combat aircraft, but let me set you straight on one thing. Every job is important. Every job at every level that is done well, with imagination and enthusiasm, adds to our over-all effectiveness. Every job that is not done well detracts from our effectiveness.

Flying is thrilling, and the Air Force job is exciting. Therefore, it may come as a disappointment to you when you find out how much of the work that has to be done is not exciting or thrilling. Believe me, the biggest test of your discipline and self-control will be how you do the unexciting jobs. In a lot of ways it is easier to be a hero than it is to keep up your enthusiasm over the routine work that is so vital to our continued progress in the Air Force.

—Gen. Nathan F. Twining, USAF Chief of Staff, before graduates of a pilot training class at Reese AFB, Lubbock, Tex., August 14, 1956.

The next few years, however, may be more complex in some respects than the past few, and the determination of the size and composition of collective armed forces will become more difficult.

For example, the impact of revolutionary future changes in weapon systems is difficult to appraise, and there can be honest and wide differences of opinion.

In addition, planning collective forces requires a tremendous understanding of national and international situations and, of course, not all nations see things exactly the same. Not all of us view the world situation in the same light, or through the same eyes. Each nation has to evaluate in its own terms the potential enemy and the courses of action that enemy might choose.

Then when we put all our considerations together—well, suffice it to say that we all do not necessarily arrive at the same conclusions with respect to the collective forces to be raised and maintained.

—Adm. Arthur Radford, Chairman of the Joint Chiefs of Staff, before the Executives' Club of Chicago, Chicago, Ill., September 21, 1956.

LOCKHEED F-104
INTERCEPTOR

DOUGLAS B-66 BOMBER

BOEING B-47 BOMBER

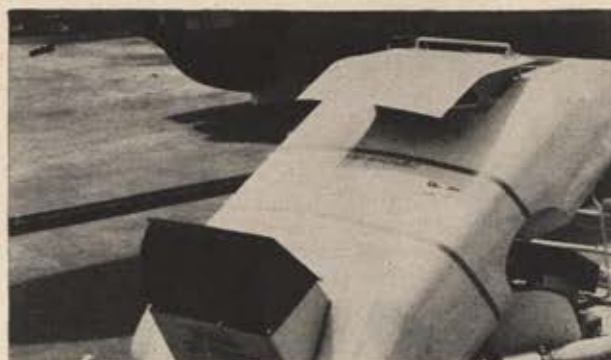
Five Examples of How General Electric



1 G-E TURBODRIVES AND TURBO-PUMPS convert air from engine compressors on the B-52 into drive-power for the giant bomber's generators and hydraulic-power for landing gear, bomb-bay doors and other hydraulically-actuated devices.



2 G-E AIRCRAFT INSTRUMENTS, serving the B-47, include unique mass fuel flowmeters for in-flight refueling which are capable of measuring up to 10,000 pounds of jet fuel per minute with accuracy within one per cent. Flowmeter systems include transmitters, power supplies, and indicating instruments.



3 NEW G-E J79 TURBOJET, delivering more power per pound than any engine of comparable size, receives run up test in B-45 flying test bed. Now in production for the Lockheed F-104A, world's fastest fighter, the J79 is joining the more than 31,000 turbojet engines pro-

These are just a few results of General Electric progress in the development of advanced aircraft equipment. Today G-E engineers and scientists are applying the extensive resources and facilities at their command to explore the mysteries of hypersonic missile and aircraft flight in a continuing effort to provide the advanced equipment necessary for a strong air defense tomorrow. General Electric Company, Schenectady 5, N. Y.

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duced by General Electric for the Air Force since 1941.

Every 24 hours at USAF bases around the world, G-E turbojets are flying 5,500,000 miles, or the equivalent of an airline with 340 four-engine transports.



4 NEW G-E CONSTANT FREQUENCY POWER PACKAGE produces 20 KVA from a 105-pound system. This lightweight development is based on the 9-KVA constant drive speed used on the A4D and generators and controls equipping the F-101A fighter-bomber and B-66 bomber.



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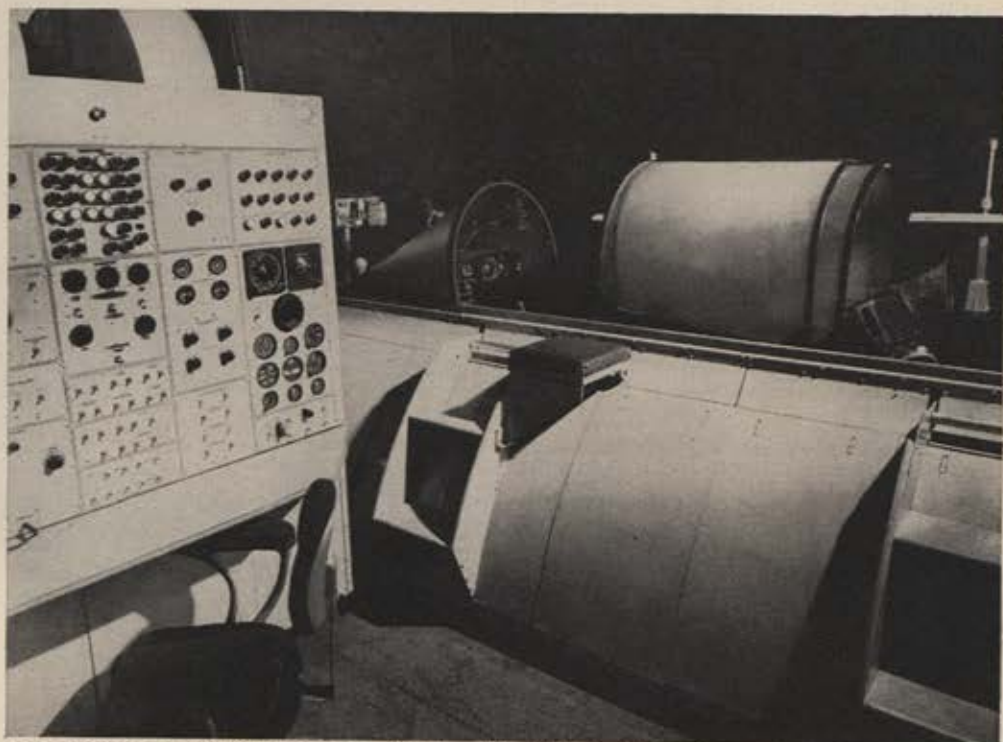
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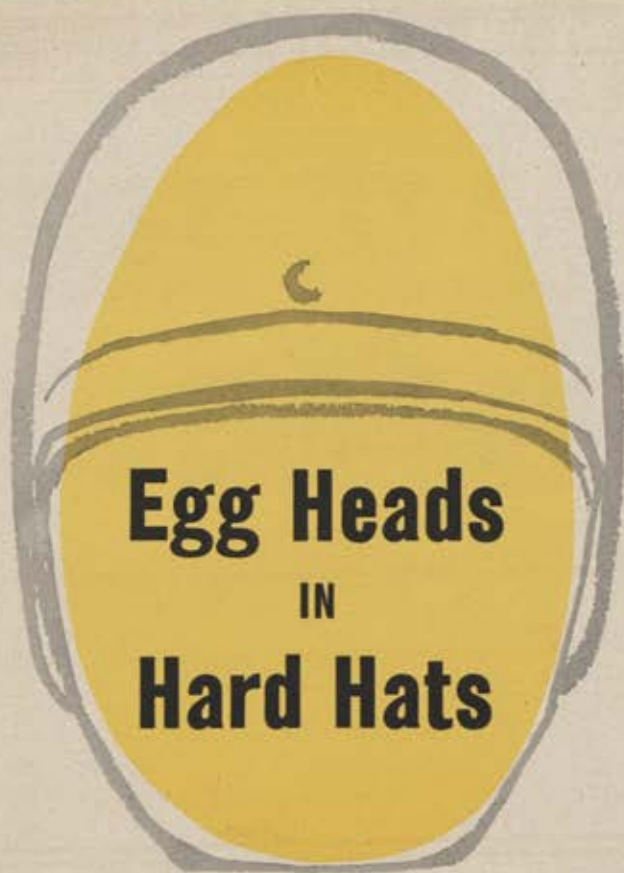


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Egg Heads IN Hard Hats

By
Ed Mack
Miller

New kinds of airplanes have produced a new breed of test pilot—half-airman, half-scientist. These double-domes shake the bugs out of the electronic gear that puts our newest air-to-air missiles on target

THE SKY above the shimmering Mojave was pastel and unmarked by cloud. Only a small exclamation mark of contrail, far to the north, touched the solid blue. It was an exclamation mark, too, for 30,000 feet above the desert a pilot was in trouble.

At least he was confused, for he was screaming along upside down making a simulated rocket run by automatic control on a target being pulled by a B-45. The only trouble was that he shouldn't have been upside down. As the hot little ship picked up speed and started to make negative G corrections to get in firing position, the pilot started to panic. What if he should red out? What if the wings should come off?

He started to break the attack off, for it was getting mighty uncomfortable, hanging there upside down with all the blood going to his head. But he hesitated. He wanted to make sure. He gritted his teeth under his oxy mask and hung on for a little while



California ANG's Brig. Gen. Clarence A. Shoop heads test operations at Hughes. He began flying in 1930.

longer. Just a little longer. And while he hung on, he was thinking, observing, remembering. He had a report to make when he got on the ground. . . . If he didn't red out . . . If the wings didn't bust off. . . .

Thirty minutes later, safely on the ground again, he described the trouble to technicians in technician's language. The explanation, reduced to layman's terms, was simply this: Someone had forgotten to tell this intricate and elaborate new electronics system which way was up. Consequently, when he had locked on the target, the closest and easiest way for the system to make the attack was upside down, and so the plane had rolled itself over and had been making an excellent inverted attack.

The pilot grinned.
"Real nice system," he laughed as he picked up his hard hat and 'chute.
"Hard on pilots, though."

In the decade-plus since World War II, a new type of test pilot has emerged from the American sky—a man who is the exact antithesis of the "Flatspin Franky" of the Thirties, who left a broad path of empty bottles, bruised blondes, and broken airplanes in his ebullient, if irresponsible, wake.

This new addition to the ranks of highly specialized professionals has, in the past few years, quietly taken his place beside two of his more publicized brothers, the "Six-G" airframe test pilot, who "shakes the bugs" out of development aircraft, and the "edge-of-space" experimental test flyer, who drives the dangerous "X" models to new altitudes and undreamed-of speeds.

Few can qualify for such a job for it demands a highly educated mind, a healthy, well-coordinated body, and a courageous, questing spirit. A classified ad, designed to find electronic test recruits, would, in fact, verge on the ridiculous:

"Wanted: Veteran all-weather pilot, with extensive jet experience, at least a year of aircraft test background, green card, doctor's degree (or at least master's) in engineering. Must be able to assume responsibility of management; must be sober, articulate, and literate to a high degree; must be physically perfect, with coordination and reflexes nonpareil. Must be able to keep pace with rapid advances in the nuclear arts. Must have superior motivation, principles, and patriotism, an unsullied security record, and a determination to give life if necessary to maintain American air superiority. Pay excellent; advancement rapid; the sky's the limit."

(Continued on following page)



Convair YF-102. Much flight testing is highly dangerous because it is done early in the history of a new type plane.

As one executive said: "You don't find 'em or buy 'em; you breed 'em or build 'em—and then try to keep your competitor from stealing 'em."

Perhaps, the biggest pilot-pool of this type scientist-flyer is maintained by the Hughes Aircraft Company in Culver City, Calif. (also Tucson, Ariz., and Holloman AFB, N. Mex.). Hughes manufactures the E-4, E-5, and E-6 weapon systems for the AF, and also manufactures the Falcon missile, ground radar units, and other electronic gadgets.

To run their test show, they picked a pilot who had technical ability, varied experience, and foresight.

He is Clarence A. Shoop, and he came to work for Hughes in 1947. Shoop had started flying in 1930 as a cadet at March Field. A member of the California Air National Guard

since 1933, he spent six years on active duty with the 115th Observation Squadron as a first lieutenant. Just before Pearl Harbor, after being stationed as Assistant Air Corps Representative at the Douglas Aircraft Company's Santa Monica plant, he was transferred to Lockheed and assigned to experimental test flying on the then-new P-38s and modifications to existing types. He was one of the early P-38 pilots, as well as one of the first test pilots to fly Lockheed's Constellation. Later he was one of the first pilots in the nation to fly jet airplanes; testing the XP-59 (the first jet plane to fly in the US) and the XP-80 and a great many other experimental planes.

He went overseas to the Eighth Air Force early in 1944, serving with the 55th Fighter Group in the air

war over Western Germany. He took command of the 7th Photo Reconnaissance Group on June 5, the day before the invasion of Europe. During the invasion period his group flew many recon missions and was considered a top-ranking photo reconnaissance group (they were credited by General Eisenhower with furnishing him his most valuable information on the progress of invasion in its earliest stages, and it was shortly afterwards that Clarence Shoop received his promotion to full colonel).

Shoop returned to the US early in 1945 at the request of the Air Materiel Command at Wright Field and was assigned to command the Muroc Flight Test Base. Returning to civilian life at the end of the war, he became commanding officer of the 146th Fighter Group, Air National Guard, with headquarters at Van Nuys, Calif., from its formation in 1946 until he took command of the 146th Fighter Wing in the latter part of 1950. He received his federal recognition as brigadier general on January 24, 1955.

Prior to the war he was superintendent of operations for the Wilshire Oil Company. He has been secretary-treasurer and, more recently, vice president of the Associated Motion Picture Pilots. He has done quite a little motion picture flying, and has been called upon both as a pilot and as a technical advisor. Included in the films in which he either flew or acted as advisor have been: "So Proudly We Hail," "Blaze of Noon," "Gallant Journey," "Saigon," "One Minute to Zero," "Jet Pilot," and others.

Shoop, who recently has appeared in TV productions produced by his friend Robert Cummings, is married to Julie Bishop, motion-picture and

Robert DeHaven, fourth ranking ace in the South Pacific during World War II, assists General Shoop. Like Shoop, he is a jet pilot in the California ANG.



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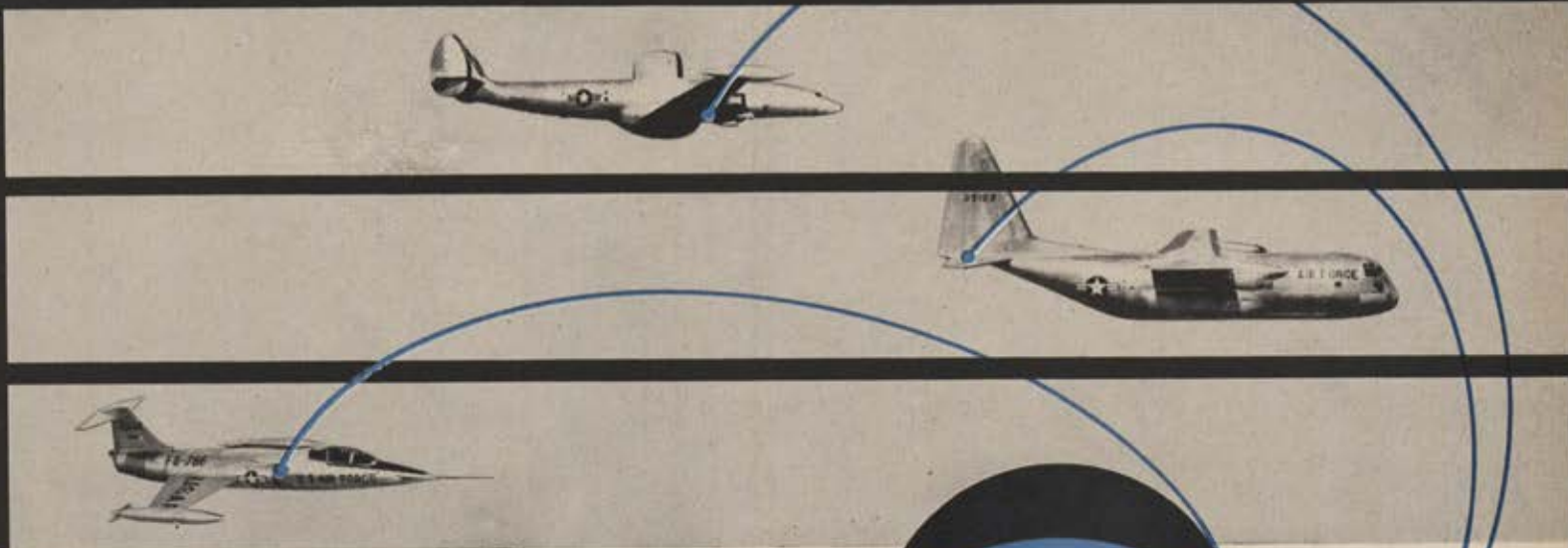
GPL Ruggedized TV Camera, mounted to wheel wall housing without shock insulation, monitors landing gear perfectly during take-off, flight, landing.

BENEATH TAIL STABILIZER

Mounted camera enables pilot to observe waver of air flow tufts on horizontal stabilizers as plane approaches stall.

IN JET PLENUM CHAMBER

Camera, dolly-mounted and wheeled through curved air ducts into otherwise inaccessible chamber, checks for presence of foreign objects.



the TV camera that can take it *it's RUGGEDIZED*

Unique in closed-circuit TV, this ruggedized, remote-control camera manufactured by GPL packs into six pounds the super-rugged construction that enables it to operate efficiently in extreme environments. It is the only camera to have performed successfully under flight conditions with forces exceeding 15 G's in each of its three axes. Noise levels as high as 175 decibels and altitudes over 70,000 feet do not affect picture detail. Camera can withstand temperatures of minus 55°C to plus 60°C, humidity levels of 100%, and extremely high wind velocities. Though not hermetically sealed, it is spray-

proof... operating for 800 hours in an icing tunnel, the camera showed no sign of damage or operating failure.

Including motors for remote control of iris and focus, the camera is only 7" long without the lens, 5 $\frac{3}{8}$ " high, 3 $\frac{1}{8}$ " thick—small enough to fit in almost anywhere. It operates on a 525-line system, 60 fields interlaced, 550-line resolution. No external shock mount is required. All controls can be handled from a remote location. Power requirements are minimum.

This new TV camera results from special

aviation test needs of Lockheed Aircraft Corporation. Because of its standing in the TV field, General Precision Laboratory was chosen by Lockheed to produce the small-size, remote-focus camera it had developed. In it, ruggedized components are combined in a unique design that isolates critical vidicon tube and video circuit areas from external vibration. GPL has production-engineered it for widest application in heavy construction, engineering research, automotive testing and many other industrial and military operations, as well as in aviation. Write for further information.



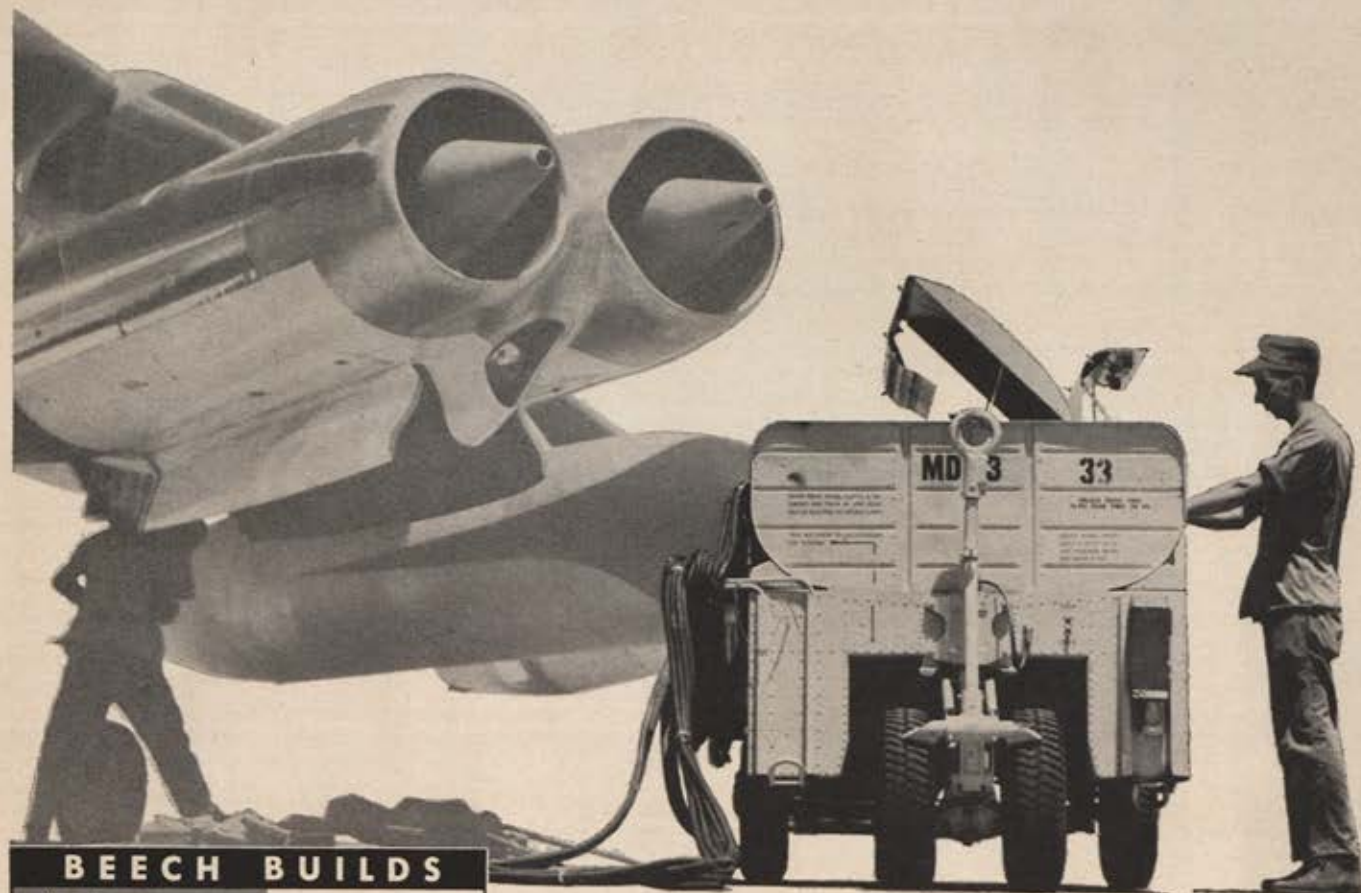
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Building auxiliary ground power units for military jets is only one of the many complex research, development and production problems solved by BEECHCRAFT. Right now, for example, Beech craftsmen are at work on 42 major production projects ranging from complete aircraft to subcontract components and assemblies.

For more than 24 years Beech Aircraft Corporation has been a leader in the aviation world with an enviable reputation for dependable products and on-schedule deliveries. Today its list of subcontract clients includes some of the most famous names in aviation . . . *Lockheed, Republic, McDonnell, Convair* and others who demand and receive the highest quality production from BEECHCRAFT's modern assembly lines.

Beech Aircraft Corporation has five major plants with 1¾-million square feet of plant area and more than 6,000 skilled employees . . . *with capabilities*. BEECHCRAFT's manpower, tools and experience can be put to work to solve research, development or production problems. Whatever your needs, telephone or write BEECHCRAFT's Contract Administration Division today.

Beechcraft

BEECH AIRCRAFT CORPORATION, WICHITA, KANSAS, U. S. A.



Pilots with the experience of these electronics test pilots are hard to come by. As one executive put it: "You don't find 'em or buy 'em; you breed 'em or build 'em—and then you try to keep your competitor from stealing 'em."



Before test hops, a stop at the parachute loft is a must. Above, pilot Fred Ruffolo, left, and Dave Burwell.

television star, and they have two children, a daughter, Pamela, eight; and a son, Stephen, six. He has a daughter, Sally, who is seventeen, from a previous marriage.

Although pressed hard with a full schedule of Hughes and Air Guard executive duties, Shoop still gets his share of flying time. He has had more than fifteen years of experimental test flying of many types of airplanes and equipment including single-engine and multi-engine conventional fighters, two- and four-engine bombers, two- and four-engine transports, and single- and multi-engine jets, the latest being the YF-102 and F-102A delta-wing fighters. He also has conducted the early phases of testing on all-weather fire-control systems, radar, and the air-to-air firings of the Falcon missile.

But when Shoop came to Hughes as its first electronics test pilot, he came with a certain uneasiness. As an old day-fighter pilot, he was a little doubtful that a plane could hit a target or a plane without ever seeing it. He was willing to give it a go, however, and soon he started flying the new-fangled all-weather jets off a sod field. The whole thing, he admits now, was "a bit on the hairy side."

As the work load picked up, a California Air National Guard pilot, Robert DeHaven, was hired to assist Shoop (like his boss, DeHaven is also married to a famed TV and film personality, singer Connie Haines).

As Hughes started to build up its Flight Test Group, it was faced with a decision of whether or not to hire experienced test pilots. But it was decided that it would be better to take well qualified pilots and train them in test work, inasmuch as the electronic type of testing that they were embarking on (utilizing radar computers and other radical departures)

was indeed a new art, an art that called for a combination of flying ability, engineering education, and just plain guts.

As the pilot seniority list grew, it began to look like a cross section of an MIT faculty listing, rather than a bunch of hot-rod radar and fire-control jet test jockeys. A number of the pilots are engineers; one of the pilots holds a doctor's degree, another an MS degree, and even the professional radar observers are also jet pilots. All new test pilots go through an indoctrination course at the plant in the basic systems of electronics and engineering. Most have been all-weather radar pilots, which simplifies the training; but even with the most experienced it takes a year to a year and a half for the pilots to become well enough indoctrinated in the systems and basic theory for them to participate effectively in the test programs.

The pilot group is made up of men whose combined flight experience would furnish raw material for a dozen novels—and would nostalgically touch many of the aviation highlights of the past few decades.

One was actually shot down by American anti-aircraft when he flew into Pearl Harbor, December 7, 1941, unaware of the Japanese attack. The same pilot landed on the carrier *Yorktown* only minutes before it was attacked and sunk. Another, like General Shoop, has flown almost every jet since the old P-59 Airacomet. Bob DeHaven was the fourth ranking ace in the South Pacific. One of the pilots soloed at the tender age of fifteen, another pioneered helicopter instrument flight, and a third is one of the few Americans to have flown the Avro Jetliner. One of the F-102 pilots, Oliver Deal, didn't let either World War II or the Korean action interfere with his desire to

marry, raise a family, get an education, and pursue his hobbies. Besides a box full of medals he won as a Marine pilot in both conflicts, he has accumulated four children, a Ph.D. in physics, and a flock of jet time, and he still finds time to indulge in skin-diving, singing, and hi-fi radio.

The average age is about thirty-three, and all the pilots have from three to five thousand hours of diversified flying. Naturally, much of this is jet flying, as the great preponderance of the test work is in jet aircraft. Much experimental testing is done that is highly dangerous as the test programs begin very early in the history of a new type aircraft. Hughes normally gets prototype all-weather aircraft and then starts its program on the fire-control system in those prototypes. This presents many problems as, in most cases, the airframe has not always been put through its various testing phases by the airframe manufacturer. No maintenance or support procedures have been developed, which puts quite a load on the operation. For instance, in the North American F-86D program, Hughes had prototype YF-86Ds better than a year before the airplane went into production. The same situation took place in the development of the Convair F-102. Hughes got YF airplanes long before the delta-wing fighter went to the assembly line. This meant, of course, transitioning the pilot in a new type aircraft, training maintenance people, and building flight and support programs almost from scratch.

The test pilot sees plenty of water and plenty of desert in his work, as the development programs are normally planned in the area most suitable for the test. The Pacific, of course, lies just off the west end of the Hughes flight strip, and only

(Continued on following page)

minutes north is the Mojave desert where most testing is done. The desert, too, gives the pilots the safety factor of being able to utilize the field at Palmdale or Edwards AFB—the AF Flight Test Center, with its long runways and adjacent dry lakes for emergency landings. Missile operations are at Holloman Air Development Center, Alamogordo, N. Mex.

One odd facet of the work is “flying” a plane within a plane. Often components have to be tested for airplanes that aren’t flying yet, so cockpits of fighter-type planes are installed in transport-type planes and taken aloft for testing and improvement.

One of these frontiers is the advanced type of cockpit with new types of instrumentation and controls. Future systems will have many features other than the normal search and track operations—automatic programming, automatic flight control, positioning, and navigation; automatic instrument landing, and many more sophisticated operations of the aircraft through electronic means designed to free the pilot from making routine decisions so that his mind can be spared for exercising judgment.

Some pilot specialists are used on field teams, which tour the world seeking to help AF all-weather fighter squadrons solve their control-system problems. Each team consists of a pilot, a radar observer, and an engineer; and they spend considerable time with the squadrons, particularly when the units are transitioning from day fighters to all-weather interceptors. They brief the operations and maintenance people and fly the squadron’s airplanes to see that the systems are properly maintained.

But, because a pilot is at Thule or on the opposite side of the globe, it does not necessarily follow that he is stuck in a slot and forgotten.

“We have tried to develop a program for our pilots which not only will be attractive to them, but at the same time be of advantage to the company,” Shoop says. “The pilot who does nothing but fly is not training himself for the days when he will want to move out of flight operations. Consequently, we assign pilots to administrative duties in addition to their flight testing. This gives the pilot an incentive to broaden his experience and training level.”

General Shoop, for example, is now a principal executive of the company, director of Product Reliability and Flight Test, and a member of the

Executive Policy Committee. Bob DeHaven is assistant director of the Flight Test Division.

John Seymour, a pilot with a log bulging with hours in the air, is now head of the Aircraft Maintenance Section and is also assistant director of the Flight Test Division, having moved up to this position from a test pilot’s job (it often is a hard position, too, for there are few tech orders to work from—for the simple reason that the equipment is still being developed).

“This is where our system of training for pilots pays off,” says Shoop. “Men like DeHaven and Seymour know what the end product must be. They know that what we are building is for pilots. They aren’t going to sell a brother flyer short. That’s why we want our pilots to move up the ladder.”

As the pilots progress in the organization and move into more and more administrative and engineering type work, they tend to do less and less flying, “which,” as Shoop says, “most of us aren’t too happy about.” Naturally, the pilots feel that the paper work and the administrative work interfere with their flying, but the company keeps them in the new models enough to keep them proficient. This is done by means of the “spot check system.” The basis of the system is the assignment of one pilot to a specific project so that he spends a year to two years on the development of the system before it actually gets to the flight phase; they then take it into the air; it is their project and they shepherd it through to completion. But along the way, the older pilots, who have moved up the line into management, spot check the systems. Through experience, they are able to step in and give an objective evaluation, but their time is not taken up with detail work.

“Now,” says General Shoop, “the pilots are pretty solid citizens, and they are not only pilots but businessmen, scientists, and executives, and if we occasionally get a pilot who doesn’t fit into this category, we don’t waste any time in letting him know that there is no place for him in our organization.”

The business is serious, brain-grinding, and, to a certain extent, dangerous—even though the record has been remarkably accident-free. (Shoop once had to land a B-25 sans nose wheel, when the front roller failed to shake loose. “There were only a few sparks and a screeching halt.”)

Shoop also got a good scare in his first flight in an F-102. The drag chute failed on landing and he had to squeeze a bit on the brakes to get the big bird stopped on the Culver City strip.

During 1955 and 1956, Shoop went back to college for a management course at UCLA.

The course took four or five hours a week, and sitting on either side of him were vice presidents, managers, and directors of many types of industries. This specialized executive program is a condensed version of UCLA’s post-graduate course in overall business management, running for a full school year of two semesters and teaching many things the modern executive needs to know, such as accounting for management, statistics, organization, and various other features required in the running of a large organization.

General Shoop runs his business from a cool, modern office overlooking the flight strip. Both in the office and at home he has a special radio set up that will allow him to talk to his pilots while they are flying test missions, for “Shoopie” worries a bit about his boys. And if he can’t be up there on every test, he wants to be able to help if something goes wrong.

For it’s a select fraternity he’s trained, these electronic test pilots. And he feels pretty close to each and everyone of them.

He thinks they’re the best, these “egg heads in hard hats.”

And many people would be inclined to agree with him.—END



About the Author

Ed Mack Miller, one of our most prolific authors, lives in a “big house on a small lot” in East Denver, from which he conducts his various enterprises, chief among which is his job as flight instructor for United Air Lines. A major, with more than 7,000 flying hours, he flies the Colorado ANG. As a freelance writer, he employs one full-time and five part-time researchers, who this summer traveled some 100,000 miles in nine countries. Ed’s now finishing up a book on SAC. He and his wife have six youngsters, three boys and three girls.

"To be prepared for war is one of the most effectual means of preserving peace"

George Washington

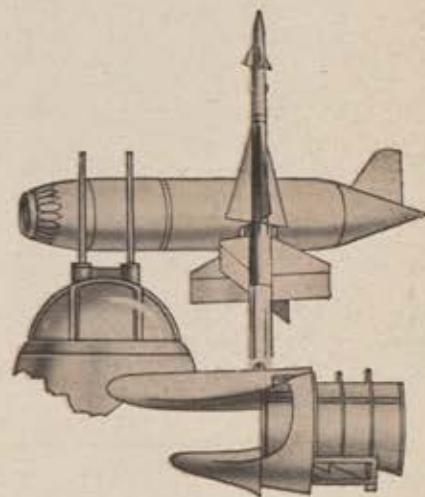


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Pretty Capt. Jean Gallagher is one of 2,600 military nurses in the Air Force.



Jean Gallagher

USAF



On duty. Though not a flight nurse, Jean often flies with sick personnel.





Jean helps anesthetists before an operation in AF's most modern hospital.

NURSE

By Jim Winchester

PHOTOGRAPHY BY GEORGE BURNS

CAPT. Jean Kelly Gallagher, brown-eyed, brown-haired, pretty as a jet slicing across a cloudless sky, is one of the 2,600 nurses on active duty around the world with the United States Air Force.

As a medical section supervisor at the sparkling new, \$6 million 2750th USAF Hospital at Wright-Patterson Air Force Base, near Dayton, Ohio, she works five days a week, from 7 a.m. to 3 p.m. She lives at home with her husband—who is an Air Force captain in technical intelligence—has a month's vacation each year, and collects \$569.38 a month in pay and allowances.

"If that isn't a good deal, I don't know one," says Jean. "Any girl is foolish not to go into military nursing."

Jean has been in military nursing herself since a short six months after graduating in 1942 from Mercy Hospital in Sioux City, Iowa.

"There's no drudgery in this type of nursing," she points out. "You can spend all your time—most of it, anyway—helping people. That's what a nurse is really trained for, after all. It's very gratifying."

As an Air Force nurse Jean finds

other gratifying aspects about her job, too. One is travel. On assignment and as a tourist-in-uniform, the attractive captain has already been three-quarters of the way around the globe, visiting more than fifteen foreign countries, from down under in Australia to up there in Denmark and Iceland.

Commissioned a second lieutenant in the Army Nurse Corps in 1942, her first overseas tour was to the South Pacific, pushing along with the 92d Evacuation Hospital as it trailed General MacArthur's troops on their island-hopping campaigns north from Australia through New Guinea, Biak, and on to the Philippines. In 1946, out of the service, she went to the Army's Fitzsimmons General Hospital, near Denver, as a civilian nurse.

That's where she met her husband, Capt. John Gallagher, who was going to a technical school at nearby Lowry Field. They were married in October 1951. By that time Jean—then a first lieutenant—was back in the service, this time as an Air Force nurse, having donned her uniform at the start of the Korean war. After a year's duty at the Francis E. Warren AFB Hospital in Cheyenne, she trans-

ferred to Lajes Field, in the Azores, to rejoin her husband, who'd been sent there for a tour with the Military Air Transport Service.

"It's an Air Force policy," says Jean, "to assign married couples to the same base whenever possible. John and I hope to see a lot more of the world together before we're ready for retirement."

Already, they have seen a lot of it together. During the year and a half they were stationed in the Azores they took several vacation trips to Europe and Africa.

As an Air Force nurse Jean has many spots to choose from when it comes time for her next assignment. In the United States alone there are 125 Air Force bases where nurses are stationed. Overseas, Air Force nurses can be assigned to bases in nineteen different countries.

Aside from her strictly professional duties—tending patients, checking records, conferring with the medical staff, and assisting, when the occasion demands, in the operating room—Jean often spends off-duty hours talking to nursing groups, picturing for them her life as an Air Force nurse.

"There's a need—as well as a great opportunity—for young girls over twenty-one, who are United States citizens, who want to become Air Force nurses," she stresses in such talks. "The major qualifications are a recognized nursing degree and average health. Once you get your commission—and the rank you get to start depends on your age and experience—there are unlimited opportunities."

"Each year, the Air Force trains 100 new girls as flight nurses. When they're on flying status they get extra pay—\$100 a month for second lieutenants, \$120 a month for first lieutenants, and \$210 a month for captains."

Each year, too, a number of Air Force nurses are sent to leading civilian universities and colleges to complete requirements for degrees in nursing administration or nursing education. In addition, those qualified who desire to complete the final semester needed for an undergraduate academic degree can take this term—at Air Force expense, and while drawing full pay and allowances—at any college or university they elect.

Jean makes a pretty picture each weekday morning as she leaves the Gallagher bungalow in Fairborn, Ohio, on her way to the hospital, only ten minutes away. She wears her

(Continued on following page)



Mid-morning coffee break finds Captain Gallagher (center) chatting with two civilian nurses on her floor: Margaret Horstman (left) and Betsy McCarnetney.



Capt. Gregory Krivchenia (left) waits with Jean outside of operating room.



Familiar? It's the well known needle being filled for the well known shot.



Taking blood pressure. Jean started her military nursing career in 1942.

In the children's ward, Jean holds a little tot with a badly burned hand.



trim, white uniform—furnished free by the Air Force—to and from work and on duty. However, her neat 5' 3½", 120-pound figure looks just as well in any of the several other duty and dress uniforms—also paid for by the Air Force—which she wears as occasion demands.

Getting through work in mid-afternoon leaves Jean plenty of time for shopping and housekeeping before her husband gets home.

"That's another thing about this job," says Jean. "You're never rushed. There's always plenty of time to relax."

Much of this relaxing atmosphere can be attributed to the sparkling new physical layout of the 2750th Hospital itself. One of fifty new medical facilities completed or under construction in the United States by the Air Force, this one has the most modern medical facilities and installations available anywhere. Few of them are duplicated in even the largest or newest hospitals.

Medicines, for instance, are distributed to each individual nursing station from a central dispensary through a pneumatic tube system.

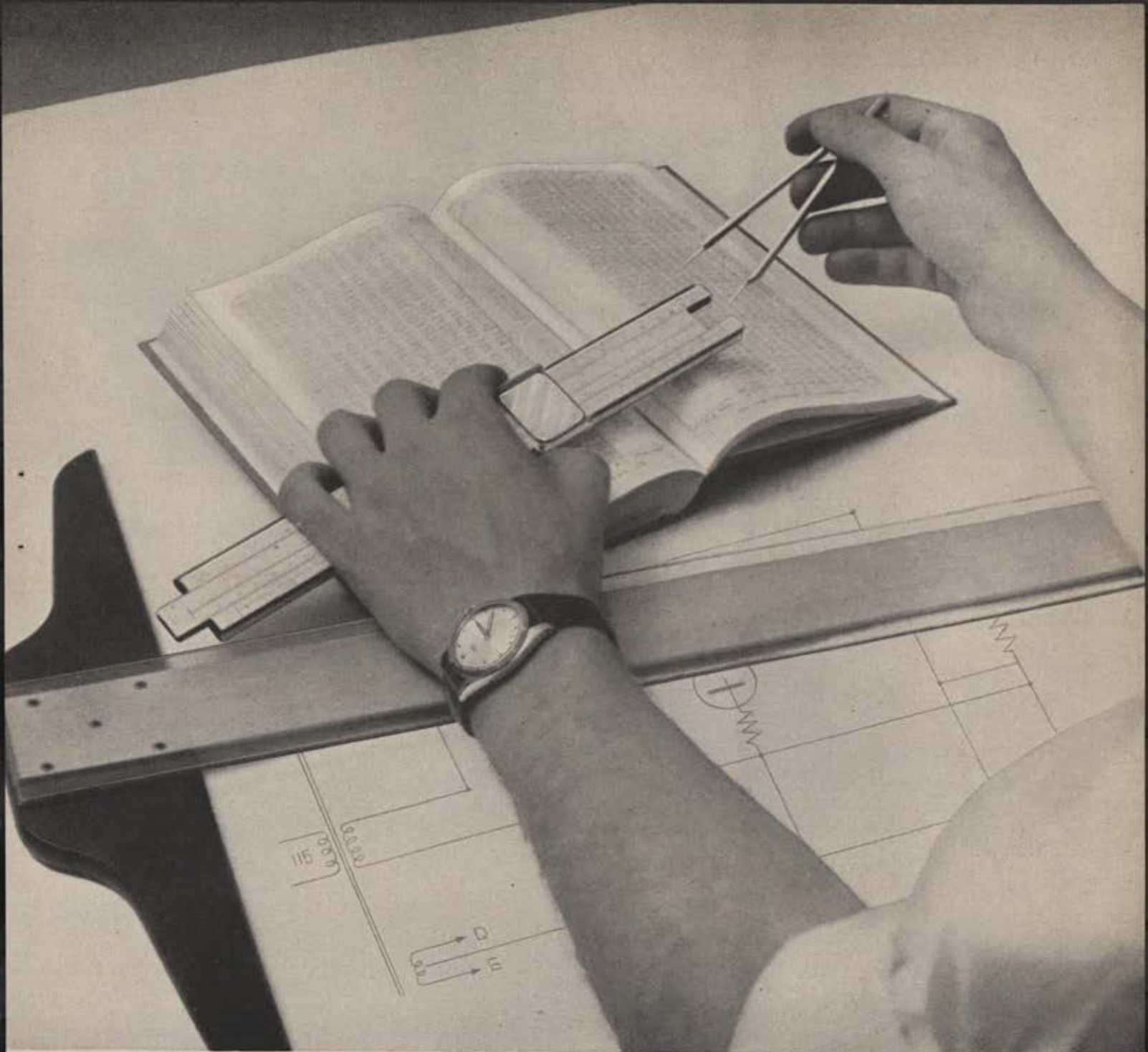
"You have to be a nurse," says Jean wryly, "to appreciate what that means in steps saved each day."

An audio-visual call system also enables each nurse to keep in constant communication with her patients. Each bed has a radio speaker under the pillow which can be tuned to any one of five stations without disturbing other patients. Even the lavatories are equipped with call signals and each ward has its own TV-equipped day room.

With eleven wards and forty-seven private rooms, capable of handling 348 patients, the 2750th also features a centralized admitting system enabling a patient to check in, deposit his valuables and papers, change to hospital garb, and store his clothing, all within a ten-foot area, and in a few minutes' time. The 2750th is also one of only three hospitals in the United States to have a consultation service in aviation medicine.

"I'm sure," says Jean, smilingly, "that no nurses anywhere work in as modern and as well equipped surroundings as we do here. That's a big plus."

"But be sure and say this about military nursing, too. A girl can meet lots and lots of eligible men. The opportunities to get married are endless. Look at me. I got my husband in uniform, didn't I?"—END



What's most important in this picture?

Not the slide rule, though it's helpful. Nor the divider. Nor the logarithm table. It's the human hand, of course, because it is motivated by the long, strong arm of human intelligence. It belongs to the career engineer dedicated in his service to the Department of Defense.

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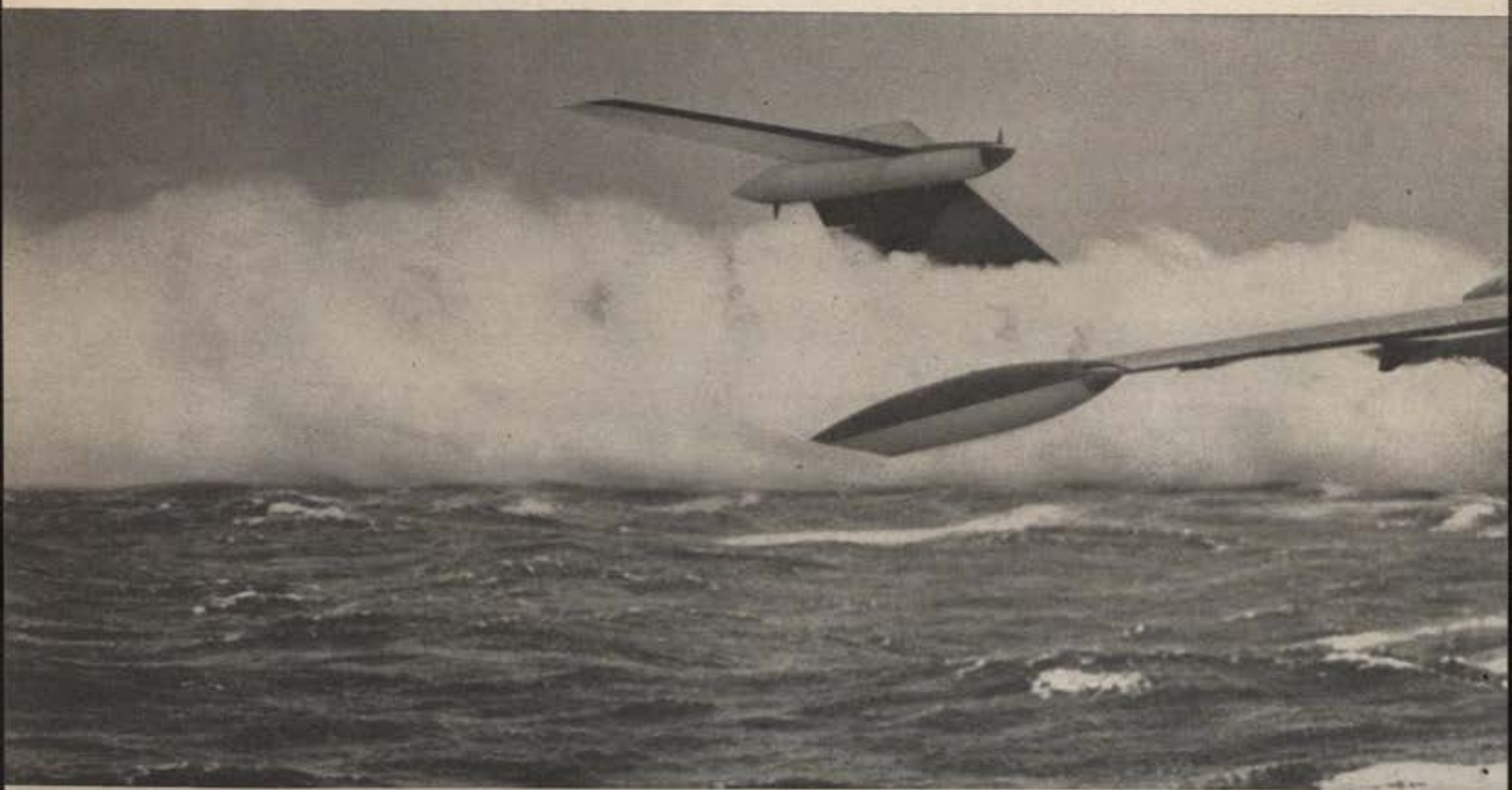
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flow of information about target position in terms of range and rate of closing.

RCA is a major supplier of airborne fire control equipment to the Armed Forces. Its activity in developing and producing

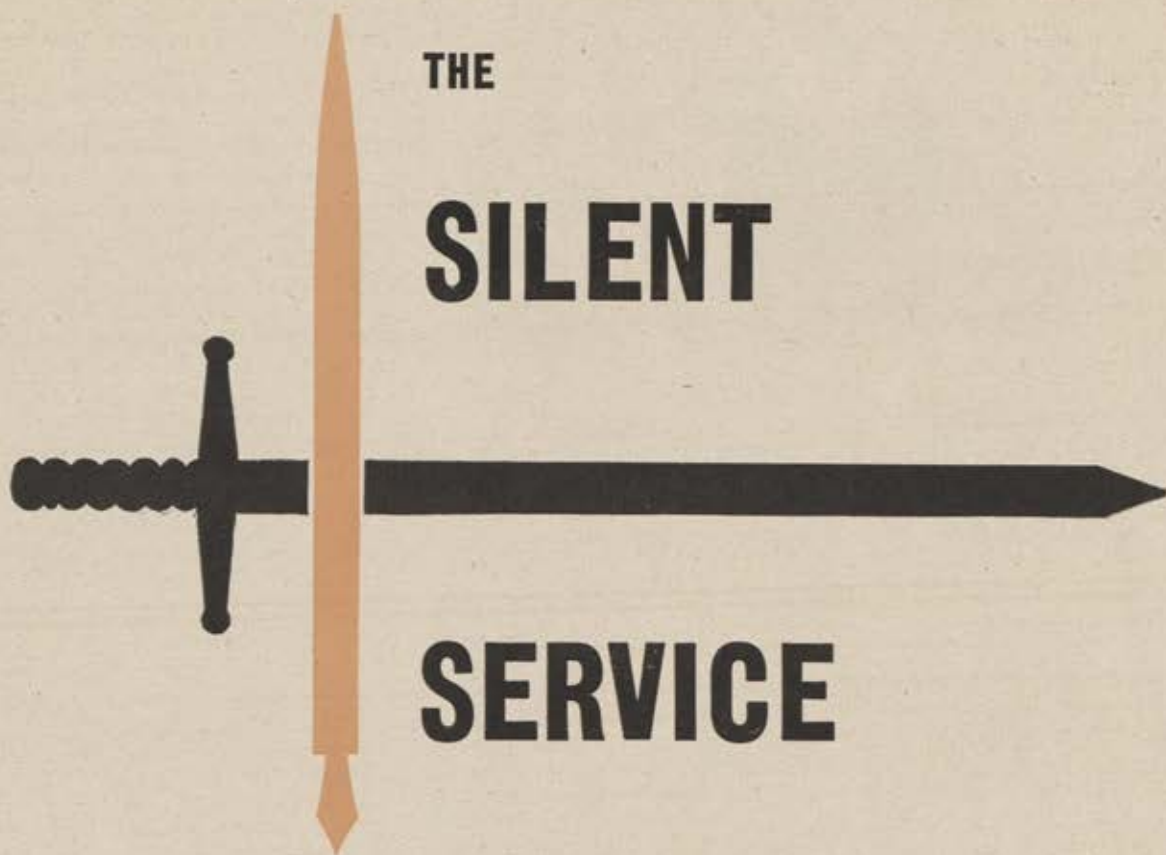
these systems requires a close working relationship with the airframe industry and the Department of Defense, a "partnership" vital to the success of any weapons system.



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THE SILENT SERVICE

The Air Force has many great stories to tell, but its people, unlike those of the other services, just ain't talking—in print

By M/Sgt. Frank J. Clifford

IF THE pen is mightier than the sword, and there is a considerable body of evidence that indicates it is, then military men are ignoring a cost-free, keen-edged tool.

A casual roll call of authors writing on military subjects reveals an embarrassing scarcity of military titles. More disturbing still is the scarcity of military authors in the military magazines and professional journals. The play has gone to civilian writers—historians, college professors, freelance magazine writers, newspaper pundits, and politicians.

Ranging no farther than my desk, I count eight civilian authors vs. three military men in the June 1956 issue of *AIR FORCE*. In the July issue there are four civilians and one military; the gap closes in August—ten civilians, nine military. In addition, much of this magazine, like many military publications, is staff-written.

The Air Force is the Silent Service.

W. Barton Leach, writing in *The Annals of the American Academy of Political and Social Science* (May 1955), says, "The Air Force is really the silent service. Its senior commanders do not write books and articles. As to the war in Europe, there are books by Eisenhower, Bradley, Montgomery, Patton, and a host of junior commanders but none by Spaatz, Doolittle, Vandenberg, Eaker, Twining, Norstad, Weyland, Anderson, or Quesada—and as a result, ten years after, several of these names are not even remembered by the public. No Air Force officer has recounted the strategic bombing effort that brought Japan to its knees—the first time in history when airpower was a principal factor in causing a nation to surrender before its homeland was invaded. The same pattern appeared in the Korean war—some ten books about the Army, five about the Navy, four about the Marines, but [up until May 1955 not

one book about the Air Force had appeared. There have been only a few since then]. Those responsible for the development of national airpower have not made use of the basic instrumentalities of information and enlightenment to get the public behind them."

A look at the service journals backs up Professor Leach. The *Marine Corps Gazette* of October 1955 carries twelve military authors and only two civilians. *Army* magazine for December 1955 had articles by six military and two civilian writers—the February 1956 issue of the same magazine carried ten military and four civilian names.

Admittedly, this is a desk-top survey, but for all of that it is a pretty reliable one—and the pattern, before and since, has remained remarkably consistent. Air Force men simply are not writing.

This absence of AF authors is not because of an editorial preference for
(Continued on following page)



Compared to the other services, AF men simply aren't doing much writing.

THE SILENT SERVICE

CONTINUED

civilian-written stuff. Actually, the opposite is more likely to be true.

But military editors are little different from their civilian counterparts when it comes to guarding the quality and good reputation of their magazines—both require the same high degree of authority, documentation, and quality of writing. This fussiness works to the advantage of the freelancing airman, for rank, *per se*, is not an open sesame to publication.

To be published *anywhere* a writer need meet only three requirements—he must have something to say, say it honestly, and say it reasonably well. Of these, having something to say is easily the most important. There is no writing skill, trick, or technique that will make up for the lack of it. Try it and see for yourself.

This is as good a time as any to

shoot down a durable fable that “if you know the editor” or “if the editor likes you” he will run your stuff. Nonsense! Among other things, editors of all kinds are business men who keep a sensitive finger on the pulse of their readership, and they try to give the paying customers what they want. If you’ve got what the man thinks his readers want, he’ll print it, like you or hate you.

That military men are not writing is a matter of great concern to editors. When I sold my first article to *AIR FORCE* (yes, they pay for ‘em) in 1953, the managing editor remarked in his letter of acceptance, “We’ve been trying, without much success, to stir up interest among service people to write professional, service-journal-type articles for us.” He is still of the same mind, but judging by the military-

civilian author box score just ticked off, he is still looking.

The reasons why military men do not write are limited only by the imagination. My alibi is lack of time and this appears to be popular, even if largely fictitious. The bald fact is, most of us waste at least half of our off-duty time—TV, golf, bridge, brass-rail oratory—take your pick. I’m strong on the brass-rail, myself.

Long, long ago, in the bad “Old Army,” many officers felt it a breach of dignity to write on military affairs, preferring to maintain a stoic silence. Others wrapped a toga of modesty about themselves, protesting that appearance in print before they had reached field officer grade might be regarded as presumptuous by some. Still others (and they exist today) kept their pens sheathed because of a reluctance to “stick their necks out,” thereby incurring the supposed wrath and swift retribution of the powers that be.

Enlisted writers were almost entirely unheard of, and when they did appear they were confined to “Old Sarge” topics, for what else would an enlisted man know about?

None of these reasons will hold water, and the most porous of all is the one protecting the neck. The AF is not at all thin-skinned, and constructive criticism is always welcome as I have reason to know for I have done more than a little of it—and in print, too, with my name and rank plainly in view. Needless to say, I am still at large, still fat and sassy, and I have no intention of mending my ways.

The key to immunity is the word *constructive*. With this in hand even the most conservative pages are unlocked and the most controversial issues become legitimate subjects for discussion.

Air Force Regulation 190-6, dated December 9, 1954, not only encourages AF people, military and civilian, to write, but tells what can be written about, what must be cleared before publication, and on whose time you can write it.

Let’s break this writing thing down into its basic parts. We have already said that in order to be published a writer must have something to say and then say it in an orderly fashion, in plain, understandable language. This is the beginning and end of all writing.

Having decided on a subject, the next order of business is a plan of presentation. Unless you are a skilled writer, fully practiced in the art of mental juggling, a written outline is necessary and while making one might seem tedious and time-consuming, an outline is actually a short cut to a finished product.

(Continued on page 81)



Military men plead lack of time—but much free time is spent on diversions.



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It provides a well-marked path leading from start to finish and enables the writer to readily shift his order of sequence to obtain the most effective presentation. An outline stimulates thinking and helps the writer to separate the important from the unimportant. Not the least of its virtues, it obliges him to stick to his subject.

Effective outlines need not be elaborate or minutely detailed—some that I have used have been composed of single sentences, sketched out on the back of an envelope, a matchbook cover, scraps of paper, or even in a proper notebook. (A dry cleaning firm once returned to me a call check with the note, "Perhaps the notes on the back of this check are of value to you"—all the world loves and protects a writer.)

One thought, written down, gives rise to others and a natural growth takes place even before a single line of copy is written. Properly done, each sentence can be expanded into several paragraphs, and the result is an almost finished piece of work.

Very, very few writers can compose an acceptable piece of composition in the first draft, but this is one of the most difficult and annoying lessons for the amateur to learn. An editor, highly skilled in evaluating literary offerings, has no alternative but to reject hasty and poorly prepared work; his reputation and the quality of his "book" demand the best obtainable.

Rewriting is almost always necessary, and the calm acceptance of this requirement frequently means the difference between a "buy" and a reject. Rewriting, like rain at the annual picnic, is a fact of life—accept it.

Rewriting, or polishing, as it is called in the writer's mags and handbooks, is frequently an idea incubator—generalities and approximations set down in good faith in the first draft now reveal themselves in their true light. They are straw men with no substance to command the attention of the thoughtful reader. Additional, meaty facts are indicated, and supplying these add to the quality of the piece and substantiate the first principle of writing—having something to say.

Rewriting is never a light-hearted chore, for frequently many artfully contrived sentences and deftly turned phrases must be ruled out of the finished copy. Unless a fondly regarded brain child contributes to the support of the article, it must be done in cold blood. Every word left standing must bear its full load, and it is no accident that some of the finest com-



Often manuscripts are rejected because they aren't sent to the right place.

position in existence is also the sparest.

Jazzing-up the copy does not mean trifling with facts. One of the most precious things a writer has to sell is his integrity; it is in his own interest to stick to facts. Helping to keep him on the righteous road is the editor who can be depended upon to check and double check any statement faintly resembling blue skies.

Editors have another important function and that is protecting the author from plagiarism—literary larceny. Editors have fantastic memories, and these, coupled with a constant diet of the printed word, make it almost impossible to pull the literary wool over their eyes.

Now the polishing begins. Phrases and sentences are recast or eliminated. Lively, moving words are substituted for wooden ones—militarese should be admitted only reluctantly and then only when necessary to add verisimilitude or to attain *brevity at no expense to clarity*. The aim in this rewrite,

which could very well be the one that lands on the editor's desk, is accuracy, continuity, clarity of thought, and brevity.

If something can be well said in ten words there is no reason to believe it will be said twice as well in twenty words.

The word "style" presents itself at this time. To some, style is a mysterious writing gift that comes only to a chosen few. Baloney. Style is simply a manner or writing, and almost any serious student of the written word can achieve a pleasant, effective style provided he applies the seat of the pants to the seat of the chair and actually does some writing. Style can be regarded as an extension of "self," and a stilted, affected "style" is as ridiculous as any other kind of posturing—be yourself.

This is not to say that a writer cannot learn by imitating other writers. Imitation is one of the primary sources
(Continued on page 85)



How much you get paid depends on the publication and value of your piece.

READY FOR ACTION



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B-66, Protected by General Electric Automatic, Electronic Tail Armament Gives TAC Greater Mobility, Flexibility

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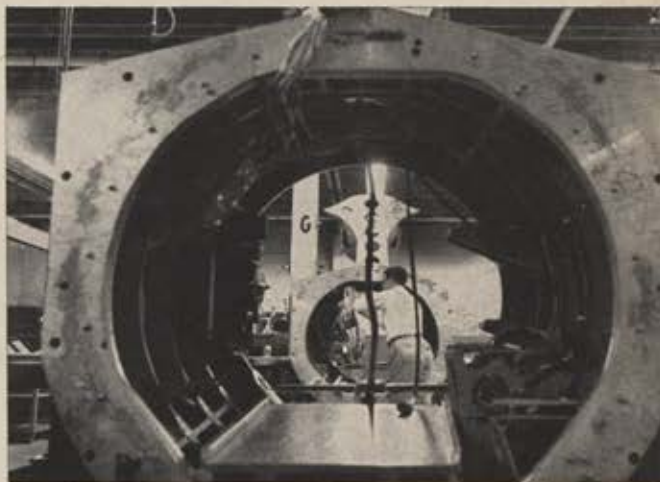
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ENGINEERS: Expanding electronic bomber defense projects at G.E. are creating opportunities for you. Contact C. E. Irwin, Aircraft Products Department, General Electric Company, Johnson City, N.Y.

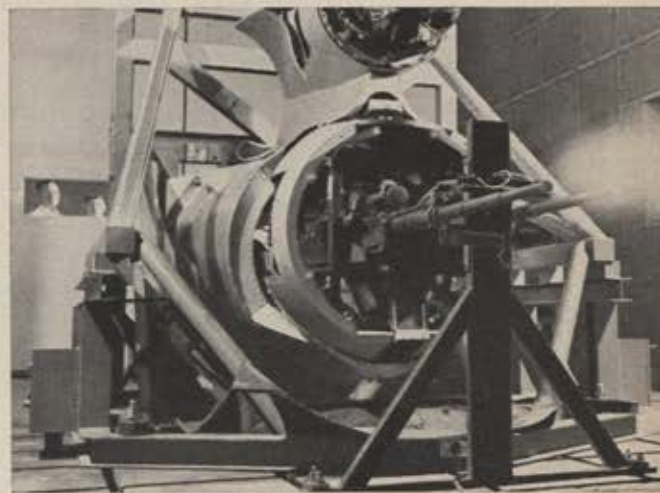
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This scientific pioneer is Dr. G. K. Wehner, designer of the space chamber which he uses here to determine the "sputter-

ing" or disintegration rate of molybdenum under bombardment from atoms moving at 25,000 m.p.h., 200 miles above the earth.

What happens to metals at 25,000 m.p.h. 200 miles up?

General Mills scientists are finding some of the answers to this question, which bears directly on space ships and man-made satellites.

Their findings indicate that materials to be sent into space must possess properties not found in today's ores and alloys. Since few new metals remain to be discovered, they conclude that present ones must be given new properties to cope with the heat barrier and to keep vehicles from disintegrating under particle bombardment.

The study of metals in space flight represents but a single phase of General Mills' over-all program of advanced

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SILENT SERVICE—CONTINUED

of learning, and much can be learned by studying the work of accomplished professionals. However, elegant *belles lettres* is an art and mastery of this art is not our goal—we are attempting to develop a knack for lucid communication by way of the printed page.

Vocabulary. Do you need an extensive cache of words to be a writer? Not necessarily, but it is only common sense for a mechanic to have on hand a good supply of tools and material before he embarks on a job. Addiction to archaic, flowery, or "big words" (i.e., words not commonly used in speech) is as bad as no words at all.

Winston Churchill, who has more than a few words at his command, says "The old words are the best, and of these, the short, old words are the best of all."

Generally speaking, modern magazine article style requires brief sentences of thirty words or less. Paragraphs rarely contain more than four sentences. Complicated, compound sentences with fancy dependent clauses and tricky punctuation are all but passé, probably for the very good reason that no one will bother to read them.

Mechanically, material offered for publication must be as professionally prepared as possible, and this includes in equal force the writing, rhetoric, grammar, spelling, and physical appearance. There is no such thing as getting away with "dashing off a few lines." Nor is there much hope for articles which are poorly organized, inaccurate in fact, and laden with words incorrectly used or misspelled. A dirty, dog-eared script is almost always an automatic reject.

Editors want to publish new writers (they get them cheaper), and they take pride in discovering new talent. A reject slip is not a spite chit; it merely acknowledges receipt and return of material that somehow failed to measure up.

Very frequently rejects adorn material meritorious in every way except that it missed the requirements for that particular magazine. Sometimes perfectly acceptable manuscripts land on an editor's desk the day after he has accepted, or the week after he has published, a similar piece. Or the article might be totally wrong for the market—a lively and authoritative dissertation on the development of the ballistic missile might be fine for *Air Force* but totally uninteresting to the readers of *Better Homes and Gardens*.

The first instance cited above is unavoidable; the second is a matter of poor judgment. There is no cure for



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- ☆ Letters of Credit; Traveller's Cheques.
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the first but the second can be avoided altogether by simply suiting material to the market. To no little degree, writers are the victims of their own cupidity—they send inappropriate material to unlikely markets mainly because these markets are high-pay.

Let's face it—military markets, like most trade-magazine and professional journal markets, are not high-pay, but it is better to have half a loaf while growing up to full-loaf size than to have no bread at all. While the checks from lesser markets are smaller, the chances of being published are greater, and being published is a mighty lift to the old ego.

Let's assume that the article is written, neatly typed, double-spaced on standard 8½" x 11" white bond paper. You've made a carbon, of course. How do you go about submitting it for publication?

If you are aiming for a military market, the procedure is simplicity itself. Just tuck your work into an envelope, along with a stamped, self-addressed envelope of suitable size (for the safe return of the rejects, of course) and a very brief note to the editor. Strictly speaking, this covering letter is not really necessary.

Above all, do not beat the editor's (Continued on following page)

Give-



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THE SILENT SERVICE

CONTINUED

ear on how hard you worked on the article, or how important it is, on how much you love his magazine and admire him, etc. He's buying merchandise—you're selling, so stow all that guff and let your stuff speak for itself.

Most military magazines will handle the Department of Defense clearances for you; if you are published you can assume that your article has the blessings of the people who are concerned in the main store.

If the article or story is for a civilian publication, the responsibility for obtaining a clearance is up to the author. If the material is only of local concern, the Base ISO can clear it. If it is national in scope, has a technical flavor or comments on AF policy, then it is best to send it to the Office of Information Services, Hq. USAF, Washington 25, D. C. Direct communication is authorized.

Send two copies. If your article passes muster, you will get one back, stamped—they keep the other. Obliging fellows, they will even send your article directly to a publisher if you give them the word.

Contrary to popular opinion, submitting a manuscript for clearance does not materially slow down its transmission from author to publisher. Aside from the fact that it must be done, military authors are not "under the hammer" when they submit material for clearance. Professionals review the material and move it along as rapidly as possible—they know from personal experience that freelancing is no piece of cake.

Does submission of a piece to the Security Review Branch reduce its chances of ever seeing the light of day? Not if the records can be believed. Dr. Frank W. Anderson, Managing Editor of the *Air University Quarterly Review*, says that a check of the record reveals that articles submitted through Information Services channels fared better than did articles voluntarily submitted for clearance by civilian publications. He says, "SRB cleared without change seventy-one percent of the articles by military authors, but only fifty-four percent of the articles by civilian magazines came through unscathed."

The clearance requirement cannot be compared to censorship; it is a necessary and valid procedure and is by no means new.

What must be cleared? Generally speaking, anything having a direct connection with the AF and its policies. This includes personal opinions, personal experiences while in military service, technical matters beyond rou-

tine maintenance, political or geographical comment having a direct connection with military activities.

Historical novels and short stories with a military theme do not require clearance provided they do not draw parallels with present-day conditions. General-topic novels, short stories, non-service-connected experiences, and articles on sports, hobbies, trades, arts—the whole range of civilian activity—need not be cleared.

In submitting a script for clearance a writer need not feel that he is placing himself in jeopardy if he has something critical to say about the AF. If the manuscript is out of line it will be returned, with a suitable letter of explanation, and, very likely, with suggestions on how it can be "saved," if possible.

Under no circumstances will a writer's manuscript be used against him. If rejected for clearance it will be returned to him, and as far as the folks in the Pentagon are concerned, that is the end of the matter.

In this article I have made repeated reference to being paid for writing. To some stainless characters this might sound mercenary and not in keeping with the high ideals of the club. Fortunately, there is a happy solution to this problem—many military and civilian publications *do not* pay for material, and since these are almost always, coincidentally, starved for copy, it would be the very milk of human kindness for those who shunt the taint of money to write for them.

I prefer to be paid for my writing. My family likes it this way, too, and so does the butcher and the baker. Scale of payment varies, but most editors are only too happy to discuss their rates; moreover, they can be depended upon to be honest with their authors. Also, it is no secret that some names appearing in magazines receive more money than others—this is for the good reason that they probably deserve more.

There are compensations other than cash in writing. Writing stimulates thinking, permits an observer to "sound off," enhances one's professional reputation, and it contributes to the general fund of knowledge. In a very real way, writers are teachers, and the printed page provides them with a classroom seating tens of thousands.

Never has the field for new writers been as wide open as it is today. This is especially true for article writers—a glance at any popular magazine will show articles outnumbering fiction pieces by at least two-to-one.

So write, write now!—END



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BACK when airframe construction first switched from wood and fabric to light metals — the thin alloy skins were actually sewn together with piano wire. Manufacturing methods had not kept pace with materials development.

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AIR FORCE CAREERS

NO. 1 OF A SERIES



Space allocation is a world-wide problem for the Air Force. Looking over blueprints at Yokota AB, Japan are, from left, Mr. Toshitake Zusho; M/Sgt. George E. McGowan, Phillipsburg, Penna.; and A/2C Sidney D. Williams, Jr., Owensboro, Ky.

Secrets of **INNER** Space

By Flint O. DuPre

THE problem was a big one. Because of a lack of space, student officers at the Air University had always been required to find their own quarters. But when the decision was made to billet them at Maxwell AFB, Ala., 150 sets of quarters—in a central location—were needed . . . and in a hurry.

Orders started to move down channels. At the end of a long line sat T/Sgt. Bryant G. Rinehart, a member of the staff materiel section, who was newly assigned to duties covering allocation of all space on the base.

A careerist with a sharp eye for AFSC (Air Force Specialist Code) numbers, Sergeant Rinehart accepted his new assignment with enthusiasm. However, a search of the AFSCs in the materiel career field failed to show a number for space allocation specialists.

Sergeant Rinehart shrugged. After all the Air Force was moving pretty

fast, and it might be that the numbers hadn't caught up with the new jobs.

Rinehart requisitioned a drawing board, dug up the diagram plans for all the buildings on the base, and wrangled some space in a corner of an office. He was in business, with his first assignment, and after several weeks of trial and error, the quarters were made available to the Air University.

Before he had a chance to take a breather after blazing the trail in a new career field, members of Maxwell's wives clubs gave Sergeant Rinehart another job. They wanted to put all their activities under one roof instead of in the seven scattered buildings that served Boy and Girl Scouts, the Teen Towns, junior library, boys' rifle club, and the members' regular meetings.

After Sergeant Rinehart managed
(Continued on following page)



Space allocation chart interests Capt. Jesus Garcias and Lt. John McClellan.

this hunter is 55 pounds
lighter



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AF CAREERS —CONTINUED

to settle the ladies in a single building, he became involved in other projects, one for additional space for the Masonic Lodge on the base, another for a new athletic field layout.

What Sergeant Rinehart did at Maxwell is now being duplicated by airmen and officers throughout the Air Force. The responsibilities of these men have grown in recent years for two principal reasons.

First, in moving toward its authorized mid-1957 goal of 137 combat wings the Air Force is acquiring additional bases and changing many temporary installations into permanent ones. The AF is far behind the other services in this respect. Some brand-new bases are being constructed, and space allocation can be planned on those. But the majority of bases are established sites, and the world-wide mission of the AF requires constant relocation of related activities to meet mission requirements.

Second, in order to maintain some degree of flexibility, the Air Force is constantly moving around—with commitments at its many stateside bases and at locations in some thirty foreign countries. Training programs, ROTC requirements, Civil Air Patrol, and Reserve encampments all aggravate the space allocation problem.

Despite its newly acquired importance, space allocation is only one small part of the giant materiel responsibility in the Air Force. The job is fairly uninteresting, never-ending in detail, and a poor field for the individual who yearns for the glory of the jet fighter pilot.

A materiel officer, or airman, may have the responsibility of 800 buildings on a single base. He is required to maintain records of assignments to those buildings, and to supervise their maintenance and improvement.

Before Sergeant Rinehart left Maxwell for a new assignment in Japan, he was up to his ears in blueprints. The Maxwell base exchange wanted to move into the old base library site with the opening of the new \$1 million Air University library. And there was a standing list for the BX space.

Another project for the sergeant at Maxwell was to get the provost marshal, the office of special investigation, and the base legal office—all related functions—into the same building. "We're working on it," he reported, "but it could mean a half dozen different moves before we solve it."

By that time the AF may have an AFSC number for the hard-working men of materiel who handle space allocations at base level.—END



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One-Man OER Regulation Survey

I have just concluded an off-the-cuff, on-the-spot survey of officer opinion on the latest change in the Officer Efficiency Rating regulation. Although my sample did not include any general grade officers (I don't know any personally), all company and field grade people I talked with like the new 120-day rating period. The old sixty-day scheme led to some rather odd (although never amusing to the ratee) word pictures that may be best typified by that oft-heard expression, "But hell, I hardly know the man and now they expect me to fill out this damn thing!"

My survey also verified the fact that quite a few company grade (junior types) don't like the OER and would like to see it go the way of the BT-13 (completely forgotten). The plea seems to be that the OER is used either as a vehicle for histrionics over that favorite son (known to his buddies as Brownie) or as a weapon over the guy who doesn't kick in that five bucks every month for the squadron party fund.

Another point is that rating officers being human, they vary immensely on how they rate. One type rates everyone, even the obvious misfits, in the four block. A different officer who is trying to be extremely objective rates an unusually effective officer in the middle three block. This sort of variety can play havoc with a career if one gets assigned to the three-block type for a long period, while equal ability twin brother is working for the four-block type. Comes along a promotion cycle and—you guessed it—brother gets it and you are listed as "not yet fully qualified."

So—the recommendation is to add a block to the OER for the rater to fill

out on himself; it would look something like that shown in the box below.

This plan, if adopted, should have two advantages: (1) it will let the reviewing officers and promotion boards know if the rating officer is rating higher than his compeers, and to take this into account if necessary, and (2) it should tend to make the four-block rater think twice before putting all his officers in the same high category.

The OER is a powerful tool that can be used to benefit both the Air Force and the individual if the wielder understands and uses correctly the power he has.

FIRST LIEUTENANT

For the Rating Officer					
I normally rate:	1	2	3	4	5
an acceptable officer					
typically effective officer					
a very fine officer					
outstanding officer					

Who Wins the Nuclear Stalemate?

In his article "The Nuclear Stalemate Fallacy," appearing in the August issue, Col. Robert C. Richardson very ably points out the many conditions where an imbalance of power in the possession, delivery, and defense against nuclear weapons would not constitute a stalemate. However, he does admit the possibility of stalemate where both sides have an equal stockpile of weapons, equal delivery capability, and mutually ineffective defenses. Colonel Richardson then glosses over the possibilities of any protracted extension of this stalemate condition in these words:

"The varied rates at which weapon systems have evolved in different countries in recent years, the occurrence and likelihood of technological breakthroughs in the fields of missiles,

radar, atomic power, etc., all suggest that it is dangerous to assume that this one combination of circumstances will prevail for any length of time. Thus the concept of nuclear stalemate between the USSR and the US must be accepted with serious reservations, even in the immediate future."

Now it is true that exactly balanced forces will never occur for any length of time; however, when the third factor is considered, the "mutually ineffective defenses," it appears to me that further thought is required. The defense has, historically, always lagged behind the introduction of new weapons. Moreover, increased technological perfection of the weapon serves to increase the gap between weapon development and develop-

ment of the countermeasure. The intermediate and intercontinental guided missiles illustrate this situation most forcibly. The testimony of the service chiefs before Congress this year frankly pointed out the immense difficulty of designing a defense to ballistic missiles. ICBMs will be an active threat to 1960, yet it appears that the defense is lagging considerably. Therefore, it appears that for five to ten years following the advent of the intermediate and intercontinental ballistic missiles, we will indeed be faced with the stalemate situation. I assume that relative weapon strength and delivery capability will remain in a fairly balanced condition. The one factor which will be a constant in nuclear stalemate will be mutually ineffective defenses. With the tremendous increase in lethality of nuclear weapons, defenses

(Continued on following page)

must achieve unheard-of perfection. An effectiveness approaching ninety percent must be achieved before we can rely on defensive measures to break the stalemate. It appears doubtful that either the US or the USSR can achieve such probabilities. The technological advances mentioned by Colonel Richardson obsolete defenses, for as the defense is perfected against one weapon, a superior weapon appears to negate the effect.

We are faced with a double threat then—first, the forging ahead of Soviet nuclear capabilities, and, second, the threat of the stalemate condition. The latter threat is the more dangerous, in my opinion, for this reason: Assuming that public opinion is sufficiently aroused to provide the wherewithal for continued US nuclear capability, there is no basic reason for the US to lag behind the USSR. However, it is quite evident that no matter what effort we expend, we will never again obtain the overwhelming superiority which we held for the ten years just past. Therefore, we find ourselves in the stalemate condition of approximately equal forces, delivery capability and ineffective defenses. And nothing could please the USSR better.

Going back to the basic definition of war as an extension of political and economic action, it becomes apparent that the USSR has more to gain economically and politically through nuclear stalemate than nuclear warfare. The bosses of the Soviet Union are faced with a ticklish situation in their own back yard. Their continued rule depends upon raising the standard of living of their own people and those in the satellite countries. Only the lure of economic gain and material welfare could unite the restive masses under the Soviet leaders for an aggressive war. These lures would certainly not exist at the conclusion of a nuclear debacle. Of course, there is always the possibility that in a last frantic grab at world power the Soviet bosses would launch the nuclear war, but even this is unlikely as long as the Free World poses the threat of effective retaliation.

How would nuclear stalemate be an advantage to them? Let's take a look into an IFR crystal ball for a moment.

It is now 1960. The US and USSR are practically matched in weapon stockpile and delivery forces. Still the wolf is crying at the door. The USSR political base is shaky as the people realize that the Soviet promises of

1956 for a higher standard of living have produced practically no improvement. The hold of the police has slipped. The army is disgruntled, and there are undercurrents of revolt. The bosses are faced with placating the people, or revolution.

The answer to the problem lies across the border in West Germany. Here, a vast production machinery is geared to supplying the necessities and luxuries of the civilian economy. Like the proverbial "Horn of Plenty," West Germany, its wealth and industry, lies ready for the plucking. Of course, it must be taken intact to supply the needs of the USSR. Germany destroyed by nuclear warfare would be of no assistance to the Soviet economy.

Suddenly, with no warning or pretext, East German "police" and Soviet "volunteers," lured by promises of loot and plunder, sweep across the border into West Germany. Simultaneously, Soviet diplomats inform the major capitals that the Soviet Union will not employ nuclear weapons to support East Germany, which, of course, does not have a nuclear capability of its own. However, if the US and NATO nations insist on employing nuclear and atomic weapons, then the USSR will have no alternative but to retaliate. Finally, the East Germans and Soviet diplomats proclaim a limited objective. The objective is merely to "unify" Germany. If no interference is encountered from the other powers the territories of France, Britain, and the NATO nations will be respected. There will be no attack past the German frontier.

Meanwhile, although NATO forces have countered with tactical atomic weapons, the invaders have desisted from their employment. Faced with the Soviet threat to extend the war if atomic and nuclear weapons are employed, divergent opinion breaks the solidarity of the West. Orders go out to certain national forces to cease the use of atomic weapons. The homelands of these nations are completely vulnerable to Soviet attack. Little good would US massive retaliation do them after their homeland was wiped out. The forces remaining after the defection soon find themselves overwhelmed by the horde of invaders. Can the US take the unilateral decision to instigate nuclear warfare? It hardly seems likely. Western forces, built around the concepts of atomic and nuclear warfare, are no match in conventional firepower for the invaders. Using the prosaic high-explosive weapons and the mass

attack, the invaders isolate and surround the erstwhile atomic forces. Thus in a matter of days West Germany falls practically intact, with its vast wealth, productivity, and natural resources available to bolster the economy of the USSR and her satellites.

Having consolidated her gains in Germany, what would prevent continued expansion? It would take an extremely strong argument to convince the others powers that we could "save" them by the use of nuclear warfare. The pragmatic reaction of the European powers would be to save what was possible, even suffer Soviet domination, rather than go out in a Hitlerian *Gottterdammerung*. Nor would this Soviet domination take the part of physical occupation, necessarily.

Going back to our thesis that the Soviet expansion is based upon the need to bolster the civilian economy, it might accrue greater advantage to the Soviets if the remaining European countries were not occupied. Utilizing the blackmail of threatened occupation, could not the Soviets gain a favored trade position? The wealth of Europe could be orientated East instead of West.

This is, I admit, a rather gloomy picture but one which has a basis in the way our present strategy is shaping up. We are putting all our eggs in the "nuclear basket." Assuming our ability to maintain nuclear parity with the USSR or even to exceed them slightly, the lack of adequate defense against nuclear attack nullifies our position. Unless we can guarantee the territorial integrity of our allies against nuclear attack, that they will not suffer utter devastation, our nuclear power is of limited worth, only insuring that the Soviets will not dare attack us with the same type weapon. It does not insure that they will not use different rules and attack as described above.

It would seem that our present policy of complete reliance on nuclear weapons may be ignoring this distinct possibility of "pious" Soviet disavowal of the use of such weapons. The cost of maintaining conventional capabilities must be borne to insure our strength. "Business as usual" may suffer, the budget may not be balanced. But unless our people are willing to make sacrifices now and give up some luxuries, one day we may awake to find ourselves lacking such necessities as "life, liberty, and the pursuit of happiness."

MAJ. MICHAEL C. JACOBS

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The military cliché expert takes the stand

NEXT WITNESS

By A/2C Don O'Brien

WITH due apologies to *The New Yorker* magazine, which some time ago ran a piece by Frank Sullivan called "The Cliché Expert Takes the Stand," isn't it time the military cliché expert took the stand? The next witness is Airman Regg.

Q.—Airman Regg, you are an expert in the use of the military cliché, are you not?

A.—Yes, sir, I am a certified military cliché expert.

Q.—Just for the record, Airman Regg: Are you a member of the armed forces?

A.—That's correct. I am also a member of our first line of defense. I am a defender of freedom, a career-minded airman, a . . .

Q.—Thank you, Airman Regg. How old are you?

A.—Old enough to know better and young enough not to care.

Q.—You live at Breezee Air Base?

A.—Correction, sir. I am stationed at Breezee, although it is my home away from home. It is also where I hang my helmet.

Q.—And what is your work at Breezee?

A.—I am assigned to the Morning Report section. I am a pencil-pusher, an eraser-chaser, a chairborne airman, and have been awarded the typewriter ribbon for submitting perfect reports.

Q.—What are you wearing, Airman Regg?

A.—The prescribed uniform.

Q.—And how do you wear it?

A.—With pride, of course.

Q.—What word goes with your uniform?

A.—Discrepancies.

Q.—What do you do with discrepancies?

A.—I correct them.

Q.—And where?

A.—On the spot.

Q.—Now then, Airman Regg, what do you do with orders?

A.—I comply with them.

Q.—With instructions?

A.—I follow them.

Q.—With action?

A.—I recommend it.

Q.—And with records?

A.—I maintain them.

Q.—Very well, Airman Regg. What is it you take?

A.—I take measures.

Q.—What kind?

A.—Appropriate measures.

Q.—Why?

A.—To remedy situations, of course.

Q.—I see. Airman Regg, what are you always on?

A.—There's a choice here: I am either on the alert or on the ball.

Q.—To what extent?

A.—To the fullest possible extent—just as in my career field I constantly endeavor to determine the maximum capabilities of this base's manpower potential. As you can see, I think big but I also hang loose.

Q.—Where were we?

A.—Hanging loose. Or it is loosely?

Q.—No matter. Airman Regg, what do you do to shows?

A.—I get them on the road.

Q.—And when they stop?

A.—They come to a screeching halt.

Q.—What is it you make?

A.—I make concessions; also provisions and sometimes time.

Q.—Anything else?

A.—Yes. I make allowances.

Q.—For what?

A.—For inefficiency in performance of assigned duties.

Q.—Now, how are the plans these days?

A.—They are being implemented.

Q.—And the troops?

A.—They are being orientated.

Q.—The correspondence?

A.—Coordinated.

Q.—And information?

A.—Disseminated.

Q.—What do you think of striptease artists, Airman Regg?

A.—(chuckling) They don't show me much.

Q.—Do they upset you?

A.—You better believe it.

Q.—And when you are upset, you are . . .

A.—Shook.

Q.—How do you reply?

A.—By endorsement.

Q.—Now then, what do you think of regulations?

A.—I am in accordance with them.

Q.—What goes with "customs?"

A.—Courtesies.

Q.—What will happen to reports?

A.—They will be submitted.

Q.—Through what?

A.—Channels, naturally.

Q.—Why?

A.—For all intents and purposes.

Q.—What is always being passed to you, Airman Regg?

A.—The buck.

Q.—Anything else?

A.—Yes. The ball. I am on the ball and I carry the ball.

Q.—And I think we've carried this ball far enough. Thank you, Airman Regg.—END

Tech Talk

By Bob Strobell

A rapid-firing twenty-millimeter cannon, designed by the General Electric Co. for use on supersonic aircraft, was demonstrated at the Army's Aberdeen, Md., Proving Ground in August. The six-barreled gun, resembling the famous Gatling gun of Civil War vintage, will be installed on the Lockheed F-104 and the Convair B-58. The new gun (*see cut*) will provide the necessary firepower for split-second firing at fast-moving targets in supersonic combat.

General Electric, after a study of all types of machine gun mechanisms patented in the United States, selected the Gatling gun principle. It consists of a cluster of barrels, driven by an external power source, which rotate past a firing point. This design has an extremely high rate of fire under varying conditions of altitude and temperature.

The weapon is seventy-two inches long, weighs about 300 pounds, and has either an electric or hydraulic drive. Each barrel is equipped with its own bolt, and the cluster of six barrels fire one round at a time as



A six-barreled 20-mm cannon for supersonic fighters blasts a napalm target.

they rotate past a firing point at the top center position. Each barrel is also equipped with an ejector which drops the case and automatically ejects dud rounds. Simple to operate and maintain, the gun can be field-stripped and reassembled in less than thirty minutes.

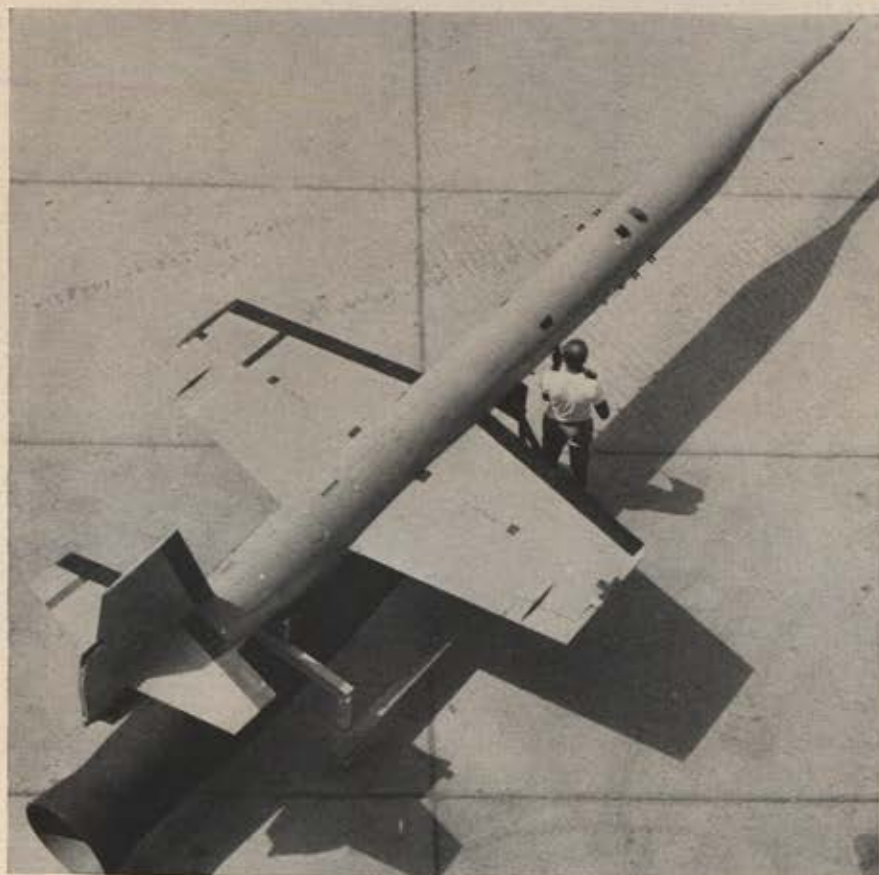
Extensive testing of the new armament system has been under way for more than two years at the AF Armament Center, Eglin AFB, Fla., where the gun has been flown and fired in a Lockheed F-94. Air Proving Ground Command successfully tested the weapon at a temperature of minus sixty-seven degrees Fahrenheit in its climatic hangar.

Details of two supersonic test vehicles were revealed at AFA's Guided Missile Conference during the AFA Convention in New Orleans. It was announced that Lockheed's X-7 has played a major role in the development of powerful new engines for ramjet missiles. This needle-nosed vehicle is used as a high-speed test bed to get test and design information in actual flight. The X-7 is airlifted by a B-29 to altitude and then launched. Rocket boosters drive it up to the speed where the ramjet operates efficiently and takes over to further accelerate the vehicle. Used to test ramjet engines developed by Marquardt Aircraft Co., Van Nuys, Calif., the X-7 is recovered by parachute for further flights.

The other vehicle is the North American X-10, a supersonic predecessor for the North American SM-64 Navaho, another strategic missile. The X-10—now completing a flight test program at Patrick AFB, Fla.—is powered by two turbojet engines. It is used to check out advanced aerodynamic design, test electronic systems and general flight characteristics. The program is aimed at producing the know-how to complete the operational design of the Navaho.

A new bombing system that enables jet fighters and fighter-bombers to accurately deliver atomic bombs is being supplied to the Air Force by Minneapolis-Honeywell. An electronic guiding and timing system, known as LABS (Low Altitude Bombing System), allows the fighter to approach the target at high speed, ground level, and then, at the right moment, start a steep climb during which the

(Continued on page 101)



The needle-nosed X-7, a supersonic test vehicle, has played a major role in the development of ramjet engines by supplying flight data. It is launched from a B-29. Lockheed built the X-7 for the Air Research and Development Command.



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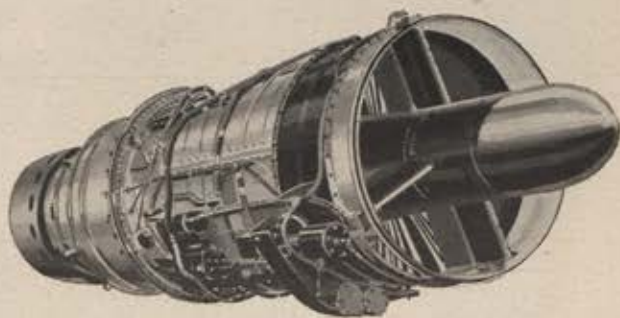
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bomb is released. The forward and upward motion of the fighter tosses, or lobs, the bomb at the target. The fighter then completes the maneuver by executing a loop and high-speed roll out (Immelmann turn) and escapes before the bomb hits the target. The heart of the system—a logical outgrowth of the daredevil tactics used by pilots in World War II when they destroyed dams by skipping bombs across reservoirs—is the electronic device that guides the fighter to the target and times the approach, pull-up, and bomb release.

The first production models of Boeing's KC-135 jet tanker-transport are now rolling from Boeing's Renton, Wash., plant. The new jet tanker will be used for aerial refueling of Boeing B-52 heavy bombers and other jet aircraft, including fighters. The tanker is equipped with a new streamlined flying boom (see cut), and a new type of high-frequency radio antenna for long-range radio communication, (see cut), which provides "vertical polarization" of high-frequency radio waves. The new tankers will replace the KC-97s as standard refueling tankers in the Air Force.



This small transmitter will send signals from the Vanguard space satellite.

Magnesium spheres, twenty inches in diameter and weighing about four pounds, will form the outer shell of the satellite, Vanguard, according to Brooks & Perkins Co., Detroit, Mich., who, under contract with the Navy, have devised special methods and techniques required to manufacture the spheres. The magnesium ball accounts for only a fraction of the total weight—about twenty-two pounds—of the satellite when it is fully loaded with tightly packed instruments and telemetering equipment. In the satellite project, where



Boeing's first jet tanker, the KC-135, is equipped with the new streamlined flying boom and a new high-frequency antenna mounted on the vertical fin tip.

scientists have been looking for ways to eliminate not pounds, but ounces, magnesium was selected as the metal with the required strength and the least weight. Each half of the sphere will be drawn from a single sheet of magnesium alloy, and the skins will be so thin it would take fifty of them to make an inch of thickness. Many strengthening pieces, battery supports, brackets and attachments for instruments, all magnesium, as well as built-in pressure chambers and supports for radio antennas, are a part of the structure.

At about the same time, the Navy announced that it had developed a thirteen-ounce (see cut) minitrack transmitter to send signals from the satellite to tracking stations on the ground. The transmitter uses transistors and is powered with a battery pack consisting of seven mercury cells that will provide transmitting power for a period of two weeks.

The Air Force delivered a Northrop Snark SM-62 intercontinental guided missile to Will Rogers Field, Oklahoma City, Okla., in a Douglas C-124 Globemaster for display at the National Aircraft Show over the Labor

Day weekend. Simultaneously the AF announced that the missile was being delivered to Patrick Air Force Base, Fla., regularly for test programs there. The strategic missile can be airlifted in a matter of hours in standard C-124s to potential launching sites near any airfield in the world capable of receiving the large transport. To transport the seventy-four-foot missile, its wings and vertical tail fin are removed for stowage aboard the Globemaster. The Snark is then reassembled at the launching site.

A small, simple, lightweight device developed by Kaman Aircraft engineers now permits a helicopter pilot to put his ship's rotors "in-track" during flight. The tips of a helicopter's rotor blades must rotate in the same plane to ensure smooth flight at maximum operating efficiency, and this tracking of rotor blades is normally a time-consuming job requiring manual adjustment to the cockpit control system by a mechanic while the helicopter is on the ground. Kaman's new cockpit blade tracker allows the pilot to adjust the blades

(Continued on following page)



North American's F-100F, two-seat version of the famous Super Sabre, takes off on its first flight. This two-man airplane can be flown by one man as a fighter-bomber or as an air-superiority fighter, or can carry an observer or a student in the rear cockpit. Like its predecessors, the F-100F can exceed the speed of sound in level and climbing flight. It is already in production.

during flight by turning a small crank in the cockpit. The crank energizes a small step motor which in turn moves a portion of the control system to correct the out-of-track blade which is readily visible to the pilot.

The American Bosch Arma Corp. has disclosed details of the defensive system installed in the Boeing B-52. The long-range jet bomber has a tail turret mounting four fifty-caliber machine guns which are automatically directed by the new system. The system incorporates radar to scan the sky automatically for attacking aircraft and pass the information to the gunner who monitors the system on a scope. The gunner merely watches the system until the electronic brain, after computing all the needed distance and speed information and

locking onto the target, tells him to squeeze the trigger. If the system could distinguish between enemy and friendly aircraft, even the gunner would not be needed.

A new four-place twin-engine executive airplane, called the Badger, manufactured by the Beech Aircraft Corp., Wichita, Kan., made its first flight on August 6. This business plane (see cut) will cruise at approximately 200 miles per hour and is powered by two 180-horsepower Lycoming O-360 engines. Built "under wraps" at Beechcraft's main Wichita plant, the Badger is now undergoing a fast flight-service test program.

Lockheed's C-130 Hercules prop-jet cargo carrier has successfully dropped the heaviest single load—a 27,000-

pound dummy load of iron—ever extracted by parachute from an airplane for aerial delivery. This weight included the iron, the platform carrying the load, and the six 100-foot cargo parachutes used to float the load to the ground. The first C-130As are scheduled to join the Tactical Air Command late this year.

The common tin can, delight of brides throughout the world, has now entered the supersonic aircraft research field at Boeing Airplane Co., Seattle, Wash.

Approximately three million tin cans, of varied sizes and types, are being utilized in Boeing's new supersonic wind tunnel now under construction. The cans fill the two thirty-eight-foot-diameter steel spheres, into which air will be pumped to a pressure of 150 pounds per square inch. The air will then be released simultaneously from both spheres, blowing through a four-by-four wind tunnel test section at speeds up to Mach four. An average test run will last about fifteen seconds.

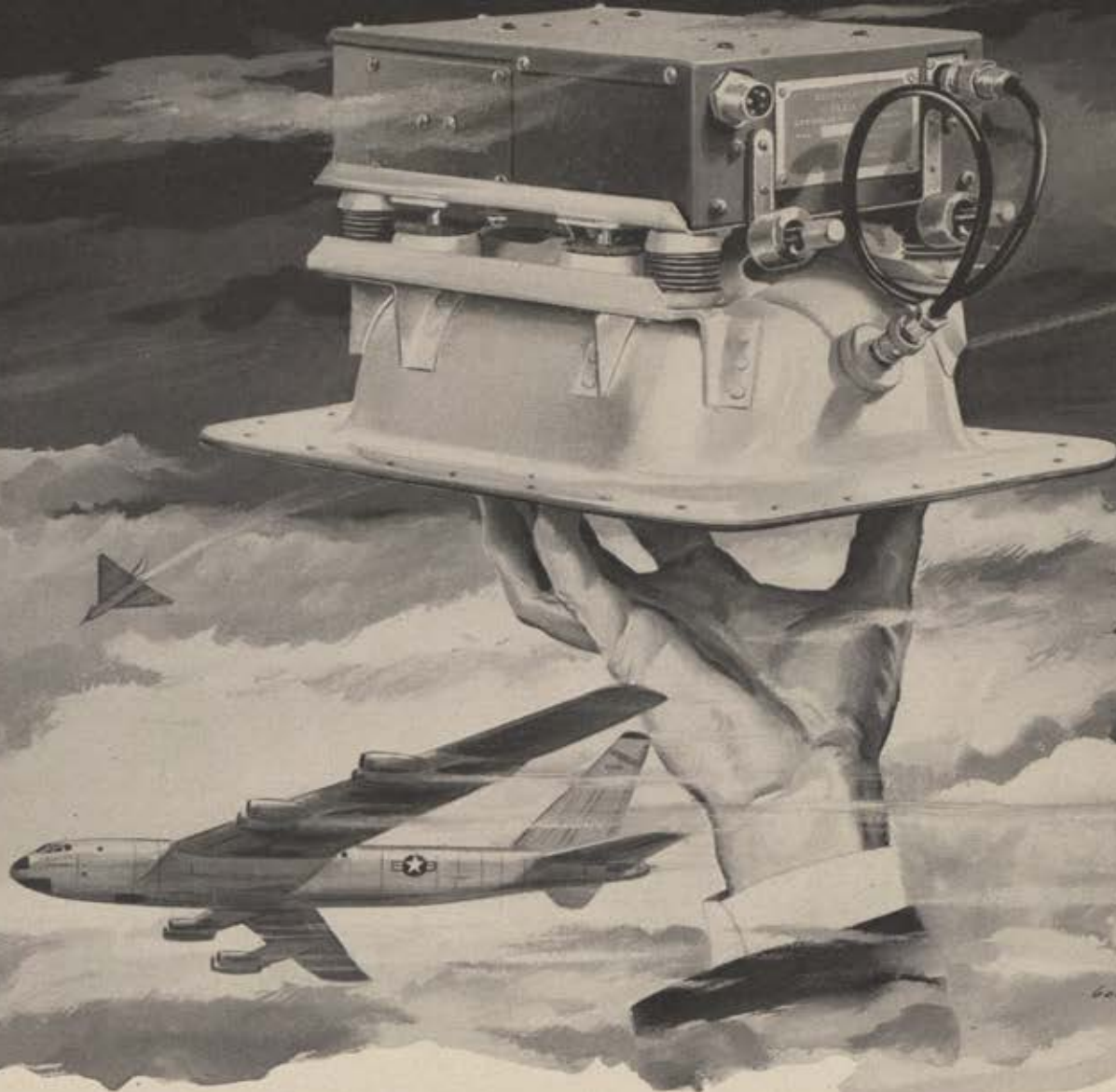
The cans, all unused factory rejects, serve as a "heat sink" during these runs. When the air is released from the spheres, it expands and cools rapidly, which would normally cause the temperature to drop below the dew point. This would result in condensation and extreme temperature variation within the spheres and tunnel, and produce undesirable test conditions. The cans, however, impart their heat energy to the expanding air to maintain its temperature at an acceptable level for exacting test conditions.

Douglas will add the visual element to all the sensations of actual flight being built into its DC-8 flight simulator. A new device, using television, gives a lifelike view of the airport on landing and take-off as part of the transition training for the big Douglas jet airliner. The system, called Telerama, projects a fifteen-foot picture in front of the simulator cockpit. It reflects changes of perspective, attitude, and motion caused by whatever action the pilots takes in the trainer.

The picture is that of a scale model representing a typical airport landscape. A number of these map-like models, representing actual airports, can be stored and used at appropriate times. Flight and vision are so closely coupled that it is believed this system could add significantly to the effectiveness of simulators.—END



The Beechcraft Badger is the latest addition to Beech's line of executive-type airplanes. It has a cruising speed of approximately 200 miles an hour.



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By using sub-miniature components and techniques, Stromberg-Carlson is now producing for the U. S. Air Force a receiver measuring 79 cubic inches in volume (compared with 308 in previous models); 3.9 pounds in weight (compared with 10.5); and requiring 15 watts power (compared with 40).

This new receiver (the AN/ARN-32) is easier to maintain because of the quick accessibility of its components. For example, the bottoms of tube sockets and wiring are easily reached from the outside.

In addition, the receiver is designed for unusually stable sensitivity and frequency.

Operating directly from the aircraft's 28-volt electrical system, the new receiver is effective at altitudes of 50,000 feet and at a temperature range of -68° to 160° F. It meets all Armed Forces requirements for resistance to shock and humidity.

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U. S. Air Force Photo

An Air Force cargo plane delivers vital Air Force supplies to an overseas base.

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Because our Air Force is operating in all quarters of the earth, AMC is a globe-circling operation with its headquarters centered at Wright-Patterson AFB near Dayton, Ohio.

The vital logistic mission for the Air Force involves billions of dollars in procurement, thousands of airplanes, and more than a million different kinds of supply items. Organizationally, AMC includes fourteen air materiel areas, or major area depots, located in the United States, Europe,

North Africa, and the Pacific. Geographically, air materiel operations extend throughout the free world.

Working with weapons systems contractors in private industry, AMC procures the equipment which has been developed and tested by the Air Research and Development Command, and distributes the equipment to combat units as needed. The never ending objective of the Air Materiel Command is to maintain an instant combat readiness, logistic-wise, in this era of super speeds and super weapons to support Air Force operations at any point on the globe. The philosophy of Air Materiel Command is that such readiness must be characterized by the closest interrelations of combat and logistic elements, by speed, flexibility, mobility and economy.

This is one of a series of ads on the technical activities of the Department of Defense.



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RESERVE AND AIR GUARD NEWS

Three months ago the Air Force directed that airline pilots and others who occupy key positions with airlines be eliminated from the paid programs of the Air Force Reserve and Air National Guard. The directive decreed that these individuals be removed from paid training status by December 31.

A few exceptions were made. The directive authorized retention of young Air Guard jet pilots, who had won their wings through the ANG aviation cadet program, until they had completed their three-year contracts with the units which sent them to pilot training. And it permitted retention—until qualified replacements could be found—of those who occupy supervisory positions in a Reserve or Guard unit.

By and large, however, the directive closed the door to further participation in the reserve forces on more than six hundred airline employees.

The screams that greeted the directive were loud and long. Those affected resented bitterly the fact that not only were they being eliminated from the paid program but also the fact that the same policy did not apply to airline employees in the Army, Navy, and Marine Reserve programs.

As the protests mounted, Air Force Secretary Donald A. Quarles agreed to review the policy; and Assistant Defense Secretary Carter L. Burgess decided that some thought should be given to a solid, across-the-board, Defense Department position.

Last month, in an effort to bring the controversy into proper perspective, the Air Force Association called a meeting of all parties involved.

The all-day meeting in Washington brought together representatives of the Air Force, Department of Defense, Office of Defense Mobilization, Defense Air Transport Administration, Air Line Pilots Association, Air Transport Association, Airlines Personnel Council, and the Air Force Division of the National Guard Bureau.

This was the first time that all parties concerned had gathered around the conference table, and approximately

25,000 words were exchanged—every one of which, incidentally, was transcribed—and full texts delivered the following morning to Mr. Quarles and to Mr. Burgess, and later copies of the transcript were sent to all participants.

No effort was made to reach a decision; rather the conference was intended to explore all facets of the controversy with a view to producing a single, factual document that would tell the full story from beginning to end.

The AF directive had its beginning in the wartime requirements of the country for airlift. To satisfy the airlift needs of the three services, the airlines will be called upon to make available to the government a high percentage of their equipment, with crews. Equipment and crews will become the Civil Reserve Air Fleet and will operate under Air Force control, specifically MATS, the Military Air Transport Service.

The airlines will be called upon also to give up another portion of their equipment, principally twin-engine aircraft, to carry on essential government airlift within the United States. This equipment, with crews, will become the War Air Service Pattern.

Repeated studies by various government agencies, dating back to 1950 have concluded that both equipment—and people to fly, service, and maintain the equipment—would fall far short of the wartime requirement for CRAF and WASP.

Air Force planners took a long look at the deficits and, based upon an Executive Order of 1951, concluded that all key airlines people—who are on the Department of Labor critical skills list—would be frozen in their airlines positions. If these same people were in the Guard and Reserve, the Air Force reasoned, they would not be available for mobilization. So, the Air Force decided to release them now, instead of waiting for M-Day, and replace them with people who are coming off active duty.

The Air Force feels it will have little difficulty getting these replacements, particularly among pilots. In fiscal year 1956, the Air Force lost 2,100 pilots. In the current

(Continued on following page)



Winning team, 144th Fighter-Interceptor Wing, California ANG, with Ray Studer, Casper, Wyo., business man (center). From left, top: Capt. A. J. Porter, Capt. R. P. Greenwood, Lt. Col. G. W. Edmonds, Lt. Col. R. R. Wright, and Lt. D. L. Peterson. Bottom, from left: Lt. R. E. Condie, Maj. M. R. Graham, Capt. J. A. Kilpatrick, and Lt. D. L. Dillon.



1st Lt. Mary W. Messinger, first woman AF officer ever to be assigned to the University of Maryland, adjusts hat of Adele W. Lambrides who is modelling ROTC women's uniform.

fiscal year it expects to lose 2,700 pilots; 3,700 next fiscal year and 3,300 pilots in fiscal year 1959.

The pilots feel differently. They believe that the current directive removes from operational units highly qualified pilots, many of whom occupy key training supervisory positions and many of whom have built up several hundred hours in jet fighters; and further, that despite the directive, the Air Force still has no guarantee that these reservists will remain with the airlines; for the law requires that airline pilots must bid for the CRAF and WASP positions and, to date, no bid procedure has been established.

If the conference developed the point that personnel shortages exist for the wartime CRAF and WASP, it also developed the point that the Air Force had not screened those affected by the directive down to the point where it knew precisely how many jet fighter pilots were included and, specifically, how many might be in runway alert units. Nor was the directive given to the Air Force Committee on Reserve and National Guard policy to consider before it was issued.

As this issue went to press, it appeared that Mr. Burgess intended to apply the policy across the board. He told the Army and Navy that he supported the Air Force policy and told these two services to review their positions in the light of the Air Force directive.

But it was obvious that the airlines employees had no intention of giving up their fight to remain in the paid reserve training program and elect to serve in uniform on M-Day.

California's 144th Fighter-Interceptor Wing is to the Air National Guard gunnery meet what the Yankees are to the American League. It's always the team to beat.

Last month at Casper, Wyo., after a two-year absence from the top spot, the 144th won the annual ANG gunnery exercise for the fourth time in the last six years. And this time it was a walk-away.

The 144th racked up a total of 1960.5 points, giving the Far West entry a margin of 516 points over the 133d Wing of Minnesota and 591 points over the 140th of Colorado.

Fourth place went to the 116th Wing of Georgia, which was represented by the wing's 157th Squadron of South Carolina, with 1325.5 points.

Fifth place went to the 101st Wing of Maine with 1316.5; sixth was the 108th of New Jersey, at 976.5; seventh was the 112th of Pennsylvania with 764; and the 199th Squadron of Hawaii finished eighth and last with 325.5 points.

The 144th Wing team included two pilots from the wing's 191st Squadron at Salt Lake City. One, Lt. Col. Roland R. Wright, won high individual honors with 356 points. The other, Lt. Robert A. Condie, had the second high individual score of 331 points. The team's Californians, both from Fresno, finished third and fourth, respectively. Maj. Milton R. Graham had 289.5 points and Lt. Col. George W. Edmonds, team captain, finished with 263.

While the Casper exercise was in progress, the Air Guard was holding its annual light bomb exercise for B-26 squadrons at Gulfport, Miss.

The 122d Bomb Squadron of New Orleans successfully defended its 1955 championship. Capt. William Byrd of the 180th Squadron, St. Joseph, Mo., won first place



Col. Ralph W. Luten has been assigned as Commander of the Air Reserve Records Center, 3800 York St., Denver, Colo.

Lt. Col. Donald K. Rogers is new Military Assistant to the Deputy for Reserve and ROTC Affairs, Assistant Secretary of the AF.



in the individual pilot competition, and Maj. Edward J. Murphy, 122d commander, finished second.

"Operation Sixteen Tons" ended last month, ringing down the curtain on the largest airlift operation in Air Force Reserve history.

Between June and September, Air Reserve crews from throughout the country airlifted 856,715 pounds of Coast Guard long-range air navigation equipment from Long Island to islands in the Caribbean where a chain of seven LORAN stations is being established.

A special Ad Hoc committee has been appointed by the Air Force to discuss proposed amendments to the Reserve Officers Personnel Act. The committee meeting this month will be chaired by Frank T. McCoy, Jr., of Nashville, Tenn., brigadier general in the Reserve and first chairman of the Air Force Association's National Reserve Council. The AFA representative on the committee is Daniel DeBrier, Atlantic City lawyer and Reserve colonel.—EDMUND F. HOGAN

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AF wives at Ellington AFB, Tex. Through lectures and meetings, the AF is winning the understanding of its wives.

The AF's WIFE INSURANCE

Through education, the AF tries to gain loyalty of the wives

By Louis Alexander

THE PILOT had an all-night argument with his wife before he took off on his flight mission. They were on the verge of divorce.

"He remembered clearing from the other base for the return flight," said Col. M. R. Halbouty, his flight surgeon. "He had no other recollection of the flight."

The pilot didn't crash. But in one sense he was already in the midst of an emotional crack-up before he got into the cockpit.

"I grounded him till his home situation stabilized," the flight surgeon said. "He divorced his wife; and he is still around, flying, today."

"A man can't undergo a big emotional upset and pilot a plane, too," Colonel Halbouty said. "It shows what part a wife plays in keeping her husband healthy and happy."

Plenty of emotional crashes—never

investigated by the flight safety officer—lose officers to the Air Force. Not pilot error, just misunderstanding and failure to operate properly that social vehicle—the family.

As wives go, so goes the Air Force. Nothing in the Air Force regulations lays out—by the numbers—what a brand-new second lieutenant and equally brand-new husband does to buck his wife's dislike of a cramped apartment in a strange new town. No SOP prescribes how the lieutenant quenches the tears that accompany, "Why must *you* be in the Air Force? There's no war on."

But, if national defense is important, if it's vital to man the air bases and train the cadres, then it's vital for wives to be loyal, understanding, and — if necessary — downright sacrificial about it.

But what does a woman do if she

wears slacks to the grocery on her first day in a new town, only to discover it isn't done and that all the other wives are staring at her?

What does she do if her first baby is almost here—an ocean apart from her mother—and she doesn't know where to turn for help even in assembling a layette?

How can she have the meals on the table at whatever hour her husband gets home from the base, tell him, "I'm proud of the good job you're doing," when it's all she can do to conceal the tears?

"One of our biggest problems—keeping officers in the Air Force—results simply from the wife's not knowing what's coming off," says a knowing officer and husband.

"She doesn't know what her husband's job is. She loses interest. She says there's no war going on. Yet she may send her husband off at 7:00 a.m. and that night keep his supper hot for him till it's too late to do anything with it, and not hear from him till still later—when he telephones from two states away that he's grounded at another base and won't be home till the next night."

Yet women, thousands of them, have achieved the understanding and the answers themselves to the problems of military life.

Air bases today are going after the loyalty and understanding of these wives. Lackland AFB has its five-morning Blue Yonder Workshop for wives of new pre-flight students. Officers Wives Clubs, NCO Clubs, and service clubs at bases all over the world provide meeting places, activities, friends, and sympathetic understanding.

For the past two years the Officers Wives Club at Ellington AFB, outside Houston, Tex., has been inviting wives to a two-morning orientation course. "Drop that feeling of aloneness; come out from among the diapers and meal planning. Come and learn about the services available to you. Learn how to use them, and how you can help your husband in his daily duties. Learn why the Air Force needs *your* husband." This was the invitation extended to the wives of student officers going through observer training and the wives of ROTC graduates undergoing their first regular tours of duty as full-time tigers.

With completion of the orientation course went many of the fears, questions, and problems of the wives. Confidence, assurance, and happiness replaced them.

A pretty picture, but is it artificial? "The course has a fine effect on our young officers," reports Mrs. L. C. Hess, president of the Officers Wives Club.

A transportation officer reports the flow of calls with queries and complaints about moving has slowed to a trickle. "Wives seem more confident and happier about moving," he reports.

The head of the dependents' clinic (herself an Air Force wife) reports

that wives *feel well informed* about the medical care they may expect and how to get it for themselves and their children.

A personnel officer at Ellington said, "I know it does good. We can't help but believe it will affect reenlistments, too, even though it's too soon to tell."

The Ellington course is typical of what wives and wives' organizations are doing, in cooperation with base officials, all over the world. Hundreds have attended.

The Ellington course has featured Col. Charles Chitty, assistant commandant of the Squadron Officer School at Maxwell AFB, Ala., who spoke on national policy and the Air Force, and Dr. Clanton Williams, a Reserve colonel and academic vice president of the University of Houston, who described the threat of Communism. Other speakers have discussed subjects such as medical facilities, service benefits, how to make a move, and the part that Ellington plays in the national picture.

At Lackland's Blue Yonder Workshop, each wife learned that "All your lives you have been swept forward by the forces of history, and all your life you will find it necessary to exercise your will and strength to influence those forces."

"The hunger of a herder of horses in Central Asia, the political inclinations of a cabinet minister in a South American country, the discovery of tin in Tadzhikistan, the idea that inspires a desert Bedouin—all these impinge upon your life."

"Our national and individual responsibilities to the world and to the
(Continued on following page)



During the orientation lectures, the children are watched in the nursery.



To get a better insight into their husbands' jobs, Ellington AFB wives tour the base and inspect the airplanes and equipment their husbands work with.



Nurseries, so important to young AF families, are provided at most stations. Above, 2d Lt. David A. West receives a tearful goodbye from his two children.

history of our times are tremendous. The fulfillment of these responsibilities demands careful husbandry of all our strength, all our minds, and all our resources."

The battle between freedom and totalitarianism has been going on since the beginnings of recorded history, Dr. Williams told the ladies at Ellington. In recorded history there has virtually never been peace, he reported.

Since the Korean war there have been outbreaks of fighting in Algeria, the Middle East, Korea, Viet Nam, the overthrow of a Communist-dominated dictator in Guatemala, and revolutions in South America.

The result, Dr. Williams pointed out, is a tremendous continuing threat to freedom.

To meet this threat the Air Force has to be flexible. How flexible it is surprised the civilian neighbors of an Air Force family living in an Ohio community. They were shocked to

find the officer's wife could pack and move in one day.

Moving is easy enough, for veterans, but the wives of new second lieutenants are appalled at pulling up roots within a few months after their marriage.

The paper work is a cinch, Charles E. Spear, a transportation officer for sixteen years, told the wives. Leave the paper work to your husbands, he advises, and most of the physical work to the packers and movers.

Hubby signs a Form 116, which is the application to have the Air Force handle the moving, especially the cost. Hubby and wife together fill out a Form 117, which is an approximate inventory of all their worldly goods.

A first lieutenant is authorized to carry 7,500 pounds, but even when you weigh the bedroom suite, stove, refrigerator, living room suite, the television set, the five or six barrels of dishes and utensils, and all the

clothes, Spear reports it rarely comes to more than 4,500 pounds.

Even an airman is authorized 4,500 pounds, if he's been in the service long enough to reenlist; for any period shorter than four years, he's on his own. The maximum allowance is 11,000 pounds for colonels and up. And of course there are exceptions upward and downward for different parts of the world.

The movers pack everything, Spear told the wives; at the other end the mover's men unpack everything. Wives don't have to lift a finger if they don't want to. His wife, Spear says (when he was in the service; now he's a retired major working as a civilian), usually packs her own personal things. Money and jewels are not shipable, though some wives and husbands do ship them anyway.

One distraught young wife called the hospital dependents' clinic before she finally got her message to the base transportation officer:

"Where are the movers?" she wailed. "I've been waiting for two weeks."

She hadn't known that she—or her husband—had to notify the base transportation officer and sign the one form to apply for government handling of the move.

"We'll send the movers as fast as we can," the officer promised, "to crate and ship your goods."

The woman lamented, "But I've had everything crated for two weeks."

Most wives have lesser problems, but the problems make them unhappy and irritated just the same, Spear reports.

"I shipped a bottle of ink and a bottle of catsup when we moved and they both spilled," is one complaint. "What shall I do?"

The solution to that is a clean-up, for the present, Spear replies, and for the next move the lesson is obvious.

They also ask, "Should I take diapers and baby food to our next station or can I buy them on board the ship?" and "Can you find quarters at the next base for me?"

Spear is not a housing officer, but he starts by assuring the wife that moving anywhere, stateside or overseas, is pretty simple. With communities of Air Force families everywhere, there's considerable resemblance to your own home town even in France and Japan. A family must prepare to convert the electrical voltage to what their appliances use, or buy a converter or some different appliances.

(Continued on page 113)

MICROWAVE AIRLIFT...



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A microwave station that can be transported to a site by helicopter and then put into operation in as little as two hours has been developed by Motorola for the U.S. Air Force. The equipment was designed to satisfy Air Force requirements for high information handling capacity, transportability, and quick installation.

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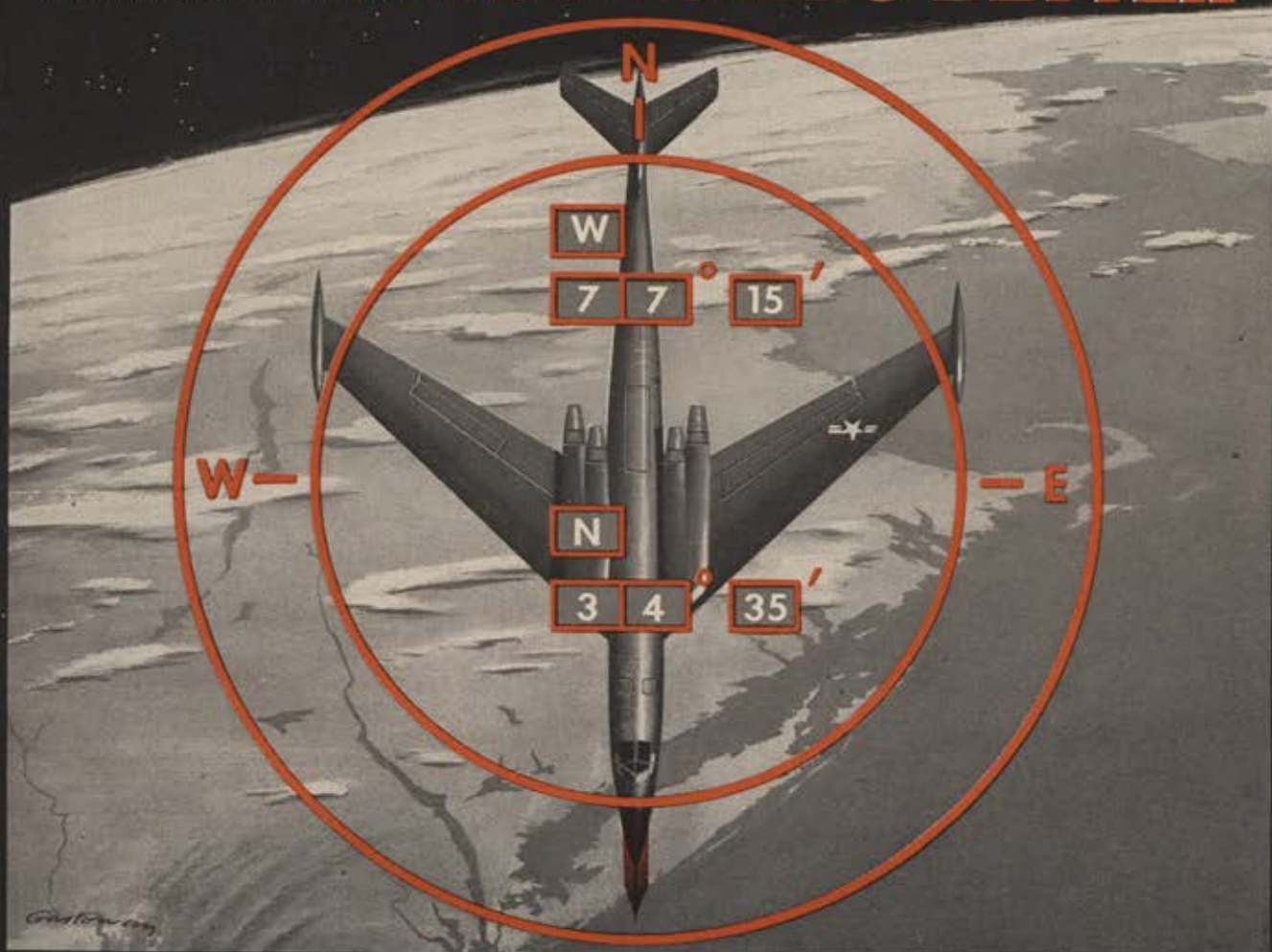
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tude), ground speed, ground mileage, drift angle and ground track in continuous, readable form. No computations are necessary. The equipment is compact and self-contained. No ground facilities are employed—no wind information or aerological data are needed.

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For some families there is government housing on the base. For others there is Wherry housing off the base. For the rest there is the same scrounging for suitable apartments, houses, mansions that would occur if an oil company or retail chain transferred the manager to a new branch.

An obviously pregnant woman asked Col. M. R. Halbouty, flight surgeon at Ellington, "Where and when can I have my child get immunization shots against polio?"

Colonel Halbouty asked, "How old is your child?"

"He's not born yet," explained the wife.

Ellington gives immunization shots on Friday afternoons, Halbouty told her and the other officers wives in the base theater during his talk on medical facilities. When families are preparing to ship overseas, the base hospital gives all pre-shipment immunization shots.

Wives tell each other, and their husbands, too, that the first pregnancy is an awesome experience. Like most base hospitals Ellington helps to transmute the awe into delight by keeping the military part of the procedure simple.

"It's necessary only to call or visit the hospital as soon as you're sure," a staff sergeant explained to wives. "We enter your name on the delivery book so we'll have room for you when your time comes, and we'll schedule your first appointment with one of the doctors."

Ellington's hospital delivers seventy-five babies a month, Halbouty reports. Maternity facilities are booked almost to capacity four or five months in advance, as at most military installations, allowing only a little slack for the unexpected and the emergency.

"For most Air Force wives it's their first baby," said a wife who works in the dependents' clinic. "The girls depend a lot on our nurses to help and advise them with everything from formula changes to insect bites."

Fear—fear of polio, of miscarriages, of the insects that bite their children—these are the big medical problems of wives. Doctors and technicians start in the orientation program supplying the answers and keep it up during the daily sessions of the dependents' clinic.

Medical facilities abroad are often better than in the US, wives learn. The explanation to this surprise is that Uncle Sam realizes civilian care is more plentiful at home, and easier to obtain, so he must nurture his



Coffee break. From left, Col. Norman L. Callish, CO of Ellington AFB; Jayne Kepner; Pat Dunn; Elizabeth Decker; Sigrid Tillson; and Col. Charles Chitty.

forces and their dependents abroad to a greater extent.

Nowadays the port of embarkation generally sends to the traveling family a letter telling them what medical care is available at the other end.

"The type of medical care available at a foreign base depends upon the base commander and the outside facilities available," Halbouty told the wives. "Some have hospitals, others only dispensaries. Have your husband check and find out."

Solving the day-to-day problems of medical care is important to the health and well-being of families, Colonel Halbouty says.

"A happy home usually means a happy husband," he reminds wives. "Your husband can't do his work as well in any other atmosphere. That's how much you mean to his well-being, safety, and his career."

For the problems that the medical and transportation sections can't solve, Air Force officials remind wives of the Air Force Aid Society, the Red Cross, the base chaplains of every religion, and the official services available at every base headquarters. The dependents assistance program is a going concern.

"So many of these wives have only been married a short time," a wife said. "They have to solve both the

marriage problems of living together and the problems of living within the Air Force, at the same time."

Perhaps that explains why some girls take it hard when an officer gets his orders to leave on another assignment. They become a great debit to their husbands, Mrs. L. C. Hess warned the wives. It is difficult to leave the friends they have made in the last two or three years, but Mrs. Hess advised them: "You are going to meet new friends. The next base may be even better. After a year or two on one base, my husband and I always look forward to the next one."

Don't try to live alone, Mrs. Hess advised the wives. Get out and get acquainted. Attend the activities of the Officers Wives Clubs—golf, bridge, luncheons—mix in the general society of the base.

"Use good judgment in mixing and living in the society of the civilian community," Mrs. Hess advised wives. "Since we military wives are fewer than the wives of the home town people, let us be at our best."

"Learn what the customs are—whether women wear slacks or wear dresses to go shopping, whether folks speak to newcomers without waiting for introductions or prefer to go through proper protocol."

(Continued on following page)



About the Author

Louis Alexander was last bylined in our June '56 issue with his article about navigators. In December '55 he wrote "Aviation's Utility Infelder" for us. Lou, county editor of the Houston, Tex., Chronicle, is married and has two daughters. An AF Reserve major, he teaches at an airport ground school near Houston and freelances for many publications all over the country.

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AF WIVES _____CONTINUED

Mrs. Hess urges women to pamper their husbands. During the orientation course they tour the air base, inspect the airplanes, and are reminded that their husbands are not bound to civilian type nine-o'clock-to-five schedules.

"You can best help yourselves and your husbands," Mrs. Hess says, "by using your judgment, your common sense, and your loyalty."

Moving around the nation and around the world is a mixture of blessings and hardships, spiced with wonderful experiences that are almost out of this world.

"Overseas," Mrs. Hess warns, "you won't have some things you are familiar with, like supermarkets. We've lived in everything from a tent to a manse. You'll have to get along."

When the Hess family decided to send their twelve-year-old daughter to a French school, during a tour of duty in French Morocco, the whole family suffered with her in her tears and her seven-months' enforced silence in class. After that, mother and father reported with delight, their daughter began speaking French as she never would have done from a course in a stateside high school.

But back in the States, the family found their daughter was behind her Texas class in English. She made it up, Mrs. Hess reported proudly, and now is an honor student.

"Air Force wives and families must work a little harder than others," Mrs. Hess warns.

"Just think what a wonderful opportunity you and your whole family are getting. You meet not only people of other cities but the people of other nations, and you get to know what they really are like. Air Force people become more understanding and have broader outlooks.

"Children benefit immeasurably from the kind of learning and experience they can never find in classrooms.

"You don't really understand your own people and your own country until after you have lived among other people."

There's glory in it, too, Maj. Gen. John H. McCormick, base commander, points out to Lackland wives at the Blue Yonder Workshop.

"You are on the threshold of an adventure on the last frontier of our age," he writes. "You are your husband's helpmate, and his triumphs and reverses will be shared by you.

"Your courage and fortitude will help him over rough spots; your devotion to the Air Force and the nation will be reflected in his success."—END



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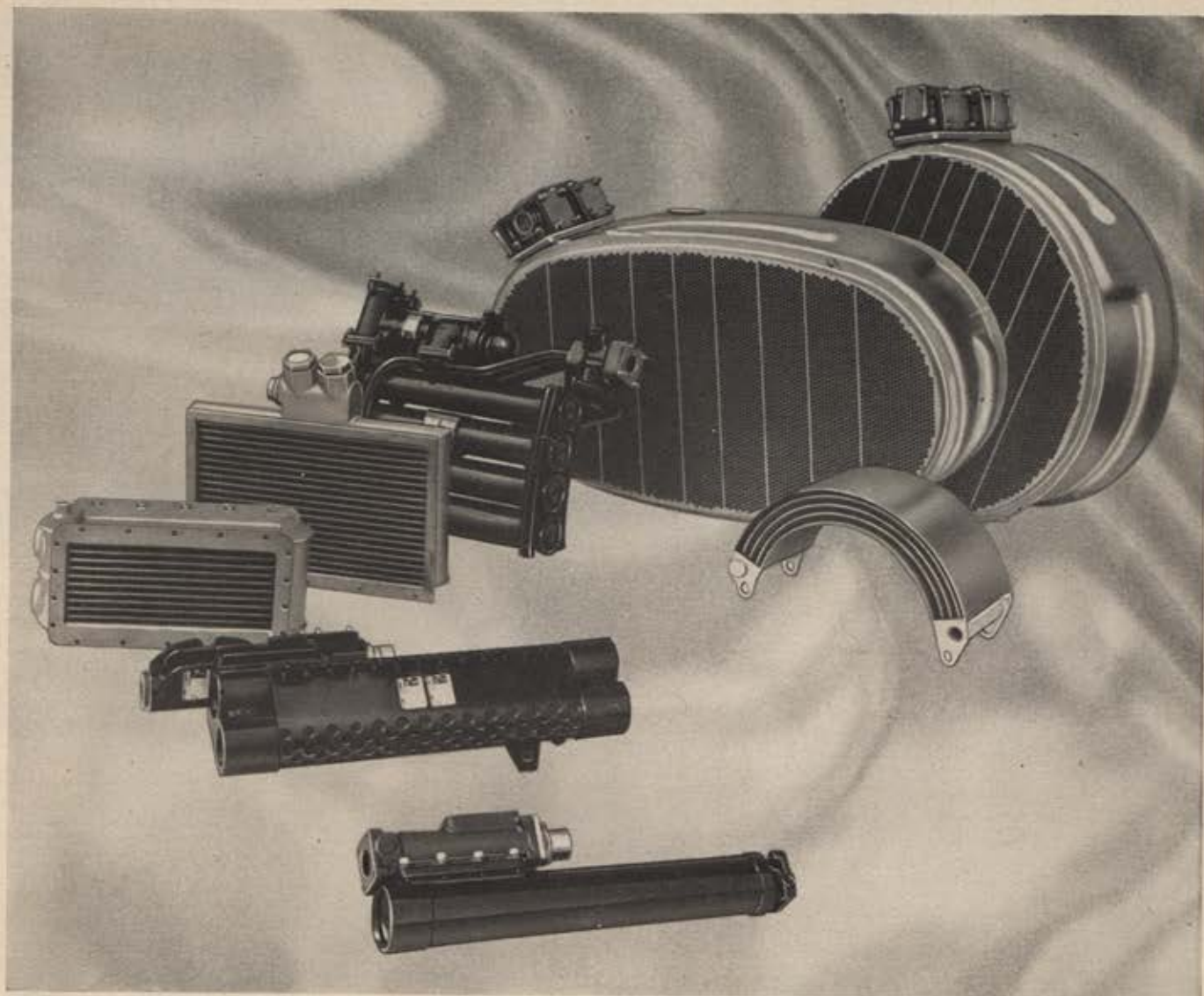
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Maryland Wing Honors Hecht Company

AIR FORCE WEEK IS HELD IN CONJUNCTION WITH DEDICATION OF NEW BALTIMORE STORE



In August, Gill Robb Wilson addressed the Lockheed Aircraft Co. Management Club in Atlanta, and "ground-checked" the C-130 at the plant in Marietta, Ga.

The Hecht Company, whose President, Samuel M. Hecht, is AFA's national treasurer, recently opened a new branch of its department store in Northwood, a Baltimore suburb. In connection with the dedication ceremonies, an Air Force Week was held outside the new store with displays of AF equipment, including a one-man helicopter and a mock-up of a C-124 cockpit. The AF Drill Team also put on its precision marching exhibition during the week.

An outstanding feature of the week was the display of a collection of more than 200 hand-carved model planes depicting the entire history of the USAF. It belongs to Capt. E. M. Gyerman, a Baltimore Reservist who estimates he has spent more than 10,000 hours working on the collection.

During the week, the Maryland Wing of AFA presented a citation to the store for its "outstanding accomplishments in the field of community relations . . . contributing to a closer bond between the American people and their Air Force." Paul Fonda, Maryland Wing Commander, made the presentation.

AFA's new President, John P. Henebry, has been busy during the first weeks of his term. On September 6, he made a trip to Washington to meet with the headquarters staff to map out plans for the year, and to

discuss future policies with AF Secretary Donald A. Quarles and AF Chief of Staff Gen. Nathan F. Twining. During his tour of the Pentagon he also met briefly with Gen. Thomas D. White, AF Vice Chief of Staff; Under Secretary of the AF James H. Douglas; and Maj. Gen. William E. Hall, Assistant Chief of Staff for Reserve Forces.

He also officiated, as President, at a reception that evening welcoming Brig. Gen. Andrew J. Kinney, new

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its outstanding series of programs honoring local and visiting dignitaries in aviation, thereby focusing public attention on the aims and objectives of the Association.



A small visitor to the Hecht Company Air Force Week examines a helicopter.

USAF Director of Information Services. General Kinney has replaced Brig. Gen. Robert L. Scott who is new Commander of the 3600th Combat Crew Training Wing at Luke AFB, Ariz.

Will O. Ross, Mobile, Ala., Squadron Commander, reports that the monthly luncheon series at Brookley AFB is rolling along in fine style, and attendance is increasing each month. (Continued on following page)



Paul Fonda, Maryland Wing Commander, second from left, gives scroll to Hecht Co. Vice President J. J. Miller. William Antrim and Charles Purcell look on.



Members of the Pittsburgh Squadron and Auxiliary are shown with the Pittsburgh Falcons during first flight tests of model planes built by the Falcons. Chester Richardson, Squadron Commander, is second from the right in the back row.

In August, the Squadron secured as its speaker Maj. Gen. Winston P. Wilson, Chief of the AF Division of the National Guard Bureau, during General Wilson's visit to New Orleans for the AFA convention.

General Wilson spoke to more than 100 people at the Officers Club at Brookley, where the audience included Maj. Gen. Fred R. Dent, Jr., Commander, Mobile Air Materiel Area.

Earlier, during the Armed Forces Day observance at Brookley, the Squadron awarded "Future Pilot" certificates to several thousand youngsters who took their first "flight" in one of the three Link Trainers set up on the ramp.

As a result of these and other air-power programs, the Squadron has more than doubled its membership.

The 1956 Mid-Year Conference of the California Wing has been scheduled for October 27-28 at the Ha-

cienda Motel, Fresno, scene of the 1955 Wing Convention. Curt Christensen, Wing Commander, advises that the agenda will include a program of orientation for new Squadron and Wing Officers, and the re-Chartering of the Wing Auxiliary, in line with the action taken by the delegates in New Orleans limiting Auxiliary activities to the state and local level. Details can be obtained from Christensen at 17907 Tarzana St., Encino.

The September meeting of the Capital Squadron, District of Columbia, featured an address by Lt. Col. William H. McVey, Aide to Gen. Nathan F. Twining, USAF Chief of Staff. Col. McVey, who has been Gen. Twining's aide since 1946, accompanied him on the recent trip to Moscow.

Colonel McVey reported that the USAF visitors were most impressed with the aircraft industries and engineering schools they visited.

Don Steele is Squadron Commander, and joins other AFA leaders from various sections of the country in endorsing the monthly luncheon type of meeting.

The Jet Age conference program, which had its beginnings at the national conference last February, is still going strong. The latest units to stage Jet Age conferences are the Boise Valley, Idaho, Squadron, which will sponsor a program on November 3, and the Spokane, Wash., Squadron, which met on September 14.

Roy Hanney, Spokane Squadron Commander, served as chairman of the program in his state, and John R. Alison, past AFA President and Board Chairman, delivered the keynote ad-



From left, Mike Kavanaugh, George Smith, and Charles Morgan at August meeting of San Francisco Squadron.

dress. William M. Allen, President of Boeing Airplane Co., was the principal speaker at the luncheon. Other speakers were: James A. Pyle, Deputy Administrator, CAA, who spoke on "Civilian Requirements"; J. M. Clapp, Assistant to the President of United Air Lines, who spoke on "Jet Age Safety"; and Col. Harry W. Shoup, Director, Combat Operations Center, ConAD, who talked about "Military Requirements."

In Boise, James M. Trail, AFA national director, is program chairman. The program will also tie in with a celebration of the tenth anniversary of the Air National Guard in Boise, and will include a demonstration by the Thunderbirds, official AF precision flying team.

Jack Brummer, Fresno, Calif., Squadron Commander, reports that the July 4 Centennial Air Show, sponsored by the Squadron, was the most successful event ever held at the local airport. It attracted thousands of
(Continued on page 121)



Third annual charter flight of Air Explorer Squadron #87, sponsored by Detroit Squadron. Squadron Commander Ted J. Syms stands at the extreme right.

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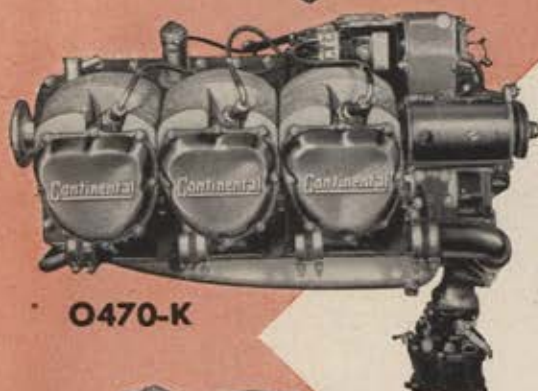
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Shown with Gill Robb Wilson in Atlanta are Dave Kelly, Lockheed Management Club President; Jack Allan; Bill Paris, Atlanta Squadron Commander; Arthur Patton; Douglas Embry; and Bob Sneed. All are members of Atlanta Squadron.

spectators, who saw the latest military aircraft in the air, as well as on the ground. The aerial demonstrations included the refueling of a B-52 Stratofort.

USAF Recruiting set up a booth next to the fuselage of the famous "Lucky Lady II," the B-50 which was the first plane to circle the earth non-stop—and signed up fifty AF enlistees, who were to remain together during basic training as "The Fresno Flight." James C. Lewis of Fresno was the first to sign up.

Brummer was Chairman of the event, and he was assisted by Wilmer Garret, Maj. Phillip Gangemi, Maj. Nick Delgado, Lt. John Hammel, Jr., Walter Berg, and Sam Bluecian.

The Las Vegas, Nev., Squadron has set up a luncheon program in conjunction with the USAF Gunnery Meet on October 9 which should help publicize the unit. The program, sponsored for the Chamber of Commerce, will give the Squadron a chance to tell its story, and also to brief the audience on the Gunnery Meet which takes place there annually.

Brig. Gen. Robert L. Scott, Commander, 3600th Combat Crew Training Wing, Luke AFB, Ariz., will be the principal speaker.

Ray Culley, Commander of this new Squadron, says that community interest in AFA activities is running high as a result of the programs it has sponsored and planned.

The San Diego, Calif., Squadron has sponsored another of its tours to acquaint community leaders with the problems of the USAF. The latest was held in late July when the group was

flown to Oxnard AFB, Calif., as guests of the 414th Fighter Group, and its Executive Officer, Col. M. Mulligan.

Feature of the program was a "scramble" of F-89s, after which two of the planes were available, along with their crews, for the group's inspection and questions.

We owe an apology to the San

Diego Squadron for an error in the July issue. We reported that the Air Harbor Squadron was named the outstanding California Squadron at the 1956 Wing Convention—but it was the San Diego Squadron which won the trophy.

Omaha's Ak-Sar-Ben Squadron and Arthur C. Storz, AFA director, were hosts at a big party for the personnel of SAC Headquarters recently. The buffet-dance, held in the gymnasium at Offutt AFB, was attended by more than 4,000 who danced to the music of Woody Herman's orchestra.

In his welcoming remarks, Mr. Storz referred to the party as a "small tribute to the airmen of the Strategic Air Command who are protecting Omaha and the American people." Maj. Gen. Richard M. Montgomery, SAC Chief of Staff, was among the honored guests.

The San Francisco, Calif., Squadron reports that interest in its monthly "Airpower in Action" series of luncheon meetings is gaining momentum each month. The August meeting—a sellout according to Clifford
(Continued on following page)

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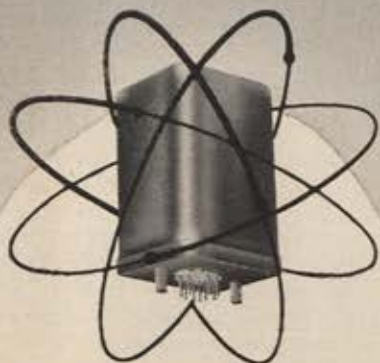
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122

Griffin, Squadron Commander—featured a speech by George F. Smith, North American Aviation test pilot.

Smith is the only man to survive a low-altitude bail-out at supersonic speed. Early this year he was ejected from an F-100 at a speed of more than 700 mph, and the injuries he sustained hospitalized him for more than six months. He's now back in the air, flying the Century Series of fighter craft for North American.

San Francisco is also planning another orientation tour for local community leaders, similar to the one which was held in June. This time a group will go to McClelland AFB, Calif., for an inspection of the Air Materiel Command installation there.

The Metropolitan Philadelphia, Penna., Squadron, under the leadership of Commander Joe Dougherty, began programs last spring which may put the Squadron among AFA's top units.

For instance, when Capital Airlines instituted its Viscount service in Philadelphia, the Squadron was on hand with a scroll for the occasion. When Miss Ruth Nichols, an aviation pioneer, came to town to accept an hon-



Joe Dougherty presents Philadelphia Squadron citation to KLM's D. J. Koeleman at opening of new KLM offices.

orary degree at the University of Pennsylvania, the Squadron gave her an honorary membership in AFA. A Rumanian princess who had aided hundreds of AF men to escape during World War II visited one of them in Philadelphia, and the Squadron gave her a citation for her work.

These, and many other programs, have given the unit much favorable publicity locally, and also helped it win the Pennsylvania Wing Outstanding Squadron prize for 1956.

Cross Country. . . . A member of the Air Harbor Squadron, Charles E. Sherbno, was a finalist in the USAF "Airman Of The Year" contest from ConAC. . . . Members of the New Jersey Wing, led by Wing Commander Joe Gajdos, were hosts to visiting members of the CAP Foreign Exchange program on July 26. . . . New Orleans's CAP Cadet Drill Team was recently named State and Regional Drill Champions. Most of them are members of the new Earl T. Ricks AFA Squadron in New Orleans. . . . Jerome Green, Great Lakes Region Vice President, announces the first Regional Conference for Sunday, September 30, in the Air Reserve Center, 705 South Clinton St., Fort Wayne, Ind., at 11 A.M. . . . Utah's 1957 edition of the Airpower Symposium, so successful in 1956, is scheduled for January 31, February 1 and 2. Joe Jacobs, Commander, predicts it will be bigger than last year's. . . . The Tampa Squadron plans a Florida Manpower Conference for October 12. Details will be furnished later. . . . Colorado's Wing Convention, November 10, will feature an address by Gen. Earle E. Partridge, ConAD Commander.—END

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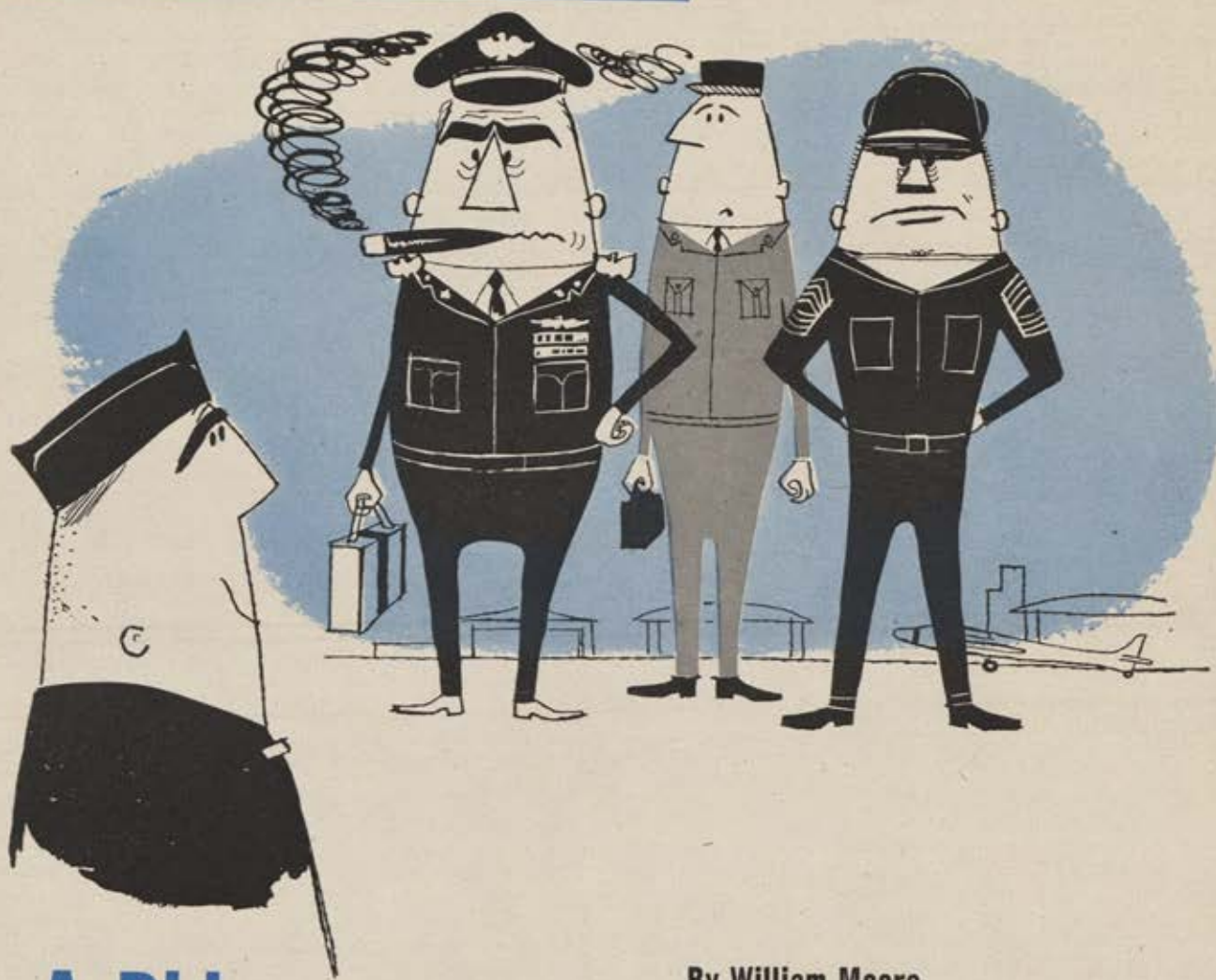
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A Ride With Colonel Rudder

By William Moore

LET ME explain the arithmetic to you, Lieutenant," said the squadron commander, in his precise Princeton accent.

"There are five other squadrons on this base. There are approximately 500 ferry pilots assigned here, some of whom can fly very well.

"Out of six squadrons, they pick mine. And out of ninety officers in my squadron, they pick you. And you are almost a total loss. Frankly, young man, I suspect a plot."

That, I thought bitterly, was making entirely too much out of a slight

dent in the wing tip of a BT-13. Of course, there was also that technical AWOL. And that nasty letter about low-flying planes. Still and all. . . .

Draping his slim, elegant form over the counter in the squadron operations shack, the captain continued the seminar.

"You have been with us only three months, Lieutenant, but in that short time I have acquired a profound respect for your ability to get into trouble. It amounts almost to genius.

"Now you have been put on orders
(Continued on following page)

to fly co-pilot for Colonel Rudder. YOU, of all people! Indeed, I am alarmed."

The cold, dry voice continued to bore a hole in my head, alongside all the others.

"I give you fair warning, young man. Do not, in the slightest detail, foul up this trip. If you do, a letter will come through channels from Colonel Rudder, bearing the black spot. It will be bad for me, Lieutenant, and very, very bad for you."

"Confidentially, I have high hopes of making major soon. And I do not propose to lose it because of a feeble-minded refugee from a second-class reform school."

"If anything goes wrong, I will make the punishment fit the crime."

With this cordial farewell, he left me, muttering something about how he thought he had friends down at Base Operations.

Smoking slightly around the collar, I slung my gear into the jeep and proceeded directly to Base Operations. I felt like the captain of the *Titanic* just after the iceberg.

The colonel and two enlisted men were waiting when I got there.

Col. Ralph Rudder, commanding officer of the Ympth Ferry Group, Lavender Army Air Field, was surplus from World War I. Short, round, and ruddy, he was a brisk, nervous man with a faintly genial air, reminiscent of a prosperous dentist.

He liked big, black cigars and was rarely found without one. He also had some sort of upper respiratory condition (not at all helped by the cigars), which produced a bark like a seal.

The colonel was champing at the bit. He was all for getting on with the war and he didn't have much time for nineteen-year-old second johns.

The flight engineer, a master sergeant, obviously had learned his trade along with Orville and Wilbur.

The old-timer had been in the service so long that he could call the colonel "Ralph."

This ancient sergeant had a face like a well-worn GI shoe. His pale, blue eyes were warm as ice, and his mouth looked like an efficient rat trap.

He had no time at all for kid lieutenants.

Looking like a fat herring between two famished sharks was PFC Green, the fourth member of our expedition. Green, I discovered later, had been in uniform about three months.

He had come from the factory with the airplane and would stay with it until it reached a tactical unit where, in theory, he would be its crew chief.

Green had never been up in an airplane, he had never seen a full colonel before, and the sergeant scared him silly.

I walked up with a tentative "hello." The sergeant grunted. Green managed a timid smile. The colonel withdrew his stogie and said, "Hack! Humph! Glad to see yuh, Lutenant. I already checked the weather. It's fine. Fill out the flight plan and let's get going. I gotta important appointment in Big D."

Fumbling with the computer, I made with the flight plan. When it looked sufficiently confused, I slid it and the clearance down the counter to the captain in Base Operations.

Without even interrupting an animated conversation with Colonel Rudder, the operations officer spotted six major errors and threw it back.

Ten minutes later (during which the colonel developed an advanced case of the fidgets) we were ready to go.

On the way out to the plane in the Old Man's staff car, I reviewed the situation.

I was only three months out of flying school. I had taken single-engine training and had only eight hours multi-engine time, all of it as co-pilot. I had never even been in a B-17 before.

It seemed to me that, in simple fairness, the colonel should be made aware of these facts. I'd have told him, too, if I could only have figured out how.

By slyly watching the others I discovered it was possible to enter the airplane through a little door in the fuselage, down near the tail.

Once in the seats, the flight engineer, with a nudge and a grunt, introduced me to a knuckle-busting, thrice-damned little hand-powered engine primer. To this I addressed myself and instantly sacrificed three layers of epidermis to democracy.

The starting procedure was somewhat complicated by the fact that Colonel Rudder several times confused the mixture controls with the throttles. This produced a number of shattering backfires.

By the time we had all four turning and I could get my head out from under the instrument panel, Old Bootface, the engineer, was seething. The colonel, even redder than usual, was mumbling about how rusty a man can get when he only flies four hours a month.

The tower cleared us to Lavender's runway 25R for run-up. The Old Man made a screaming, one-wheel turn and took off down the ramp at just under flying speed, slowing down occasionally

with jolting applications of the brakes.

As we roared past Base Operations doing a nifty eighty miles an hour, the engineer could stand no more.

"Fa' Gahsakes, Ralph, we're not supposed to roll to Dallas. Lay off them brakes."

Ralph laid off.

Old Bootface ran up the engines while the colonel and I watched. Finally satisfied, he nodded and grunted.

The tower cleared us onto the runway for take-off. Colonel Rudder swung it out and lined it up.

Then he let go of the controls, settled back in his seat, turned to me, and commanded:

"All right, Boy—pour the coal to her!"

I goggled. This, I thought, is really going too far, just for a lousy wing tip.

Old Bootface broke the silence. "The throttles, Lutenant, are those green things in the middle. Push 'em!"

Convinced now that I was an unwilling party to a mass suicide plot, I pushed and prayed. What seemed to me to be an awful lot of airplane hunched its shoulders and started to gallop.

Halfway down the strip, frantically fanning the rudder, I came to the dismal conclusion that I just didn't know when the monster would be ready to fly.

Shrewdly, I decided to hold it down until the runway was all used up. If it didn't fly then, I reasoned, someone else could complain to the Boeing people.

I almost overdid it. Lavender's runway 25R aimed directly at Beacon Hill, a considerable prominence tastefully decorated with oil derricks.

Just before the fence came into the cockpit, and just after a warning squawk from Old Bootface, I heaved on the wheel. With a protesting below from the engines, we rocketed off the runway and up into a forest of oil derricks.

I lifted the right wing over a tower, executed a skidding turn between two others and finally shot into the clear.

Shaking, I waited for the storm to burst.

Colonel Rudder beamed. He guffawed.

"Bah Gad, Boy, Ah liked that! That had style! Keep climbing."

With that he jammed his cigar back into his mouth and immediately fell into a deep, untroubled sleep.

I swung in a wide turn out over the Pacific. Climbing through a thin overcast, I found the flight instruments just before we spun out. At 8,000 feet

(Continued on page 129)



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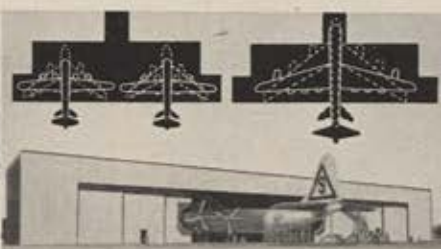
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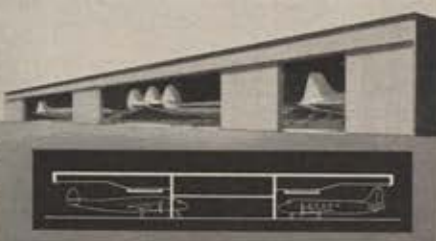


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I levelled off and pointed the nose at San Geronio Peak and Palm Springs.

The airplane was a brute, heavy on the controls and slow to respond, but I was beginning to get the feel of it.

I cranked in the Palm Springs range, convinced that the Old Man would take it when we got there.

We were almost over Palm Springs when Colonel Rudder's cigar started to singe his mustache. He awoke with a start.

"Hack! Humph! Where 'zis? Oh, Palm Springs, hey? Great little town, Palm Springs. Got a lot of friends there. Got a match?"

He fired up a fresh cigar, hacked again, and passed out.

A trifle grimly, I picked up the Phoenix range. The sun shone brightly on the Great American Desert, and the air became increasingly rough. The B-17 started to wallow and swoop, and I started to sweat to hold the heading and the altitude.

Old Bootface remained standing between the seats with a wary eye on the engine instruments—and me. PFC Green, suddenly weary of watching the scenery, squatted on the base of the upper turret.

Out of the corner of my eye I saw him fish a greasy paper sack out of his bag. Soon the spicy aroma of salami mingled with the cigar smoke that was rapidly driving all the oxygen from the cockpit.

After fifteen minutes more of horsing the controls I was thoroughly pooped. My arms were numb, and the colonel's cigar had my eyes watering badly.

He came out of the ether at Phoenix, too. "Hack! Humph! Where 'zis? Oh, Phoenix, hey? Great little town, Phoenix. Ah was stationed there back in '21. Got a match?"

A new cigar, then unconsciousness again.

Sighing, I turned the corner for Tucson.

Then I had an inspiration. Wagging a finger at the engineer, I asked, "Sergeant, doesn't this thing have an automatic pilot?"

He grunted something that might have been "Yeah."

"Well, how about turning it on? I'm beat."

"Can't do it, Lieutenant. The frangible torkle isn't centered on the reciprocating washpot. If we turn it on, the eccentric gleeble will strike the vacuum-driven dadblanger and burn out the coils on the knockolator."

And that was that.

The air got even rougher and the airplane churned and wallowed. Now

even my legs were getting numb. I was well on the way to becoming a basket case. The cigar smoke curled around the cockpit in thick, ropy coils, and I was developing a cough to match the colonel's.

In sheer desperation I started on the trim tabs. To my dazed surprise I found I was working a little easier. With a little trim to help, the brute smoothed out somewhat. But it still was no picnic.

At Tucson, Colonel Rudder regained consciousness again. "Hack! Humph! Well, Tucson, already. We're making good time. Great little town, Tucson. Got lots of friends there. Got a match?"

At this point PFC Green decided the salami hadn't been such a good

no ambition to take over the controls.

It was near dusk when I picked up the Dallas range and started to let down. At 6,000 feet Colonel Rudder sat bolt upright and threw away cigar number twenty-four.

"Hack! Humph! That Dallas over there? Fine. Great lil' ole town, Dallas. I'll take over—don't get much chance to shoot landings these days. . . .

"All right, Boy, I got it. . . .

"I said I got it! Leggo the controls! Didn't you hear me? I said I got it! I said leggo!"

Old Bootface leaned over and pried my fingers off the wheel.

Colonel Rudder grinned. "A little stiff, huh? Kinda rough today. Boy, why didn't you turn on the auto pilot?"

"Didn't want to burn out the coils



idea. He staggered into the opening between the seats, eyes watering and gulping desperately. In his misery he had forgotten about the colonel.

The Old Man, now wide awake, saw him. Half-turning in his seat, the colonel slammed Green cordially on the back and roared, "Harya, soldier! Enjoying the plane ride?"

The cigar smoke, the salami, and the shock of having a full colonel pound him on the back were entirely too much for Green's turbulence-troubled digestion.

Gulping like a beached flounder, he wheeled away.

Dimly I heard the engineer bark, "In your hat, man, in your hat."

But it was much too late.

It was only a wing tip, I whimpered silently. A lousy little wing tip on a lousy little BT. How much do they want for a wing tip, anyway?

I picked up the Columbus range and flew on.

The colonel, it developed, had friends in Columbus, El Paso, Odessa, Big Spring, Abilene, and Weatherford. Also, he had lots of cigars and

in the knockolator," I snarled.

Love Field tower gave us landing instructions, and the colonel flew the pattern while I tried to restore circulation to my hands.

The colonel was a leading exponent of the long, low, slow approach, known as the "graveyard glide."

Backing off to the vicinity of Oklahoma City, we approached the field with the now-twinkling lights of Dallas in front of us. The Old Man's approach got so low he lost the runway.

"Hack! Harump! Now whyinell did they turn off the lights? You see that runway, Boy? Watch the airspeed."

Bootface: "Those lights are still on, Ralph. There they are off to the right. Kick it over there."

Staggering along on the edge of a stall, Colonel Rudder munched around in a ragged S-turn and finally got lined up.

When I finally pried my eyes off the airspeed indicator, runway lights were whizzing past the wing tips. The main gear kissed the concrete with a touch as light as an angel's caress.

(Continued on following page)

Astounded, I blurted, "Bah Gad, Colonel, that was a beauty."

Just then the airplane reached the end of the bounce and fell in from about ten feet with a deafening crash.

In dead silence we taxied up to the ramp.

With a brisk, "See you at the airline terminal at 11:30," the colonel bounded out of the airplane and was whisked away in a staff car. Bootface filled out the Form One, forged the colonel's signature, and then he, too, vanished.

On my lonesome way back to that little door near the tail, I passed the huddled, sleeping form of PFC Green, flanked out in the radio compartment.

It is, I thought, poor form to kick a PFC. Him and his salami!

Then I staggered out into the blessed, smoke-free air, a life-long enemy of the cigar industry.

The flight we took back to Lavender picked up all the air mail in West Texas. This added up to very little mail, but a lot of stops.

The colonel ranked himself into a seat by the window, and I drew the seat next to him. Right after take-off he fired up a cigar, serenely ignoring the "Cigarettes Only" sign. I was positive he'd had enough sleep to last a week. Thirty seconds later he was snoring.

Coughing, cursing, eyes watering, I finally fell into an uneasy doze, my fingers still clenched in stiff semi-circles.

The next thing I knew, the Old Man had elbowed me awake. Humph! Hack! This was Abilene. He had a lot of friends here and did I have a match?

Same story at Big Spring, Wink, Pecos, El Paso, and Tucson. At Phoenix, complaining that he couldn't sleep a wink, he took off his shoes.

It was gray dawn when the stewardess woke us up, told us to fasten our seat belts and informed us that we were about to land at Lavender.

She also made Colonel Rudder put out his cigar. This made him a little grumpy. He became even more grumpy when he discovered he couldn't get his shoes back on.

We had been on the ground ten minutes and were alone in the plane when, red-faced and puffing, he gave up a hopeless struggle.

"Humph! Hack! Guess it's no use. Must be getting old. I'm gonna feel like a gorrammed fool walking off this plane in my stocking feet."

I sighed.

"Colonel," I asked, "what size shoes do you wear?"

Thirty seconds later, Colonel Rudder bounded down the ramp, fully shod. I followed somewhat more slowly. That concrete was cold and damp and hard.

Graciously, he had his driver go by my squadron. As I climbed out of the staff car, he blew a cloud of smoke at me and said, "Well, Boy, that was some trip."

"I tell you, Son, you better get hold of a pilot's manual for the B-17 and do a little studying. You don't know a thing about that airplane, not a thing."

"Humph! First time I ever had a barefoot co-pilot. So long, Boy. Let's go, driver."

As his staff car vanished into California's morning fog, I could see my career in the flying business going with it.

There were, I recalled, those errors on the flight plan. Then that wild take-off. And the disaster with PFC Green. I should have taken that salami away from him. Worst of all was my comment on that "beauty" of a landing.

Was it possible to get a transfer to the infantry?

Glumly, I picked up my gear and went into the operations shack.

It was very early and there were only two people in the room—one was the Princeton Tiger, my squadron commander; the other was Old Bootface, the colonel's engineer.

I stalked in, still shoeless, slammed my B-4 bag on the floor, stuck out my chin and waited.

The Princeton Tiger giggled.

I gaped. Turning to Old Bootface, I croaked, "What?"

Old Bootface actually smiled. It was like the ice going out on the St. Lawrence River, but it was a smile.

"It's like this, Lutenant. You just had kind of a check ride. It's a way the colonel has of takin' a look at an officer who's, if you'll excuse me for saying so, sort of balled things up."

"Did he know what he was doing,

Sergeant, when he told me to take that thing off?"

"There wasn't no cause for alarm, Lutenant. Me and Colonel Rudder been flying with shavetails for twenty years. But, I got to admit, that take-off really made a new entry in my book."

"And what happens, Boot—er, Sergeant, if I don't pass Colonel Rudder's little check?"

His flinty eyes never wavered. "Well, I couldn't say for sure, but I hear they need an officer out at the base pistol range. You know, to count the empty brass and keep the place policed up."

"Sergeant, they can't send me there! Loud noises make my nose bleed."

The ice went out on the St. Lawrence again.

"You ain't going to the pistol range, Lutenant. I seen the Old Man watching you, and you did all right."

"You showed him you could think in an airplane when you finally got smart about the trim tabs. And you ain't a trouble maker or you'd have blown up on the match routine. I've seen the Old Man drive people frantic with that."

"If I was you though, I'd be a little more careful about commenting on the way superior officers land an airplane. Colonel Rudder don't fly much these days, and he's not as sharp a flyer as he was, say, twenty years ago. He's still a pretty sharp judge of men, and from where he sits, that's what counts."

"Oh, and one more thing. If I was you, I'd get a manual and study up on the B-17. You don't know a thing about that airplane, Lutenant, not a thing."

I was watching him march out, rugged, strictly GI with all guards posted, when I felt a hand on my shoulder and a cultivated, Ivy League accent cooed:

"Here, young man, have a cigar."

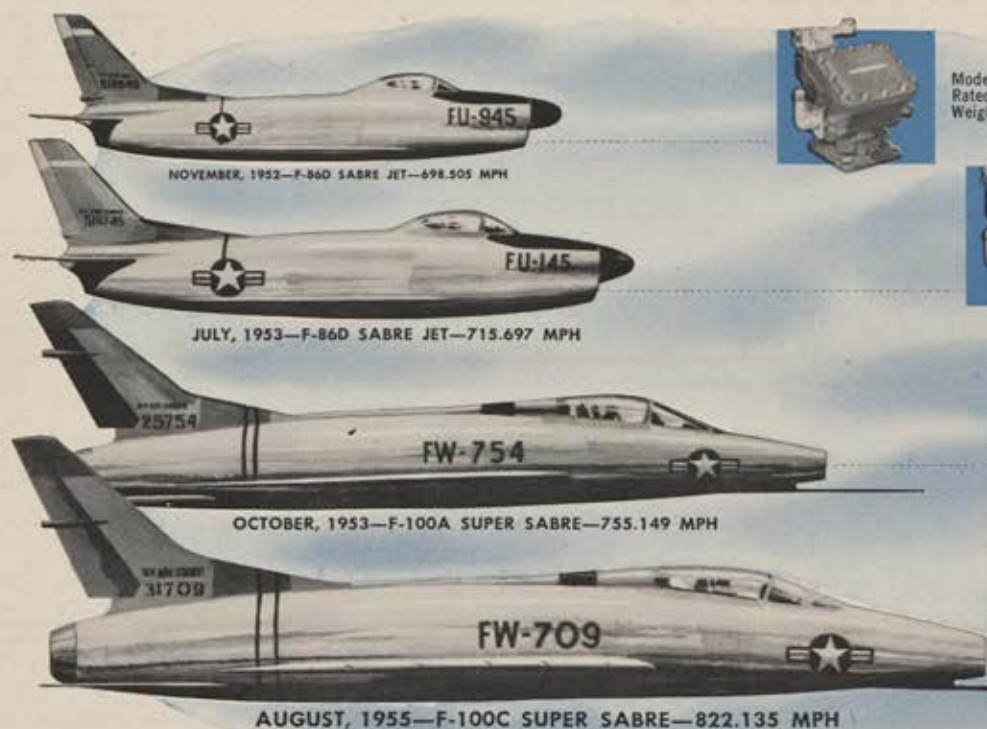
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About the Author



Bill Moore, who's assistant news editor of the Columbus, Ohio, Citizen, says he writes because, "My wife thinks I should and needles me if I don't." Born in Boston in 1923, he entered flight training in 1942. In World War II he flew with ATC before pulling thirty-four B-17 missions with Eighth AF. After the war he attended Ohio State University, and in 1948 he quit school to become telegraph editor of the Citizen. He was recalled to active duty in 1951 and was stationed at Hickam AFB, flying the transpacific run. In 1952 he was retired for a physical disability and after hospitalization returned to the Citizen. Married, he has four children.

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